

National Air Toxics Monitoring Program:
FY 2004 State and Local Agency
Grant Guidance and Allocation

Office of Air and Radiation

August 15, 2003

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I. Introduction

The President's budget request for FY 2004 includes additional grant resources to expand monitoring for hazardous air pollutants across the country. The expansion is consistent with directions from the Congress and subsequent recommendations from the Science Advisory Board (SAB). The SAB has concluded that an understanding of air toxics in the environment is important and that additional resources would aid in efforts to assess air toxics concentrations and improve the scientific basis for understanding exposure to these chemicals and their resulting health risks. In addition, the Office of Management and Budget's evaluation of the Agency's air toxics program identified several areas that expanded monitoring could aid, including closing large data gaps on toxicity and contributing to the determination of actual population exposure. The expansion also is consistent with the Agency's National Air Toxics Implementation Strategy, and National Ambient Monitoring and Air Toxics Monitoring Strategies.

This document presents EPA's FY 2004 technical and grant guidance for key aspects of the national air toxics ambient monitoring program. This information is intended as a planning and guidance tool for EPA Regional Offices and for state, local and tribal air agencies. The guidance reflects input and recommendations from the Joint Air Toxics Monitoring Committee, a sub-group of the Standing Air Monitoring Workgroup. The Workgroup is comprised of EPA, state, interstate, and local agency representatives. This year's guidance builds upon air toxics monitoring and data analysis work from the past three years. Related information from these efforts, which helps support and clarify this guidance, is listed below.¹ EPA's Air Toxics Monitoring Concept Paper is particularly important.

The national air toxics monitoring program is being implemented in conjunction with the development of both the Agency's Air Toxics Strategy and its National Air Monitoring Strategy. One of the major components of the Agency's air toxics strategy is the national air toxics assessment (NATA). The goal of the NATA is to identify those air toxics that are of greatest potential risk to the population. The assessment includes compilation of a national emissions inventory of air toxics emissions from outdoor sources, estimating population exposures across the contiguous United States, and characterizing potential public health risks due to inhalation of air toxics, including both cancer and non-cancer effects.

One of the building blocks of the assessment is the estimation and determination of ambient concentrations of air toxics across the contiguous United States. This guidance

¹ See - "Air Toxics Monitoring Concept Paper, Draft February 2000 found at <http://www.epa.gov/ttn/amtic/files/ambient/airtox/cncp-sab.pdf>; see also "Air Toxics Monitoring Data: Analyses and Network Design Recommendations," Spring, 2003, prepared by Battelle Memorial Institute and Sonoma Technology, Inc.; and also "FY 2002 Air Toxics Monitoring Grant Guidance," March 1, 2002; and "FY 2003 Air Toxics Monitoring Grant Guidance," March 12, 2003. Additional background information can be found at: <http://www.epa.gov/ttn/amtic/airtxfil.html> and <http://www.ladco.org/toxics/toxics.htm>.

addresses key aspects of that effort - the implementation of the first phase of a national air toxics monitoring trends network for pervasive air toxics and the expansion of community-scale monitoring to help characterize localized air toxics. These efforts will aid decision makers at both the state and national level in assessing and validating NATA activities by comparing monitored values with modeled data. The community-scale monitoring will also provide insight into the effectiveness of community air toxics reduction projects by enabling pre- and post-project monitoring at project sites.

The national air toxics monitoring program is also carrying out two dominant principles that emerged from the National Air Monitoring Strategy and that provide a framework for the air toxics monitoring efforts. The first principle is that monitoring programs must have an appropriate balance between national prescriptive measurements (e.g., projects in the National Air Toxics Trends System, or NATTS) and more flexibility to address local issues that are not adequately handled through a national design, given the diversity of toxics issues across the nation. The balance between NATTS and the emerging community monitoring assessments reflects adherence to this principle.

Second, the national strategy is directing a movement toward multiple measurements across numerous pollutant groups, recognizing the fact that most air pollution issues are interrelated from a scientific perspective and that enormous economies of scale can be realized from integrating program management efforts. To facilitate this movement, the NATTS are required to be located at existing PM-2.5 speciation trend sites, some of which are also located at Photochemical Assessment Monitoring Stations (PAMS). This coordination provides a spectrum of multiple pollutant measurements across toxics, particles, and ozone and a synergistic increase in the interpretive value of data delivered for state implementation plan (SIP) development and for tracking the success of air pollution management efforts.

II. Grant Funding

For FY 2004, \$16.5 million in State and Tribal Assistance Grant (STAG) funds under Clean Air Act sections 105 and 103 are expected to be appropriated to support national air toxics monitoring activities. This includes \$6.5 million under section 105 to continue support for ongoing air toxics monitoring activities initiated and conducted by state and local air quality agencies and \$10 million under section 103 authority to support the development and operation of the national air toxics assessment and trends network and expanded community-scale air toxics monitoring.

Beginning in FY 2003, \$6.5 million in section 105 funds was redirected from the implementation of the national ambient air quality standards in recognition of expanded air toxics monitoring being conducted by state and local air agencies. Initially estimated at some 300 sites, current estimates are that at least twice as many such efforts are underway across the country. The contribution of these efforts to the NATA, and their relationship to the community-scale monitoring being proposed for section 103 funding under this guidance, is further discussed below.

The primary focus of this guidance is on that portion of the air toxics monitoring efforts funded under section 103 authority. This totals \$10 million and includes support for the national air toxics trends network, associated quality assurance and data analysis needs, and funding for multiple community characterization projects. The latter are to be selected on a competitive basis using specific criteria outlined in this guidance.

NATTS is an ongoing, 22-site network that will continue to receive maintenance and quality assurance funding. NATTS monitoring resources total \$3,070,000. Supporting quality assurance and data analysis total \$730,000. An additional \$6.2 million in funding will be allocated to support a number of community characterization projects, with data collection activities designed to answer questions satisfying both the national need and the local need.

III. Funding Parameters

All NATTS projects and associated program support activities are exempt from competition as outlined in EPA Order 5700.5. The applicable exemption is that which addresses the National Air Toxics Monitoring Pilots and is found under section 6(b)(1) of the order. The full text of the Competition Order may be found at: http://www.epa.gov/air/grants_funding.htm. The community assessment projects are not exempt from competition, however. These projects are listed in this technical guidance, but the details and rules to apply for these funds are contained in a companion request for applications (RFA) document. More information is provided in the following section.

III. Projected Activities and Project Purposes (for Section 103 Funds)

The grant funds are expected to support the following activities during FY 2004:

- Continuation of Initial Trends Sites. An important objective of the national network is to establish trends and evaluate the effectiveness of hazardous air pollutant (HAP) reduction strategies. To this end, funding for air toxics monitoring at 22 NATTS sites was released during FY 2002 and FY 2003. These sites, to be in full operation by January 2004, are:

<i>Region</i>	<i>Urban</i>	<i>Rural</i>
I	E. Providence, RI Boston (Roxbury), MA	Chittenden County VT
II	New York, NY Rochester, NY	
III	Washington, DC	
IV	Decatur, GA Tampa FL	Hazard, KY Chesterfield, SC
V	Detroit, MI Chicago IL	Mayville WI
VI	Houston (Deer Park), TX	Harrison County, TX
VII	St. Louis, MO	
VIII	Bountiful, UT	Grand Junction, CO
IX	San Jose, CA Phoenix AZ	
X	Seattle, WA	La Grande, OR

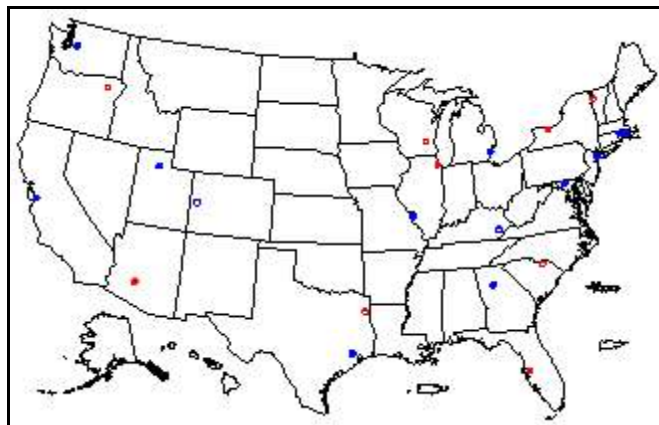


Figure 1. Map of 22 Trends Sites
(Blue = urban, Red = rural)

The FY 2003 grant guidance notes that “(c) continuation of the trends sites beyond this 12-month period is expected, although the funds for this additional monitoring will need to be addressed with next year’s funding allocation.” The allocation of \$2,200,000 (\$100,000 per site) in FY 2004 is necessary to maintain all 22 trends sites. The trends sites are expected to comply with the quality assurance activities, including participation with the Agency’s Performance Evaluation and Round Robin sampling program. Trend measurements are listed in Section IV below.

Additional funding will be available for hexavalent chromium measurements at all NATTS sites, continuous high resolution carbon monoxide (CO) monitoring at five NATTS sites, and continuous formaldehyde measurements at up to three NATTS sites (see allocation table below). Hexavalent chromium, rather than total chromium, is of interest given U.S. EPA’s cancer risk numbers and experience from the pilot city program. Continuous CO, which may closely track benzene, and continuous formaldehyde are of interest, given the pilot city analyses that recommended more frequent sampling for both benzene and formaldehyde. Only a limited number of NATTS sites are selected for CO and formaldehyde instruments to ensure that adequate testing and evaluation of these instruments are conducted prior to an anticipated full NATTS deployment for CO. Expansion of continuous formaldehyde instruments (which complements the formaldehyde measurements captured by traditional cartridge techniques) is contingent on a better understanding of the resource requirements and performance attributes of this technology. The motivation for introducing these continuous methods into the NATTS is based on a desire to capture more frequent data (continuous hourly data versus every sixth day 24-hr average) and to promote newer technologies to advance the state of routine air toxics monitoring.

Please note grantees are expected to input their quarterly monitoring data into AQS as a grant condition for this funding.

- Data analysis projects: Funding is set aside for data analysis of air quality data from the 22 NATTS sites, data from other urban or regional programs (especially, programs funded in total or part with Air Toxics Monitoring Program grant monies from a previous year), community projects discussed below, and other quality assured, valid air toxics

data. Quality assured data sets are the highest priority, but all data should be included for analysis and flagged with the appropriate quality assurance caveats. These analyses will consist of trends analyses (for data sets with a sufficient number of years of quality assured, valid data) and general characterization analyses. These analyses should supplement (and not duplicate) other trends and characterization analyses being performed such as EPA's 'Trends Report' found at: <http://www.epa.gov/airtrends/toxic3.html>, and LADCO's 2003 air toxics characterization study found at: <http://www.ladco.org>.

The data analysis project is also required to produce an annual inventory of the ongoing toxics monitoring in the nation (outside of NATTs and community assessments projects included here.) Tasks to be included are:

- 1) identification of the sites and pollutants measured in the previous year;
- 2) evaluation of the quality of the data (appropriate methods and/or adequate QA);
- 3) provision of a brief summary of the data considered to be of NATTs-type quality, such as annual averages and maxima and completion of a screening-type comparison against health benchmarks.

In addition, these funds will also cover the sponsoring of a data analysis workshop for all interested parties to attend (up to 100 attendees).

- Quality Assurance. Three main elements of the quality assurance program are funded: annual data assessment, performance evaluations/ round robin, and technical systems audits. OAQPS will provide an implementation plan describing these activities.

Data analysis and quality assurance activities, since they will collectively support the individual NATTS activities, are proposed to be handled under a national contract as associated program support. This means that these funds, with the concurrence of the state and local partners, would be determined in advance of the allocation among state and local agencies. Funds for data analysis and quality assurance would be managed by EPA's Office of Air Quality Planning and Standards.

- Community Monitoring Assessments. As noted earlier, all NATTS projects and associated program support activities are exempt from competition as outlined in EPA Order 5700.5 under section 6b.(1) which addresses the original National Air Toxics Monitoring Pilots. Community assessment projects are not exempt. These projects are listed in this technical guidance, but funding must be applied for following rules outlined in a companion request for applications (RFA). OAR anticipates posting of the RFA some time after August 15 at: http://www.epa.gov/air/grants_funding.html. Once posted, applicants will have 60 days to prepare and submit an application.

IV. Community Monitoring Assessments

Purposes. To provide greater spatial resolution that could capture important concentration gradients across communities; detect impact signatures from differences between areas subjected to stationary, area, or mobile sources, and address in-depth specific community exposure and risk issues. In principle, these community studies are expected to achieve characterizations that are focused on a more local perspective in contrast to the NATTS that attempts a much more broad scale characterization. The proposals can include an entirely new monitoring network or can include enhancement of existing networks.

Based on available funding, it is hoped that community-scale monitoring projects in at least 10 cities will be funded. These cities should have several (e.g., at least four or five) monitors representing a variety of land use types, including neighborhood-scale (population-oriented) locations, industrial source-oriented, such as a large facility or airport (exposure-based, not fence-line sampling), mobile source-oriented, and commercial source-oriented. The idea with monitoring siting is to ensure sufficient resolution to capture representative concentrations (for each land use type) and characterize spatial gradients over the urban area. The estimated funding level is expected to be about \$500,000 per city. Although this guidance appears to restrict community assessments to similar sized studies in around 10 locations, there is no intention of excluding proposed projects that leverage existing studies resulting in important contributions to multiple cities.

A final report outlining the results, including the data, data analysis, and relation to risk will be required of the grantee. This work will also be presented by the grantee at the annual data analysis workshop. In addition, all work done with this funding will need to follow the field and measurement protocols as outlined for the NATTS sites, including the demonstration that the area is participating in the National Toxics Inventory effort (see table of NATTS requirements below.)

Objectives for Community Monitoring Assessments. These studies are intended to complement the NATTS by providing the flexibility to address issues that are not ubiquitous at a national level and to provide additional spatial resolution beyond a NATTS. Ideally, the aggregate of projects should provide some prototypical examples that can be relied upon without duplication in other areas. An example might be a single airport analysis or characterization of wood smoke that allows for either direct translation of results to other locations or provides directions for similar studies in areas experiencing common problems. A list of expected data uses follows:

1. Complement and support the NATA analyses by evaluating air quality models that in turn are used for exposure assessments. Air quality models are the direct tool for exposure assessments. However, they require supporting observations to instill confidence in model results, or to direct needed improvement in underlying model formulations or related emission inventories. NATA results are to be considered in selecting these projects.
2. Develop a baseline reference frame of air quality concentrations that provide the basis for the longer term measuring of progress of a planned emissions strategy program.
3. Develop spatial differences in pollutant concentrations that are driven by factors such as proximity to major roadways, influence associated with important stationary sources and other factors unique to particular communities. In many aspects, this objective is very similar to objectives of the major pilot city studies.
4. Characterize pollutants that are not ubiquitous everywhere (e.g., mobile source BTEX compounds), yet remain a problem on a national scale. Examples could include: (1) woodsmoke issues that are characterized by semivolatile organic compounds (e.g., polycyclic aromatic hydrocarbons (PAHs)) that present known toxics risks and exist both in gaseous and particle forms, (2) specific air toxics issues near the U.S Canadian or U.S. Mexican borders, (3) characterization of the toxics components of diesel emissions (similar to wood smoke in going beyond

simple particle mass or light absorbing carbon characterization that is more routinely performed as part of the PM monitoring program), and (4) numerous source specific issues related to local compliance efforts.

5. Test the application of available advanced technologies that can be operated on a routine basis.

Limitations of community assessments. In contrast to the NATTS component of toxics monitoring which can extend² for several years to decades, the community assessments may only last for as short as one year reflecting the nature of the information obtained or to expand the list of communities given the level of resources available. Within this context, these assessments will provide a “reference” baseline characterizing air quality at an initial point in time with only a limited ability to track expected progress associated with specific community based emissions mitigation efforts. To a certain extent, these and subsequent community assessments, should be viewed as a survey to corroborate NATA and better define those areas of concern where more extended monitoring should be conducted to truly account for ongoing progress of air program measures designed to reduce air toxics emissions. EPA will work closely with recipients in determining the how the course of community-scale monitoring will be proceed.

Criteria for Project Selection. Project selection will be based on the following considerations and criteria (these are duplicated on the OAR competition policy website referred to above):

1. Projects focused on model-to-monitor relationships within NATA for the specific community or region;
2. Clarifying spatial concentration patterns of key hazardous air pollutants (HAPs) within urban areas. Such pollutants could include those monitored as part of the NATTS as well as location specific pollutants.
3. Projects developed to either pre- or post-monitor for a planned air toxic reduction project, or correlating results with the community’s effort at characterizing air toxic risk. For example, community-based projects initiated at the request of the community or city and with a strong EPA and/or state/local/tribal presence. This might include projects already funded through federal grants or monies such as the Community Assessment Risk Reduction Initiative (CARRI) from the Office of Air and Radiation.
4. The inclusion of one or more non-routine, advanced technologies that have strong potential for routine operations for state/local agencies and tribes. Types of monitoring, such as Dual Optical Absorption Spectroscopy (DOAS), other optical based approaches, emerging continuous technologies can be considered. The intent here is to encourage fresh uses of existing technologies to address the gaps in in-situ continuous methods given that virtually all routine toxics measurements use time integrated decoupled (i.e., sampling collection followed by laboratory analysis) sampling and analysis approaches. Note, this is not intended to serve as

² Note that trends sites often need an extended period of time to meet the objective of delineating a change in air quality. However, analyses of certain NATTS may show that there is a reduced need to monitor because of site-to-site redundancy relative to the identification of significant exposure or the determination of progress. Therefore, each NATTS must be continually evaluated to determine the relative worth of the information supplied.

a vehicle for new methods development or research that is beyond the intended scope of resources.

5. Demonstrated effort to leverage other resources; for example, other planned/ongoing air toxics monitoring studies, and the use of measurements from PM and ozone (or PAMS) to assist in interpreting air toxics source-receptor and other characterization needs.

In evaluating these proposals, the EPA will consider the merits of individual proposals as well as degree to which the aggregate group of studies includes appropriate geographic and source issue diversity. This criterion addresses the value added of a proposed project in relation to the collection of proposed projects to minimize redundant efforts and optimize total value of the program. As part of this evaluation, EPA will insist on representation of tribal lands in the aggregate group of projects. (Please note that tribal organizations are encouraged to submit proposals for this funding, individually or in partnership with state/local agencies and other tribes.).

These grants are to cover 12-month studies. A final report is to be submitted to the Regional Office covering study protocols, results, and grantee's plans for use of results in relation to their community needs. In addition, the workplan submitted to the Regional Office MUST include the grantee's plans for AQS upload of all data on a quarterly basis.

V. NATTS and Community Assessment Requirements

Grantees participating in this program are requested to follow certain guidelines that will aid in a consistent data base for long-term data analysis and air toxics characterization. A sampling frequency of 1/6 over a 6-year period has been established to ascertain long-term trends. This sampling regime is not a requirement for the community gradient studies, however all other protocols must be followed. Please note the following table which lists NATTS requirements to be addressed in each grant application:

NATTS Parameter	Date Due	Comments
Quality Assurance Plan for the NATTS sites	Due to Regions September 2004	A re-submit of the NATTS QA plans from previous year with any updates is acceptable.
Measured pollutants: benzene carbon tetrachloride chloroform 1,3-butadiene 1,2-dichloropropane: (propylene dichloride) methylene chloride tetrachloroethylene: (perchloroethylene, PCE) trichloroethylene, TCE vinyl chloride arsenic and compounds	All data to be reported to AQS quarterly – January, April, July, October - for previous quarters, 90 days after the end of each quarter.	NOTE- comprehensive QA is required for the six following compounds: Hexavalent chromium Benzene Formaldehyde Acrolein* Arsenic 1,3-Butadiene Community projects can omit and/or include other pollutants to

beryllium and compounds
cadmium and compounds
Hexavalent chromium
lead and compounds
manganese and compounds
nickel and compounds
acetaldehyde
formaldehyde
acrolein

include as is appropriate for their study, with the exception of mercury.**

Methods IO-3, TO-15, and TO-11A

These are available on AMTIC:
<http://www.epa.gov/ttn/amtic/>

QA budget not less than 10% of total expenditures – co-location not less than 10% of sampling.

Co-location sampling can be from monitors in close proximity to a site – please give details in grant application.

PM10 federal reference method to be followed

Please reference EPA QA handbook Volume II Section 2.11 for operation and procurement:
<http://www.epa.gov/ttn/amtic/files/ambient/qaqc/2-11meth.pdf>

Each NATTS site to have a PM2.5 speciation monitor. Each urban NATTS site to also have an aethalometer.

AQS quarterly reporting.

These instrument requirements do not apply to community projects.

Each site encouraged to follow Technical Assistance Document (TAD) for NATTS

TAD will be final late winter 2003, however draft will be available at:
<http://www.epa.gov/ttn/amtic/files/ambient/airtox/nattsdrafd.pdf>

National Toxics Inventory (NTI) Emission Inventory: a 2002, 2005 and 2008 EI due in conjunction with NTI due dates.

A complete emission inventory required for each study area. Refer to the Emission Inventory Regional Representative for guidance, “complete area” definitions, and NTI due dates.

Additional QA requirements

The Quality Management Plan for the National Air Toxics Trends Stations Monitoring Program December 2002, (QMP), EPA 454/R-02-006.

The QMP should be referenced so that all agencies (EPA, Regional offices, State and local agencies) understand their roles and what assessments will be performed on the trends network.

* Laboratory methods for acrolein measurement are currently being revised. Grantees are encouraged to work with their laboratories on using alternative methods when measuring this chemical, or may elect to forego this measurement until US EPA has formalized an appropriate method (target date FY 2005.)

** Mercury measurements are funded through other EPA grants and thus will not be covered in this program.

Please note that continuation of the trends sites beyond this 12-month period is expected, although the funds for this additional monitoring will need to be addressed with next year's funding allocation. It should be understood, however, that these sites are not necessarily intended to be operated indefinitely. On-going analysis of the data will be conducted to assess continued operation of the sites. If a given site is determined to be no longer useful for trends (or other) purposes, then it may be discontinued or relocated. Also note that the community gradient studies are one year studies and may or may not be funded in subsequent years.

VI. Budget Summary

The allocation ranges for this funding year are as follows:

\$2,200,000	Continue 22 NATTS sites at \$100,000 per site
485,000	Funding for purchase and maintenance of the Chrome VI Collection system (California method.) at \$22,000 per NATTS site
150,000	Funding for purchase and maintenance of 1 to 3 continuous formaldehyde monitors at 6 NATTS sites. (Interested NATTS sites should send a 1-page proposal for these funds.)
235,000	Funding for purchase and maintenance of continuous, high resolution CO instruments at 5 NATTS sites. (Interested NATTS sites should send a 1-page proposal for these funds.)
385,000	Associated program support in the form of a national contract for NATTS Quality Assurance including quarterly PE/round-robin samples, technical systems audits, and an annual data quality assessment.
345,000	Associated program support in the form of a national contract for data analysis.
6,200,000	Community gradient studies. Proposals for use of these funds are being solicited (see Section III above.)
<hr/>	
\$ 10,000,000	TOTAL ALLOCATION

VII. Schedule of Activities

Community project solicitation	August 15, 2003
Proposals to OAQPS	October 15, 2003
Final projects selected	December 2003
States/local agencies submit grant applications	January 2004
Work plans approved/grant allocation	February 2004

QA plans approved	April 2004
Data analysis workshop	Summer/fall 2004
Initiate monitoring no later than:	
- Community projects	April 2004
- NATTS sites - continuation	January 2005
All data into AQS	Quarterly, starting 90 days after 1 st quarter of measurements.
Data analysis report	Winter 2005

VIII. Effective Grants Management

Regional Offices and recipients are reminded to follow Agency and Office of Air and Radiation requirements for the sound management of grants awarded under this program. This includes making an award based upon the appropriate authority, purpose and eligible recipient³; promoting competition, where appropriate (e.g., the community-scale monitoring portion of this program)⁴; ensuring effective oversight⁵; and identifying specific environmental and/or programmatic results to be achieved with the resources provided.⁶

IX. For Further Information

For further information on this guidance please contact Sharon Nizich at 1-919-541-2825 or by email at (nizich.sharon@epa.gov).

³ See "Guidance for Funding Air and Radiation Activities Using the STAG Appropriation;" R. Brenner to Regional Air Division Directors; November 12, 1999.

⁴ See EPA Order 5700.5, "Policy for Competition in Assistance Agreements," September 12, 2002 at: <http://www.epa.gov/ogd/grants/competition.htm>.

⁵ See EPA Office of Grants and Debarment, Appendix S - EPA Policy 5700.6, "Policy on Compliance, Review and Monitoring.," December 31, 2002.

⁶ See "FY 2004 Grant Guidance for Selected Air and Radiation Programs and Preliminary Grant Allocation," at <http://www.epa.gov/ocfopage/npmguidance/index.htm>.