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Recommendations to the Clean Air Act Advisory Committee

Air Quality Management Subcommittee
Phase II Recommendations
June 2007

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Tribute to Gregg Cooke

Gregg Cooke served on the AQM Subcommittee until his passing on September 17, 2006. Through all of his public life Gregg sought to forge partnerships and creatively solve problems. Gregg was widely recognized as an air quality policy expert, respected for his knowledge and insight, and trusted as a partner in working to resolve many complex problems. The AQM Subcommittee dedicates the AQM report to him. This dedication affirms that the subsequent improvements in air quality management are a product of Gregg's seemingly tireless efforts, his legacy to us, and to the people he so ably served.

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AQM Subcommittee Phase II Report
June 2007

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I. Introduction

In March 2005, the Clean Air Act Advisory Committee (CAAAC) formed the Air Quality Management (AQM) Subcommittee to continue efforts to improve the air quality management process in the United States. The primary charge of the AQM Subcommittee was to develop recommendations that would improve the air quality management system and address the air quality challenges in this country expected over the next 10 to 20 years. This report addresses those challenges and includes recommendations for the United States Environmental Protection Agency (EPA), states, tribes, and others to improve the planning and implementation of air quality protection programs. The work of the AQM Subcommittee continues air quality improvement efforts started by:

- The National Research Council of the National Academies of Sciences in its January 2004 report entitled *"Air Quality Management in the United States,"* and
- The Air Quality Management Work Group, also established by the CAAAC, and its January 2005 report *"Recommendations to the Clean Air Act Advisory Committee: Phase I and Next Steps."*

From May 2005 to October 2006, the AQM Subcommittee convened to discuss changes to the AQM system and develop recommendations. The Subcommittee had a diverse membership with representatives from industry, state and tribal air agencies, regional planning organizations, environmental and health communities, and EPA.

The AQM Subcommittee recommends in this report that EPA transition its current AQM paradigm from a single pollutant focus to an integrated, multiple pollutant model that: 1) recognizes and encourages consideration of the related and sometimes conflicting national air quality, land use, transportation, and energy goals and policies and 2) recognizes the range of benefits realized by consolidating the elements of an implementing authority's clean air program into one comprehensive Air Quality Management Plan (AQMP). The proposed AQMP will make implementation of air quality programs more effective by realizing the co-benefits of control measures, and creating a one-stop shop for the public and regulated entities to understand all of the elements of a clean air program. The change advocated in this report will require a new way of thinking about air quality management by federal, state, tribal, and local officials. Initially, AQMPs would likely be resource intensive. However, the AQM Subcommittee's recommendation comes with the expectation that an AQMP will, in the longer term, lead to improved air quality through more efficient air quality protection strategies that utilize fewer resources than the current State Implementation Plan (SIP) and Tribal Implementation Plan (TIP) processes. Over time, the AQMP process would also enhance coordination between federal, state, tribal, and local governments; provide more access and transparency to the public regarding what its government agencies are doing to protect public health; and, serve as a valuable tool that identifies gaps where more needs to be done. The proposed AQMP, through more coordinated revision cycles, would also deliver the regulatory certainty that industry requires to remain competitive.

During its deliberations, the AQM Subcommittee considered a wide range of recommendations and after extensive discussion is advancing a number of those for consideration. Most of the recommendations made by the AQM Subcommittee in this report are part of the overarching comprehensive AQMP recommendation. While the AQM Subcommittee urges that the recommendations be considered as a whole, each of the recommendations should be implemented regardless of whether the comprehensive AQMP approach is undertaken by a particular state or tribe.

The recommendations in this report, if implemented, would result in improved air quality management by creating a more comprehensive approach that necessitates consideration of land use, transportation, energy, and other related issues into the air quality planning process. The AQM Subcommittee believes that the recommendations in this report may be implemented under the current Clean Air Act (CAA).

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II. Air Quality Management (Phase I) Work Group

In June 2004, the Clean Air Act Advisory Committee (CAAAC) formed an Air Quality Management Work Group to evaluate the National Research Council's (NRC) comprehensive recommendations and to advise EPA on ways to improve the Air Quality Management (AQM) system. The Work Group included representatives from industry, state and local governments, tribal interests, regional organizations, environmental and public health organizations, and EPA.

In December 2004 the CAAAC submitted the Phase I AQM report which included 38 recommendations to EPA. The recommendations fall into the five broad categories outlined in the original NRC report:

(1) Strengthening scientific and technical capacity;
(2) Expanding national and multistate control strategies;
(3) Transforming the SIP process;
(4) Developing an integrated program for criteria pollutants; and
(5) Enhancing protection of ecosystems and public welfare.

The Work Group recommended several improvements be made to the AQM system as a whole that would greatly increase its effectiveness. Because of the pending SIP deadlines faced by states for ozone, fine particles, and regional haze, the Work Group chose to make recommendations that could be implemented in the nearer term. The Work Group also agreed that it would focus on recommendations that were responsive to the issues raised by the NRC, but when implemented would not require statutory changes, and in many cases would not involve regulatory or policy changes. The Work Group also recommended that a second phase focusing on additional and more comprehensive improvements be undertaken.

The Phase I recommendations are described in full in the Work Group's Report, *"Recommendations to the Clean Air Act Advisory Committee: Phase 1 and Next Steps,"* which was fully adopted by the CAAAC and submitted to EPA in January 2005. In April 2005, EPA conveyed to the CAAAC its agreement with the recommendations, its intent to implement the Phase I recommendations, and to report to the CAAAC on progress. While there was unanimous agreement among both EPA and the CAAAC that all of the recommendations should be pursued, they also recognized that resource considerations would dictate the manner and time in which certain recommendations could be pursued and satisfied.

Implementation of Phase I Recommendations

EPA has completed work on many of the Phase I recommendations and is making progress on addressing the vast majority of the recommendations. Longer-term projects such as improving information through monitoring, emissions inventories, modeling; developing a framework for accountability; and improving ecosystem protection are moving forward and may take several years to complete. The Phase I report, current EPA implementation updates, and additional information can be found on the CAAAC website at http://www.epa.gov/air/caaac.

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III. Current Air Quality Management System

The CAA created a framework for authorities to manage air quality, assigning different roles to federal, state, tribal, and local governments. The CAA requires EPA to set standards for "criteria" pollutants. A criteria pollutant is one of the six pollutants that EPA has found to damage public health and the environment, for which EPA has set National Ambient Air Quality Standards (NAAQS). While other pollutants can cause such damage, there are only six for which EPA has set this type of standard.

There are two types of NAAQS, *primary* and *secondary*. *Primary* standards are set to protect public health with an adequate margin of safety, including the health of "sensitive" populations such as asthmatics, children, and the elderly. *Secondary* standards are set to protect public welfare, including protection against visibility impairment, damage to animals, crops, vegetation, and buildings.[1]

For the criteria pollutants, EPA and states designate those geographic areas that experience unhealthy levels of those pollutants. Once an area has been designated as out of compliance (nonattainment) for a particular NAAQS, state and local governments are responsible for implementing and enforcing rules that reduce air pollution. The responsible state or local government has three years to develop a body of rules that will lower pollution in order to comply with (or attain) the standard. States use computer-based modeling to show (demonstrate) that the body of rules (collectively called a SIP) will bring about compliance with the standard (attainment). Tribes may develop Tribal Implementation Plans (TIP) to address the NAAQS in Indian Country. In areas where tribes choose not to develop a TIP, EPA is responsible for implementing the program in Indian Country. Once EPA approves the SIP or TIP, it has the force of federal law. States and tribes retain primacy for developing and implementing the SIPs and TIPs, thus allowing them to tailor air quality approaches to their individual local or regional concerns.

Aside from setting the standards, EPA has additional roles. EPA issues national rules that reduce pollution throughout the country, such as on cars and trucks. EPA also issues procedures and guidance to ensure consistency and certainty to states and tribes as SIPs and TIPs are developed and implemented. EPA then reviews SIPs and TIPs and approves them when they meet federal requirements, or takes action when plans are inadequate or not submitted. On occasion EPA must take action when mandated progress goals are not met within the required timeframes. EPA may also enforce state or tribal programs that are included in a SIP or TIP, if for some reason a state or tribe fails to do so. As required or appropriate for pollutants other than criteria pollutants, EPA may issue national emission control programs such as the maximum achievable control technology (MACT) standards for stationary sources of hazardous air pollutants.

Air Quality Management in the 21st Century

While much progress has been made in air quality management, the Subcommittee sees clear need for improvement. The NRC report identifies a number of significant challenges that

[1] http://www.epa.gov/particles/standards.html

require a more comprehensive perspective, new and improved tools, and innovative strategies. Addressing these challenges will help ensure future progress and keep pace with meeting current and future clean air goals.

Presently, EPA, states, tribes, and local agencies are well underway in their efforts to achieve the NAAQS. EPA has continued efforts to routinely review the NAAQS as required under the CAA. In 2006, EPA revised the particulate matter (PM) standards and is currently reviewing the standards for ozone, lead, nitrogen oxides, and sulfur oxides. Such reviews underscore the need for a dynamic air quality planning strategy approach.

The Phase I recommendations by the CAAAC along with the Phase II recommendations in this report are designed to assist EPA and state, tribal and local agencies to improve air quality, protect public health, and protect the environment. Not only will it enable agencies to achieve the NAAQS, but it also aims to take a more holistic multipollutant approach, including reducing air toxics and greenhouse gases.

IV. Challenges for Air Quality Management – A Look Ahead

The economic and societal activities that generate air pollution continue to grow. Despite this growth, air quality management programs in the United States have made significant progress in several key areas. Concentrations of key pollutants have improved considerably in much of the country. This progress has resulted in substantial public health benefits, economic savings, ecosystem protection, and improved aesthetics during a period of growth in the economy, energy production, vehicle use, and population.

A number of serious AQM challenges persist, especially areas that continue to have public health and nonattainment problems with ground-level ozone and particulate matter. There is also a heightened awareness and concern over exposure to air toxics, increasing levels of pollution transported from abroad, ecosystem effects, and effects of air pollution on visibility in and near national parks, effects of air pollution on climate change, and the feedback effects of climate change on air pollution. The AQM Subcommittee believes that to be more effective, future air quality management should address all of these challenges in a more holistic manner.

Nonattainment Problems: Ground-level Ozone and Particulate Matter

Following the anticipated emissions reductions from implementing the federal SIP Call for Nitrogen Oxides (NO_x), the Clean Air Interstate Rule (CAIR), federal mobile source rules, existing state and tribal air pollution control programs, and existing local initiatives, federal air quality modeling suggests that a number of areas, especially heavily populated areas, will continue to violate the current NAAQS for ground-level ozone and PM (See Figure 1). The number of nonattainment areas is expected to increase in light of the more protective 2006 fine particles (PM2.5) standard. The geographic scope and number of nonattainment areas is also expected to increase if a new, more protective ozone standard is promulgated.

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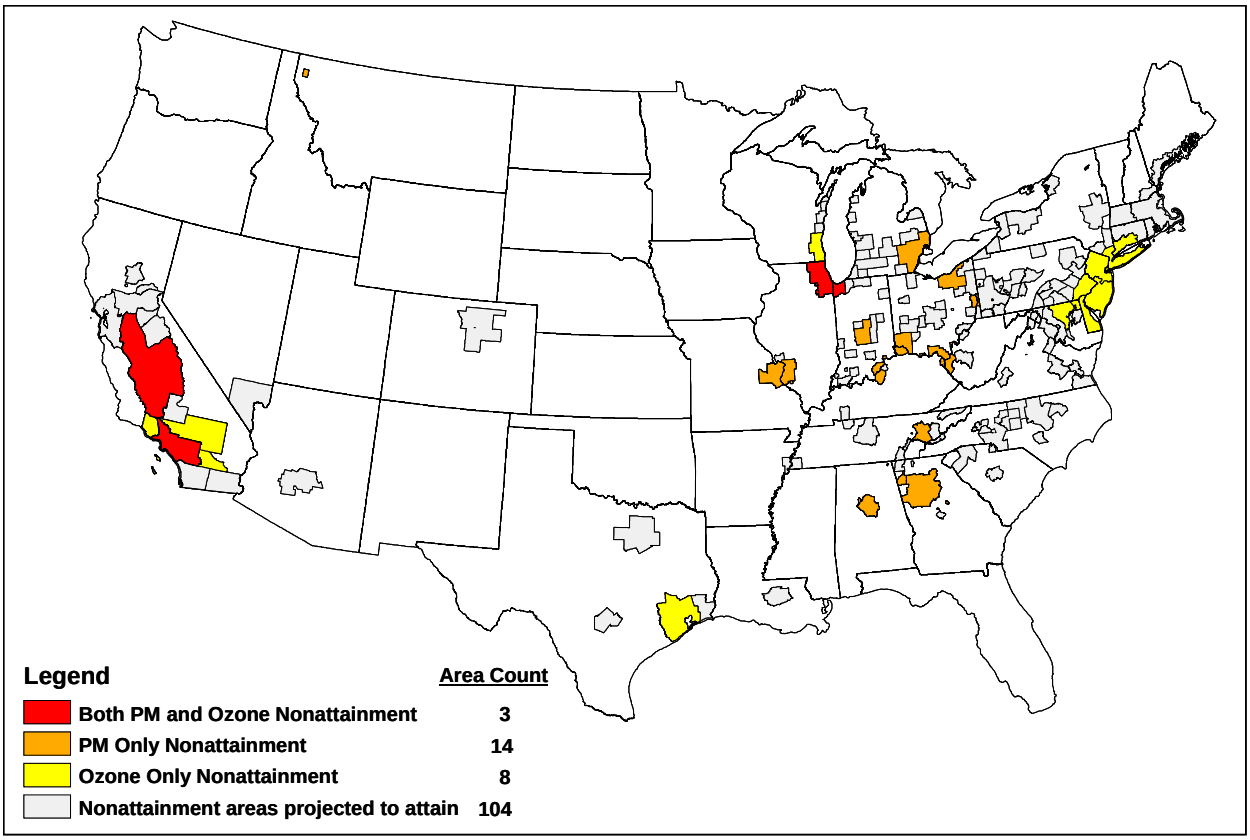

Figure 1. Areas Projected to Exceed the PM2.5 and 8-hour Ozone Standards in 2015 with Clean Air Interstate Rule (CAIR), Clean Air Mercury Rule (CAMR), and the Clean Air Visibility Rule (CAVR) Absent Additional Local Controls.

Nonattainment areas are of particular concern, given the increased evidence linking ozone and PM exposure to a wide range of serious human health effects. In addition to the long-recognized effects of ozone on lung function, more recent scientific studies have linked ozone to increases in mortality (especially among the elderly), hospital admissions for respiratory ailments (particularly children), school absenteeism, and incidence of asthma.

The most recent scientific information on the health and environmental effects of particles, ozone, and related precursor pollutants suggest that the NAAQS will likely remain at current or more restrictive levels in the foreseeable future. Developing strategies to attain and maintain these standards over the long term poses a significant challenge, especially in light of growth that is expected to continue. New and innovative strategies will likely be needed to achieve reductions from emissions sources that have the potential for cost-effective reductions, such as marine vessels, locomotives, existing legacy fleets and off-road vehicles, as well as under-controlled and “grandfathered” industrial facilities. It could also include instituting additional transportation control measures to address increased vehicle use and initiating local and regional planning efforts to engage in a more holistic approach to air quality management.

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Air Toxics

Historically, the AQM system has not allocated the same level of resources to air toxics control and management efforts as compared to criteria pollutants. While the air toxics standards, ozone, and PM programs have yielded reductions of a number of toxic components and precursor pollutants, air toxics problems continue to exist on local, regional, and even global scales. The NRC report and EPA's most recent National Air Toxics Assessment (NATA), suggests a background cancer risk associated with air toxics for much of the nation between 1 to 25 in one million, with much of the risk being attributed to benzene.[2]

A growing body of evidence suggests a potential overlap between air toxics and PM. The overlap creates potential exposure and health effects concerns for populations that spend significant time on or near heavily-traveled roadways. This issue may be related to direct localized emissions of particles, organic or inorganic gaseous tailpipe emissions, or toxic subcomponents. While exposure to air pollution along roadways is the subject of ongoing research, EPA and states also need to focus on strategies to deal with "hotspots." Air quality planning for localized areas will require innovative management techniques that could include transportation planning, city planning, and a variety of mitigating actions.

Other Effects of Air Pollution/Interactions

Air quality management, in addition to addressing the lingering nonattainment problems for ozone and PM, and air toxics problems, should include consideration of the interplay between air quality objectives and other policies such as national land use, energy, transportation, and climate. These other programs are intertwined with air quality policies and programs and sometimes may cause increases in air emissions that make meeting air quality goals more difficult. Similarly, air quality policies and programs may conflict with land use, transportation, and energy goals. Where possible, the AQM Subcommittee recommends that these programs be better aligned and function more effectively.

A similar interplay can exist between air quality and climate change. Climate change can influence the concentration and distribution of air pollutants through a variety of direct and indirect processes, including: (1) temperature increases and decreases which affect biogenic emissions, atmospheric water vapor content, and the reactions forming ground-level ozone and PM; and (2) altered weather patterns that affect wind speed and direction, vertical mixing, precipitation, lightning frequency, and clouds. Particulate matter emissions have direct effects by scattering and absorbing heat. The scattering of heat generally means that PM has a cooling effect. Particulate matter also interacts with clouds, thereby indirectly affecting climate. Indirect effects arguably represent the greatest uncertainty in our understanding of PM effects on climate.

During the past several years, many cities and states have initiated actions to reduce greenhouse gases. To date, 41 states and Puerto Rico have completed greenhouse gas inventories and 28 states and Puerto Rico have completed, or are working on, action plans that identify options for reducing greenhouse gas emissions or enhancing greenhouse gas sequestration. Over 300 mayors representing more than 50 million Americans have signed the

[2] http://www.epa.gov/ttn/atw/nata1999/natafinalfact.html

U.S. Mayors Climate Protection Agreement that commits cities to take action to meet or exceed the Kyoto Protocol targets[3]. The AQM Subcommittee believes that a number of cities and states are interested in integrating air quality planning with their climate change programs. For example, California has established greenhouse gas standards for passenger vehicles beginning with the 2009 model year. Several Northeast and Western states have also adopted these California measures. In addition, eight northeast states (CT, DE, ME, NH, NJ, NY, RI and MD) participate in the Regional Greenhouse Gas Initiative (RGGI) to reduce greenhouse gas emissions from the electric generating sector through a cap and trade program, and they have issued a model rule. Two northwest states, Oregon and Washington, are also considering similar greenhouse gas control initiatives.

Environmental Effects

Prior to the 1990 CAA Amendments, federal, state, tribal, and local air quality management programs focused on health-based programs. The U.S. Congress amended the CAA in 1990 to enhance the health-based programs, including setting a new national air toxics program, programs to address visibility, and reductions in pollutants that cause acid rain. The programs mandated by Congress in the 1990 CAA Amendments resulted in substantial reductions in emissions of air toxics, sulfur oxides, and nitrogen oxides. EPA has launched research on ecosystem health and the CAA contains requirements for secondary standards for certain criteria pollutants to protect public welfare, including the environment. The 2004 NRC report recommended establishing ecosystem protection as an AQM priority. In addition, the NRC suggested the need for more monitors to measure ecosystem health, improved meteorological and exposure models, risk assessment research, and researching the interplay of ecosystems with factors such as air quality, climate, and topography.

[3] For more information visit http://usmayors.org/climateprotection.

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V. Approach for Phase II AQM Subcommittee

Air Quality Management Subcommittee and Phase II Process

In its Phase I recommendations, the CAAAC recommended that a new subcommittee be established to continue the assessment and development of recommendations for long-term changes to the air quality management system. It recommended that discussion of all remaining issues and options be directed towards further strengthening the U.S. air quality management framework over the next decade. [4]

In response to this recommendation, the CAAAC established the AQM Subcommittee in March 2005. The AQM Subcommittee was charged with developing Phase II recommendations for long-term systemic changes to the AQM system and with monitoring EPA's implementation of the AQM Phase I recommendations. As with the original AQM Work Group, the Subcommittee's membership was comprised of representatives from industry, state, tribal and local governments, regional organizations, environmental and public health organizations, and EPA. The list of Subcommittee members and other participants can be found in Appendix A of this report and is available at the CAAAC website at http://www.epa.gov/air/caaac/aqm.html.

The AQM Subcommittee established two teams to facilitate data collection efforts and develop recommendations. The first team was charged with evaluating improvements to the AQM process. This team focused on three areas: 1) problem definition and priority setting; 2) the AQM planning process; and 3) strategies for improved coordination and communication. The second team was charged with examining and developing tools to support state, tribal, and local agencies to improve air quality. An organizational chart is provided on page 76 of this report.

The AQM Subcommittee deliberated on recommendations developed by both teams. The Subcommittee reached agreement on many of the recommendations; for other recommendations, substantial consensus could not be reached. In addition, the Subcommittee spent considerable time and effort on two significant overarching areas for improvement: 1) developing a comprehensive AQM planning process; and 2) establishing a revised process for setting nonattainment boundaries.

In October 2006, the AQM Subcommittee reached agreement on recommendations to present to the CAAAC. Where there was not substantial consensus on proposed recommendations (i.e., reasonable performance levels, continuous improvement, and the process for setting nonattainment boundaries), the Subcommittee decided to document discussions where substantial consensus could not be reached. (see Section IX of this report). In January 2007, the Subcommittee presented draft Phase II recommendations to the CAAAC.

[4] CAAAC, Air Quality Management Work Group. January 2005. Recommendations to the Clean Air Act Advisory Committee. http://www.epa.gov/air/caaac/aqm/report1-17-05.pdf

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Decision Making Process

Prior to drafting recommendations, the AQM Subcommittee agreed to use substantial consensus as the means for deciding which recommendations to adopt and forward to the CAAAC. Using this process, the AQM Subcommittee achieved substantial consensus on the 13 recommendations presented in this report. However, the Subcommittee found that it was unable to develop consensus on a few recommendations that would have substantial regulatory impact. Such proposals, such as the ones listed in the Unresolved Areas of Discussion section below, often require tradeoffs. For example, a stricter standard could be balanced with a longer period of repose. The Subcommittee found that this forum did not allow for such specific considerations.

Recommendations on Changes to the Air Quality Management System

The recommendations contained in this report represent the AQM Subcommittee's vision of a comprehensive AQM system that can assist in meeting future air quality challenges in this country.

As such, the AQM Subcommittee is making an overarching recommendation for taking a holistic approach to AQM through utilization of a more comprehensive planning process. The Subcommittee is making 12 additional recommendations that serve as integral components of this improved process. Though these recommendations work together, each should be considered on its specific merits and implemented regardless of the extent to which a comprehensive AQM plan is implemented.

The AQM Subcommittee considered recommendations based on their merit, separate from consideration of whether current statutory authority supports them. Tremendous progress has occurred as a result of the CAA as it exists today, and the Subcommittee believes that changes to the CAA are unnecessary to implement the Phase II recommendations in this report. In particular, it is important to note that the primary recommendation – to establish a comprehensive AQM process – would be voluntary. This recommendation is intended to provide a vision for states, tribes and local governments, as well as EPA, to enhance clean air planning by being more proactive and comprehensive.

Unresolved Areas of Discussion

The Subcommittee discussed at great length three AQM system changes on which the members were unable to reach substantial consensus: (1) boundaries, (2) reasonable performance levels, and (3) continuous improvement. The areas are highlighted here and are discussed at greater length in Section IX of the report.

With respect to boundaries, the AQM Subcommittee was in substantial agreement on two concepts related to boundary setting, and achieved consensus on a set of principles to guide the development of a new approach to establishing boundaries. The Subcommittee agreed on the need for an airshed approach to boundaries and on the need to replace the current system with an

approach where areas that violate NAAQS and areas where controls are needed are defined independently based on scientific assessments. The Subcommittee also agreed that control areas should encompass all significant contributors to the NAAQS violation, without regard to state, tribal, or other geo-political boundaries, such that by controlling emissions from the sources included within the control area boundary, timely attainment of the NAAQS will be assured. The AQM Subcommittee could not, however, reach agreement on the details of how these concepts and the underlying principles should be implemented.

The Subcommittee considered a concept called "reasonable performance levels" (RPL). It is based on the idea of treating airsheds as a finite and essential resource, and sources are not entitled to pollute. The RPL approach would require all categories of air pollution to take steps to limit their emissions. RPLs would be established and periodically updated for all air pollution sources and all pollutants, beginning with the sources and pollutants that pose the greatest risk to public health and ecosystems. The RPL approach would provide a foundation for additional controls that might be needed to address existing or potential area-specific problems. For example, due to transport issues from upwind sources implementing RPLs, an area may still violate a NAAQS. Under these circumstances, attainment SIPs with specific deadlines may still be needed to protect public health. An RPL program would likely require amendments to the CAA. Several Subcommittee members supported this concept as a recommendation, but several Subcommittee members had significant concerns that prevented substantial consensus of this recommendation.

Finally, the Subcommittee discussed the concept of "continuous improvement." The idea is defined as continuous improvement in emissions reductions from all stationary, mobile and area sources that would lead to continuous air quality improvement in all geographic regions of the nation. The improvements would be achieved via a combination of mechanisms, including voluntary programs at the local level, continued use of a national program of command and control emission standards, and several options for strengthening and enhancing various market-based programs to encourage continuous improvements. The goal of Subcommittee members who developed the concept was to design a program that would result in more efficient and cost effective reductions of emissions associated with manufacturing and energy generation, while maintaining or improving environmental and/or public health conditions. The AQM Subcommittee members had a wide range of disagreement about this concept. Some Subcommittee members supported the concept. Others felt the proposed options lacked certainty and were cost prohibitive if there was no related limit. They also saw the programs as redundant with programs yielding reductions achieved through the NAAQS and national emission standards.

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VI. Recommendation for a Comprehensive Air Quality Management Planning Process

The AQM Subcommittee makes the following overarching recommendation for improving the current AQM system: EPA, states, local governments, and tribes should adopt a comprehensive AQM planning process and, through this process, create plans to move from a single pollutant approach to an integrated, multiple pollutant approach to managing air quality.

The NRC report noted that an integrated, multiple pollutant approach to managing air quality would be more effective, efficient and timely than the current pollutant-by-pollutant approach. The concept of a comprehensive air quality management plan, or AQMP, is to provide a framework that could be used to integrate analysis, planning, and implementation of air quality management programs.

The AQMP would be developed at the discretion of the state, tribal, or local government, or a multijurisdictional organization that is responsible for dealing with air quality issues in a geographic area. The plan would outline how a jurisdiction(s) intends to address air pollutants in an integrated manner, including, but not limited to, attainment and maintenance of the NAAQS, sector-based reductions of criteria pollutants and air toxics, improvements for visibility in Class I areas, area-wide strategies for reducing air toxics, ecosystem protection, and local environmental issues. The AQMP would document the critical planning process and decisions made. Because the AQMP would be developed on a voluntary basis at the discretion of the state, tribal, or local governments, or a multijurisdictional organization, only the CAA mandated components contained in the AQMP (e.g., the SIP) would be required to be submitted to EPA.

Development of an AQMP is envisioned by the Subcommittee as a broad, iterative process that would reflect significant interaction between all stakeholders at the state, tribal, local and regional levels, as well as the full range of affected parties. Issues that relate to air quality, such as energy policy, climate change, transportation, and land use should, to the extent possible, be considered in a comprehensive AQMP. The goal would be to create a comprehensive plan that is multipollutant based, addresses all of the critical air pollution issues within the jurisdiction, focuses on other important air quality goals in the geographic area, sets priorities, and provides an overall plan for moving forward with the strategies outlined in the plan. The AQMP also should be revised periodically (e.g., every five to 10 years).

At the same time that initial AQMPs are under development, EPA, and, as appropriate, the states should be developing multipollutant regulations. This concept affirms a recommendation from the NRC that EPA should address multiple-related pollutants in parallel.

The NRC encouraged a new approach in the steps and processes in setting the NAAQS that could result in better coordination of deadlines and would facilitate the development of multipollutant AQMPs. While the AQM Subcommittee agrees that better aligned deadlines between various NAAQS revisions and their subsequent SIPs/TIPs could maximize planning

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efforts, any alignment should not result in the delay of any CAA mandated deadline. Finally, the NRC also recommended that the hazardous air pollutants that pose the highest risk to human health and welfare be included in multipollutant AQMPs.[5]

Benefits of AQM Development

The AQM Subcommittee achieved broad consensus on the concept and desirability of a comprehensive AQM planning process and associated AQMP. The Subcommittee proposes a framework for the plan which incorporates federally required elements for criteria pollutants (State Implementation Plan elements) and non-SIP elements (e.g., MACT standards) in addition to elements that are not federally required such as local planning, growth forecasts, and communication strategies. The framework found in Appendix C provides a proposed structure that a state, tribe, local government and/or multijurisdictional organization could use when developing an AQMP.

The merits of preparing an AQMP include:

- Relationships between federal, state, tribal, and local governments would be enhanced through the coordinated planning effort;
- The public would have greater access to air quality information and greater ease in participating in the programs to manage air quality via centralization of one easy-to-access plan;
- The role for local governments and multijurisdictional organizations in air quality planning would be facilitated;
- The AQMP would be a valuable tool that highlights gaps where more air quality planning needs to occur;
- The AQMP could initiate a process to coordinate multiple emission requirements and deliver regulatory certainty, enabling industry to optimize emission control decisions; and
- The AQMP would better enable the selection of effective control strategies. More effective control strategies would insure that in the process of reducing a pollutant, increases in one or more other pollutants do not occur.

The AQM Subcommittee agreed that states and tribes should not be required to develop an AQMP. Instead, the benefits of having an AQMP, coupled with new and expanded incentives for developing these plans, could provide sufficient motivation for a jurisdiction to prepare an AQMP voluntarily. The comprehensive AQMP recommendation does not contemplate changes to the CAA with respect to the NAAQS or air toxics standards or processes.

Resources, Incentives, and EPA Oversight

Two major issues were identified by the Subcommittee that would need to be addressed before most areas could consider developing and implementing an AQMP. First is the issue of resources, including staff time and funds to implement comprehensive planning. The second

[5] National Research Council, *Air Quality Management in the United States*, (Washington, D.C.; National Academies Press, 2004), p. 21, 310.

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issue is EPA oversight; for example, the extent to which a state that develops an AQMP would be required under the CAA to secure EPA approval of plan revisions.

The AQM Subcommittee suggested that EPA consider the following incentives:

- Offer in-kind resources from EPA staff to assist in developing the AQMP;
- Streamline the SIP and TIP process through measures like parallel processing;
- Provide states and tribes with flexibility to place a lower priority on administrative obligations that achieve little in terms of public health protection for air quality improvement. Instead, those resources could be devoted to activities that enhance public health protection, which could constitute an appropriate "trade-off." For example, Title V sources are required to undergo two sets of reviews for federal and state approvals. If EPA were to merge its review of Title V permit actions with state Title V permit notice and public review processes, significant state, federal, and permittee time and resources could be saved; and
- Explore CAA section 110 authorities for the purpose of providing support for the development of AQMPs. Such support could include expedited EPA approval of regulatory measures that have been adopted or are in the process of approval by a state or tribe outside of a nonattainment area, but would benefit the area in attaining the standards.

These incentives would provide motivation for an area to commit resources to the development of an AQMP. The Subcommittee recommends that EPA fully assess the implications and options related to these incentives including, but not limited to, the legal implications, the impact on inter-state obligations/expectations, the basis for approval, and the need for consultation with various stakeholders.

EPA has broad authority to prescribe what is included in a SIP or TIP to decide which proposed actions are acceptable and to determine when revisions to the SIP/TIP are consistent with CAA requirements. The NRC noted in its report that the current planning system has significant flaws. The AQM Subcommittee believes that these flaws could be minimized with implementation of the AQMP recommendation. Regarding EPA's oversight, the AQM Subcommittee recommends that a state or tribe would need to submit only the provisions of the AQMP that are federally required and would include in the submission evidence that the state or tribe has developed a comprehensive AQMP.

The current CAA emphasizes a pollutant by pollutant approach for criteria pollutants, and a source sector-based approach to regulating air toxics. The AQM Subcommittee believes that a multi-pollutant approach to air quality management can function within the framework of the current CAA and it offers several advantages. These advantages may include:

- Reaching attainment in a more cost-effective, efficient way, thus reducing public health and ecosystem impacts, while yielding greater overall reductions of pollutants;
- Optimizing the mix of control measures for multiple pollutants, thus avoiding control measures that, while beneficial in reducing one pollutant, may result in increases in others;

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- Making better use of limited federal, state, tribal, and local resources, and those of the regulated community, for improving air quality;
- Providing a more proactive, predictable, and manageable air quality planning process; and
- Making it easier and less expensive for potentially affected sources to plan the installation of controls and/or the implementation of process changes, rather than having to install controls in a piecemeal fashion.

In addition, the AQMP would provide a formal mechanism for providing the public with a comprehensive picture of air quality where they live. It would also show how state agencies, tribes, local governments and multijurisdictional organizations are working together and in coordination with EPA to protect public health and ecosystems. Moreover, the AQMP would help to highlight to the public and government decision-makers where there may still be significant air quality issues that need to be addressed and raise the profile of these issues for consideration for further action.

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VII. Recommendations Related to the Comprehensive AQM Planning Process

In addition to the overarching recommendation related to the AQMP, the AQM Subcommittee is making 12 supporting recommendations to expand on the concept of the comprehensive air quality management process. The Subcommittee believes that these recommendations will lead to improvements in how information is gathered and analyzed, how air quality management strategies are developed, and how the strategies are implemented. The Subcommittee realizes that many decisions remain regarding how changes in the air quality management system will evolve, but that the recommendations in this report should be implemented regardless of whether a state, tribe, or local agency implements a comprehensive AQM planning process and an associated AQMP.

A comprehensive AQM system must address three principle components: assessing current air quality, air quality management planning, and implementing air quality strategies.

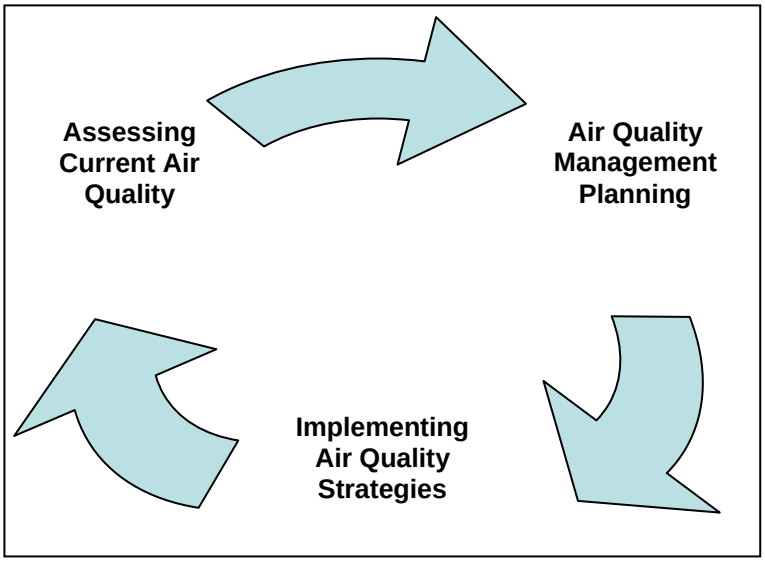

Figure 2: The Air Quality Management System is comprised of three iterative steps: 1) Assessing Current Air Quality; 2) Air Quality Management Planning; 3) Implementing Air Quality Strategies.

Assessing Current Air Quality

The AQM Subcommittee is making the following four recommendations related to assessing current air quality (Recommendations 1 through 4). The recommendations are based on the premise that a comprehensive AQM needs to include programs to assess current air quality impacts on public health and ecosystems and a means by which the effectiveness can be measured.

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<u>Recommendation 1:</u> Improve environmental and health data - *Improve the accuracy, robustness, and availability of environmental and health data (1) to enable more complete characterization of air quality, emissions, and environmental and health outcomes and (2) to facilitate the assessment and characterization of relative risks.*

Background/Explanation:

To meet future air quality management needs and to help air quality planning agencies prioritize those needs, the supporting data must be continuously improved. Scientific advancements continue to improve our understanding of air pollution and its impacts on public health and the environment. Several of the following recommended actions are expansions of recommendations that were made in the Phase I AQM report, *"Recommendations to the Clean Air Act Advisory Committee: Phase 1 and Next Steps"* (January 2005) and will improve the quality of the data that help inform air quality management decisions.

Recommended Actions:

A. EPA, states, tribes, and others should work to improve air quality data by continually improving air quality monitoring networks to collect data on pollutants of concern, in areas of concern.
B. Fill in the information gaps and continually improve emissions inventories and air quality modeling.
C. EPA should improve the information on health endpoints and on the relative risk of exposure to single and multiple pollutants, at both the population and individual level.
D. Air quality planning agencies should improve the coordination and communication between environmental groups, governmental agencies and external stakeholders, including health agencies, academic institutions, and the medical community.
E. EPA should improve the collection of control and cost data to facilitate analysis of projected and actual implementation costs for major regulations.

Benefits:

- Improved air quality data and information will improve decisions related to control strategies.
- Better environmental and health data will enhance the ability of governmental agencies to evaluate the results of implemented strategies and to make changes as needed to improve air quality resulting in improvements to public health and the environment.
- Improved communication between multiple parties will help ensure that information is shared and used to enhance program results.

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<u>Recommendation 2:</u> Improve the priority setting process - *Improve the priority setting process by creating mechanisms to systematically realign resources and regulatory focus toward areas of greatest health and environmental risk.*

Background/Explanation:

To address current and future air quality issues, the AQM system should be realigned to more effectively address the interaction of multiple pollutants. While some progress has been made in addressing some multi-state transport of air pollution, transport issues still need to be identified and proactively addressed. In addition, urban areas have a mix of emissions that may be more appropriately addressed in a multipollutant fashion than on an individual pollutant by pollutant basis.

Problem/Challenges Addressed:

- Ability to address new priorities promptly.
- Identification and assessment of most significant exposures and problems.
- Integration of a multipollutant approach.

Recommended Actions:

A. EPA should use the updated information provided by the state, tribal, and local air agencies in AQM planning to develop national regulatory priorities. EPA should also, through modeling and monitoring, help define problems that occur on a national scale that can be used to support state and tribal plans.
B. EPA should start discussions with the Centers for Disease Control (CDC) and state health agencies to determine if it is feasible to produce an air quality health trends report. The report would attempt to link changes in ambient air quality to health data on a five-year cycle, using the best available information while recognizing the limitations of those data.
C. EPA, the Federal Land Managers, and other agencies, working with the states, tribes, and local agencies should report on links between ambient air quality and the health of ecosystems on a five year cycle, using the best available information while recognizing the limitations of that information.
D. EPA and other stakeholders should strengthen the link between improved science and improved policy by developing new mechanisms to encourage more rapid adjustment of policy priorities in the face of new scientific information. EPA should investigate mechanisms (incentives and hammers) to encourage the realignment of regulatory priorities and implementation efforts to deal with the highest priority problems, both within the Agency and among implementing authorities.

Benefits:

- The additional consideration given to pollutant interactions will produce a more comprehensive approach to improving air quality than the current process.
- Using updated information to develop national priorities will allow state, tribal, and local agencies to better align and shift resources to areas of higher priority.

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- An air quality health trends report will lead to improved communication with the public on public health impacts from poor air quality.
- New regulatory programs can be adapted that improve the linkages between emissions and public health and ecosystem impacts.

<u>Recommendation 3:</u> Improve accountability mechanisms - *Improve accountability by systematically monitoring progress and evaluating results, by ensuring that data collection is meaningful and that feedback loops exist so actual environmental results inform the future allocation of resources and the establishment of priorities.*

Background/Explanation:

The AQM system must include an ongoing process for accountability, evaluating progress and developing ways to make adjustments in activities and resource allocations based on the success or failure of existing programs. Part of this process involves continuing investments in technical tools, such as modeling, monitoring, and emissions inventory capabilities, to ensure decisions are informed by the best possible information. AQM Phase I focused on needs in this area. In addition, it is important to evaluate program performance relative to air quality and cost-benefit goals, and to adjust program efforts and priorities accordingly.

In the past, EPA has had difficulty shifting resources and establishing programmatic momentum in the face of new problems. For example, EPA first promulgated a fine particle national ambient air quality standard in 1997 after evaluating available health data that indicated fine particles posed a significant health risk. However, attainment and nonattainment designations were not effective until April 2005, the SIPs are not due until 2008, and the first attainment deadlines are due in 2010. States have little discretion in how they devote SIP development resources. States and tribal air agencies are trying to integrate planning and reduction programs in a multipollutant framework. However, the rigid statutory structure and unaligned deadlines make it difficult.

Even when targeted programs are developed to tackle a specific problem, measuring progress accurately and assuring that the programs are actually reducing the targeted pollutants and improving public and ecosystem health can be difficult. Current ways of measuring progress are slow and, in some cases, not very accurate.

The current system is extremely cumbersome when faced with new information about health and air pollution priorities, no matter how compelling the evidence.

Problems/Challenges Addressed:

- The need to be able to address new priorities promptly.

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- Lack of confidence in the effectiveness of pollution reduction programs because of weak accountability systems (and therefore potential lack of support for continuing or future programs).
- Evaluation of the effectiveness of controls and adjustment as necessary.

Recommended Actions:

A. EPA should make information available to the Clean Air Science Advisory Committee (CASAC)[6], state, tribal, and local agencies, and the public on an ongoing basis about significant new research and studies on the health, welfare and ecosystem impacts of air pollution. Provide a summary of significant new studies annually to the CASAC and to the CAAAC. Provide notice in the Federal Register as to the availability of this summary and prominently display the summary on EPA's website.

B. EPA and other regulators should include metrics and schedules for tracking progress within programs and rules at the time they are initiated. Using these metrics, EPA and state, tribal, and local agencies should evaluate the progress that is being made under various regulatory control programs by assessing compliance rates, actual reductions achieved, and cost-benefit analysis. EPA and other stakeholders should improve the collection of control and cost data to facilitate analyses of projected and actual implementation costs for major regulations, as follows:

   a. EPA should develop an improved means of assessing control and compliance measures and actual costs of these measures. Prospective modeling to estimate costs and benefits in advance of new rules should be matched with retrospective analyses of actual implementation costs, so that results and impacts can be assessed more accurately.
   b. EPA and state, tribal, and local agencies should invest jointly in a complete, up-to-date system to catalog available pollution control technologies and reduction strategies and their associated costs and benefits.
   c. EPA and other stakeholders, including the CDC, should improve the assessment of the prospective and retrospective benefits associated with avoiding air pollution-related health impacts and premature mortality, ecosystem damage, agricultural impacts and other public welfare impacts.
   d. Pollution control information and cost-benefit calculations should be combined with the information in EPA's Trends Reports to produce a more comprehensive "accountability" assessment that tracks program progress in a transparent and publicly accessible way.
   e. Initial accountability efforts should focus on major rules such as the Clean Air Interstate Rule (CAIR), the Clean Air Mercury Rule (CAMR), and mobile source rules. Accountability metrics should ultimately be incorporated into all types of programs.

Benefits:

- The public will benefit if regulators are focusing on the more important public health issues and have more flexibility to respond to newly developed information.

[6] For more information about the Clean Air Science Committee visit the EPA Science Advisory Board website at http://www.epa.gov/sab/about.htm.

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- Publicizing significant new health and ecosystem studies on a regular basis will increase focus on public health and environmental goals.
- Publicizing these studies should help streamline the review/revision of primary standards and facilitate the development of meaningful secondary standards that will protect ecosystems.
- Furthermore, ongoing efforts to track effectiveness and cost/benefit of programs should enhance program design and effectiveness in the future. Accountability is always necessary to ensure public and private resources are being used to the greatest purpose, and to assure confidence in the effectiveness of current and future programs.

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<u>Recommendation 4:</u> Take climate change into account - *Take climate change into account in air quality management strategies.*

Background/Explanation:

The NRC report includes the following discussion on climate change:

> The earth's climate is warming. Although uncertainties remain, the general consensus among the scientific community is that this warming trend will continue or even accelerate in the coming decades. The AQM system will need to ensure that pollution reduction strategies remain effective as the climate changes, because some forms of air pollution, such as ground-level ozone, might be exacerbated. In addition, emissions that contribute to air pollution and climate change are fostered by similar anthropogenic activities, that is, fossil fuel burning. Multipollutant approaches that include reducing emissions contributing to climate warming as well as air pollution may prove to be desirable.
>
> *Air Quality Management in the United States*, National Research Council (January 2004) p. 16.

During the past several years, many cities and states have initiated actions to inventory and/or reduce greenhouse gases. For instance, according to EPA, 41 states and Puerto Rico have completed greenhouse gas inventories and 28 states and Puerto Rico have completed, or are working on, action plans that identify options for reducing greenhouse gas emissions or enhancing greenhouse gas sequestration. Many cities and states are interested in integrating air quality planning with their climate change programs.

California has established greenhouse gas standards for passenger vehicles beginning with the 2009 model year, a move several northeast and west coast states have also adopted. Eight northeast states (CT, DE, ME, NH, NJ, NY, RI and MD) participate in the Regional Greenhouse Gas Initiative (RGGI) to reduce CO_2 emissions from the electric generating sector through the application of a cap and trade program. A draft model rule was issued in 2006. California, Oregon and Washington are currently considering similar greenhouse gas

control initiatives. The AQM Subcommittee discussions and recommendations preceded the *Massachusetts v. EPA* Supreme Court decision. The AQM Subcommittee recognizes ongoing discussions on climate change will occur outside of the AQM process.

Problems/Challenges Addressed:

In the January 2005 AQM Phase I Report, a recommendation was made that "EPA should assist states and localities in quantifying the potential increases or decreases in greenhouse gas (GHG) emissions from reduction measures primarily designed to address ozone, fine particles, regional haze, and air toxics." This recommendation was made in the Phase I report in the context of the NRC core recommendation titled, "Develop an integrated program for criteria pollutants."

Many AQM Subcommittee (Phase II) members felt that with the recommendation made in the Phase I report that the scope of the AQM in Phase II should be further expanded on the topic of climate change. Most Subcommittee members agreed that climate change was an important issue worthy of further discussion as it relates to air quality. However, some members believed that climate change was being expanded beyond the intended scope of the AQM Subcommittee and should not be the forum for this topic as more qualified experts, not present in this process, should be a part of a broader national debate. Therefore, the AQM Subcommittee agreed to narrow discussion to certain aspects of three air quality related linkages to climate change:

- Maintenance of AQM efficiency in the face of changing climate;
- Consideration of the effects of climate change in air quality decision making; and,
- Coordination of air quality and urban planning strategies.

Recommended Actions:

A. EPA should continue to pursue Recommendation 4.3 from the AQM Phase I Report: "Greenhouse Gas Co-Benefits and Disbenefits" – EPA should assist states and localities, in quantifying the potential greenhouse gas co-benefits and disbenefits of emissions reduction measures primarily designed to address ozone, PM2.5, regional haze and air toxics. In evaluating control measures, EPA should assist states and localities in quantifying potential greenhouse gas emissions increases and decreases. Many states and localities have adopted policies to assess and/or reduce greenhouse gas emissions. Under this recommendation, where requested, EPA should support state, tribal, or local efforts to determine how pollution reduction alternatives might also impact greenhouse gas emissions.

B. EPA should undertake a comprehensive assessment of the implications climate change will have on future air quality objectives and include other federal agencies and climate change scientists in that endeavor.[7] The assessment should include estimation of the

[7] Aspects of the activities described under "B" are being carried out by EPA. For example, the EPA Office of Research and Development (ORD) initiated a large program in 2001 to assess the impact of climate change on US regional air quality. The EPA STAR Grant program funded 25 climate change-related projects; ORD and the

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potential increases in the average and high temperatures during ozone season and the impacts of such increases on ozone formation. An estimate of the air quality impact of secondary effects of temperature increases, such as wildfires, heat island effects, increased electric use, decreased hydroelectric generation, etc. should also be provided. The assessment should include an estimation of costs and savings associated with mitigation strategies to address impacts of climate change or temperature increases associated with these potential secondary impacts.

C. EPA should assist states in the development of annual greenhouse gas emission inventories.[8] The Emission Inventory Improvement Program quantification guidance should be finalized and made available to states to promote comparability between state inventories.[9] These enhanced inventories should be reflected in the assessment conducted under recommended action B and should enable states to better evaluate the air quality benefits associated with various control strategies. Coordination with greenhouse gas emissions inventories collected by other governmental entities, such as the U.S. Department of Energy (DOE), should be pursued to avoid duplication of efforts and to ensure integrity of the data. EPA, at the request of state, tribal, or local governments, should also provide additional technical assistance to states so they may effectively evaluate greenhouse gas reduction strategies in conjunction with the development of their air quality management plans.

Implementation:

- For recommended actions A and C, EPA should work with states, local agencies and tribes to provide technical assistance to assess greenhouse gas emission co-benefits and disbenefits, and associated air pollution reduction strategies, as well as provide states, tribes, and local agencies with the improved emission inventory information called for in recommendation C.

- For recommended action B, EPA should conduct the comprehensive assessment of the air quality implications associated with climate change in a manner that utilizes the best information available, and provides for stakeholder input.

National Exposure Research Laboratory (NERL) began a large project involving global and regional simulations, in conjunction with DOE through a cooperative agreement. In addition, ORD's National Risk Management Research Laboratory (NRMRL) began development of data resources and tools for emissions projections. These activities will yield results that will be summarized in two assessment reports due in 2007 and 2010, to be produced by ORD's National Center for Environmental Assessment (NCEA) in collaboration with EPA's Office of Air and Radiation and key stakeholders.

[8] Aspects of the activities described under "C" are being (or have been) carried out by EPA. For example, 42 states and Puerto Rico have completed their own greenhouse gas emission inventories in partnership with EPA. EPA's draft guidance and draft State Inventory Tool have been instrumental in the progress to date.

[9] See http://www.epa.gov/ttn/chief/eiip/techreport/volume08/index.html for more information regarding the Emission Inventory Improvement Program.

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Benefits:

- These three initiatives will provide critical information to states, tribes, and local agencies to use in any air quality and climate change program assessment or development they may be pursuing.
- Recommended action C will provide essential guidance on potential adjustments to be considered in the air quality planning process as a result of climate change.

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AQM Management Planning

The three recommendations the AQM Subcommittee is making regarding air quality management (AQM) planning (Recommendations 5 through 7) represent an expansion of traditional air quality management where the states play the lead role and the focus is on point and mobile sources. The proposed comprehensive AQM planning process recommends an enhanced role for tribal, local governments, and multijurisdictional organizations, including the utilization of scenario planning and other tools. The AQM Subcommittee also recommends an increased effort to encourage pollution prevention, energy efficiency, and renewable energy as a means to reduce emissions.

Recommendation 5: Support transportation and land use scenario planning - *The AQM Process should support transportation and land use scenario planning at the multijurisdictional, state, tribal, and local levels and other means to identify emissions reduction opportunities and improve tribal and local engagement.*[10]

Background/Explanation:

Tribal and local governments have critical control and approval authority over land use choices that significantly impact air pollution, transportation systems (which some would argue is the most critical driver of locally controlled development), air pollution, energy use and greenhouse gas emissions. Multi-jurisdictional planning organizations are also significantly involved in local land use and transportation planning in several ways, such as providing technical planning support to local governments. For example, tribes, local governments, and multi-jurisdictional planning organizations have the power to determine or influence the way in which land is developed, how vehicle use and transportation patterns evolve, which land is opened to development, and whether local funds and land use are used to support mass transit, rather than discourage it. Some may also influence whether energy efficiency or demand side management techniques are required or implemented (e.g., in residential and commercial development). There is no single federal requirement for coordination among transportation, land use and air quality. Metropolitan and statewide transportation planning must address land use, air quality factors, and transportation conformity. The conformity process seeks to integrate transportation planning to the SIP's purpose of reducing violations and contributing to attainment of the NAAQS. By virtue of their role in these multiple areas, multi-jurisdictional planning organizations, tribal and local governments have a unique opportunity to coordinate air quality, land use, energy, transportation, and climate programs. For these and other reasons, the AQM Subcommittee recommends that

[10] For purposes of Recommendation 5, "multi-jurisdictional planning organizations" include, but are not limited to, multi-state organizations such as state transportation departments, multijurisdictional and regional planning organizations (MJOs and RPOs), council of governments (COGs), nonprofit planning organizations and independent system organizations.

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multijurisdictional planning organizations, including all governments and planning organizations be an integral part of the AQM process.

The AQM Subcommittee recognizes that considerations such as quality of life are frequently the drivers for planning organizations (often with the support of multijurisdictional planning organizations) to recommend and adopt land use restrictions and other practices that are also good for air quality. EPA can play a constructive role in supporting such practices by providing tools and resources to assess the air quality benefits of alternative land use scenarios.

Problems/Challenges Addressed:

- Attaining and maintaining the NAAQS for ozone and PM2.5 and reducing regional haze.
- Addressing air quality on the appropriate geographic scale (locally, regionally and globally).
- Addressing remaining pollution problems, including unregulated and smaller "area sources".
- Coordinating air quality, energy, transportation and urban planning strategies.

Recommended Actions:

To achieve enhanced multijurisdictional planning organization, state, tribal, and local governments involvement in the AQM process and better coordination of AQM, land use, energy, transportation and climate programs, the AQM process should be modified so that multijurisdictional planning organizations including local planning choices are better integrated with, and have meaningful input into, federal, state, and tribal AQM processes. To accomplish this objective:

A. EPA should encourage states and tribes to coordinate with multijurisdictional planning organizations and tribal and local governments by aligning planning schedules. EPA should provide resources to multijurisdictional planning organizations, and tribal and local governments so they can better understand the impact that land use, energy, and transportation decisions in their areas will have on air quality and greenhouse gas emissions. EPA (in consultation and coordination with DOT, states, and tribes) should assist, where appropriate, in linking multijurisdictional planning organizations and tribal and local governments that are actively implementing integrated planning approaches (e.g., Sacramento, Portland, Chicago, Minneapolis) with those that are considering, but not yet implementing, such approaches (e.g., Atlanta).

EPA, drawing on outside expertise), should also develop a clearinghouse of planning related resources and tools, as proposed in the 2005 AQM Phase I report. Over the longer term, multijurisdictional planning organizations, including governmental and other planning organizations, need more sophisticated transportation and land use models that adequately capture local land design issues, bicycle and pedestrian travel, and reduced demand. These models will need to be supported by high quality, sufficiently disaggregated land use, and travel data. In the nearer-term, regions, communities and

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tribal entities need scenario analyses and visioning tools that allow them to understand, visualize and quantify the opportunity costs of business-as-usual development trends and the benefits of more efficient transportation and land use scenarios. Local land use and transportation infrastructure decisions are typically driven more by the quality of life and economic concerns than by air quality and environmental issues. Thus, it is critical that scenario analysis tools address multiple factors (such as emissions, mobility, consumer fuel costs, water quality, infrastructure costs, etc.) of concern to the public and the private sector.

B. EPA, in partnership with states, tribes, and DOT in consultation with other interested stakeholders, should encourage multijurisdictional planning organizations, tribal, and local governments to conduct a visioning and scenario planning process in which the area in question decides where it wants to be in the future with regard to land use, transportation, and energy; and, the area in question adopts a plan to incorporate the necessary policies and requirements/mandates that further its vision. These efforts should be coordinated with and supported by the transportation planning process. This could produce an "integrated" strategy that addresses land use, energy, and transportation in a manner that is directionally correct for air quality or explicitly tied to attainment. As part of their visioning and scenario planning process, multijurisdictional planning organizations, tribal, and local governments should be encouraged to work with state and/or tribal planning organizations to identify strategically located communities that are appropriate for new fuel and energy generation, storage, transportation technologies, facilities, and infrastructure requiring changes to the existing land and built environment.

C. EPA, in partnership with states, tribes, and DOT and in consultation with other interested stakeholders, should explore the advantages and disadvantages of mandatory and voluntary visioning and scenario planning that, among other things, identifies the environmental benefits and detriments of various land use choices. Such a program could be conducted as part of the multijurisdictional planning organizations or tribal or local government's transportation planning and air quality planning process.[11] If a mandatory program is appropriate, significant changes would be required not just to the AQM system, but to the transportation planning and conformity processes and underlying statutes.

D. EPA should allow SIP/TIP credit and make available other forms of recognition or alternative "credit" for multijurisdictional planning organizations, tribal, and local governments that revise their land use laws consistent with EPA's model goals and ordinances, or that implement quantifiable land use, energy or transportation technologies or approaches that benefit air quality.

[11] A recommendation to mandate scenario planning for Transportation Improvement Plans and Long Range Transportation Plans was initially developed by a group of transportation, land use and air quality experts convened by the Center for Clean Air Policy and the local Government Commission in December 2004. See http://www.ccap.org/transportation/smart_two.htm for more information.

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Implementation:

- For recommended action A, EPA should develop a plan in consultation with states, tribes, DOT, and the various associations that represent municipalities (e.g., National Association of Regional Councils). The plan should include a mechanism for facilitating communication and scheduling between and among multijurisdictional planning organizations, tribal, and local governments, as well as issuing guidance on integrated planning approaches.

- Further, with respect to the clearinghouse of planning resources and tools, EPA (drawing on outside expertise) should gather items that will help multijurisdictional planning organizations and tribal and local governments achieve planning and development practices that benefit air quality. The clearinghouse of resources and tools should include, without limitation:

1) Software that enables multijurisdictional planning organizations and tribal and local governments to model current and alternative land use patterns, energy trends and transportation options so that they can study how different land use, energy and transportation scenarios would impact future emissions;
2) Modeling software that enables multijurisdictional planning organizations and tribal and local governments to quantify the emission reductions associated with certain land use, energy and transportation technologies or approaches;
3) On-line tutorials and manuals for use of modeling software;
4) Model codes and ordinances that benefit air quality (e.g., model codes and ordinances that promote increased urban density, multiuse clustering, energy efficiency and public transportation);
5) Guidance that identifies land use, energy and transportation technologies or approaches that benefit air quality and establish certain minimum steps that multijurisdictional planning organizations and tribal and local governments should take to obtain SIP or TIP credit when pursuing such technologies and approaches;
6) Model educational and citizen involvement practices; and,
7) Guidebooks that identify funding opportunities for innovative land use, energy and transportation approaches.

- In assembling this clearinghouse, EPA should determine what tools have been developed and what items need to be enhanced or developed. EPA and the Federal Highway Administration (FHWA) currently provide some technical assistance and guidance on scenario planning tools and integrating transportation and land use planning. Increasing awareness of these existing tools would be straightforward and low cost. For tools needing to be enhanced or developed, EPA should decide which ones to develop first based on stakeholders' needs.

- To help ensure these tools are readily accessible to multijurisdictional planning organizations and tribal and local governments, EPA should make the clearinghouse available in a central place on the web. EPA should also consider featuring the tools at a conference with a particular emphasis on creating champions or advocates such as local

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politicians and land planners who can utilize the information to promote beneficial land-use practices in their communities.

The clearinghouse and the other recommendations in this proposal are intended to deepen current support and systematize it so these tools and approaches can be implemented more broadly. The clearinghouse would require additional staff and financial resources for implementation, especially for new tool development.

For recommended actions B and C to improve the effectiveness of scenario planning, EPA should partner with states, tribes, local governments, and DOT to support pilot transportation and land use scenario analyses in a few metropolitan regions across the U.S. These pilot efforts would test the premise that scenario analyses can identify cost-effective emissions reduction options that would otherwise be missed in the current system that does not explicitly consider land use as a policy variable. The pilots would assess whether scenario analyses yield persistent emission reduction strategies that will help maintain air quality and aid in meeting future SIP/TIP objectives. These pilot efforts should be designed to fully understand what is involved in making scenario analysis requirement a mandatory feature of AQM and inform how it would be structured and implemented. Another goal of the pilots should be identifying next steps to make use of scenario planning more widespread, including consideration of whether making such analyses should be mandatory.

For recommended action D, EPA should give states and tribes the option to include the visioning and scenario planning process as an input into their SIPs or TIPs in one of three ways: 1) as a measure in the baseline; 2) a measure warranting credit; and/or, 3) a growth assumption. EPA has developed several useful guidelines for calculating SIP and TIP credit. For example, EPA has provided guidance on SIP credit for emission reductions from electric sector energy efficiency and renewable energy projects and plans to provide guidance on SIP credit for emission reductions from highway and off-road diesel vehicles and retrofits. EPA should continue developing guidelines for calculating SIP and TIP credit associated with other land use, energy and transportation technologies and approaches and should work with EPA regional offices and in consultation with states and tribes to follow such guidelines for SIP and TIP planning and development. EPA should develop guidance that explains how areas can get SIP/TIP credit for well documented land use measures that multijurisdictional planning organizations and tribal and local governments adopt that yield emission reductions. EPA should also develop new guidance to allow some amount of SIP/TIP credit where the total reductions for innovative strategies would exceed the three percent for mobile voluntary measures and six percent for stationary source related VOC measures under current guidance. Recommendation 10 details measures that EPA could pursue to further credit and other recognition programs outside the SIP/TIP process.

Benefits:

- Current land use and transportation decisions will impact emissions over many decades. Providing multijurisdictional planning organizations, tribal, and local governments with tools and resources to better understand the interaction among land use, transportation, energy, and greenhouse gas emissions, will empower them to make better decisions over the short- and long-term.

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- Alternative transportation and land use scenario analyses have been used to identify cost-effective emissions reduction options that would otherwise be missed in the current system that does not explicitly consider land use as a policy variable.
- In addition to emissions benefits, smart growth policies can yield multiple benefits on issues of significant public and private sector concern including: energy security, traffic congestion, ecosystem preservation, reduced infrastructure costs, and protection of water resources.

Recommendation 6: Integrate air quality planning into land use, transportation and community development plans - *Local planning organizations should integrate air quality planning into their land use, transportation and community development plans when high population growth is occurring in order to prevent significant deterioration of air quality.*

Background/Explanation

As America grows, it is particularly important that land use, transportation, and air quality linkages be established in a manner that educates, provides incentives, and flexibility for local officials and governing boards or commissions. Local forums have great power to design and manage growth in ways that stimulate creative, cost effective solutions that maintain clean air.

During the history of the CAA, air quality planning by local governments has primarily occurred when a nonattainment problem had to be solved. Local governments, elected officials, and the business community can react quickly to bring about cost-effective solutions to air quality problems when they understand the possible adverse impacts of inaction. Opportunities for flexibility and inventiveness should be encouraged early in the AQM process to avoid a nonattainment designation and the prescriptive programs that would accompany those designations.

Preservation of clean air is no longer solely focused on large industrial and mobile source challenges. Local governments and leaders have a growing appreciation of the value of clean air as a health, quality of life, and economic resource. Chronic erosion of air quality that gradually builds to violations of the NAAQS is an outcome Congress foresaw in 1977. While Prevention of Significant Deterioration (PSD) increment standards and baseline dates set the foundation for preserving clean air, they are no longer sufficient to address the challenge of urban expansion, where air quality is often eroded by small point, area, and mobile source air pollution.

Comprehensive state-wide or regional airshed planning could potentially be developed from a mosaic of local plans. However, if all areas were required to undertake local planning, it could become a significant and unnecessary burden for local governments. This planning requirement would need to be accompanied by new planning tools and educational components to aid local governments.

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Problems/Challenges Addressed:

- A new local planning paradigm is needed if states, tribes, and local governments are going to preserve clean air below the NAAQS level while also promoting population and economic growth.

Recommended Actions:

A. Engage local leaders early in the AQM process by encouraging flexibility and customized solutions that would spur preemptive action. This could help avoid a nonattainment designation and the more prescriptive programs that would accompany nonattainment. Local governments and the business community can react quickly to bring about cost-effective solutions to air quality problems when they understand the possible adverse economic impacts of inaction.

B. Selected local areas, particularly those with high population growth, should be required to develop local air quality plans. This planning requirement would need to be accompanied by new planning tools to aid the selected tribal and local governments.

Benefits:

- This recommendation fills a gap in the existing AQM system to manage chronic pollution increases in high population growth areas of the country in order to preserve existing clean air areas. Some recent examples have shown this can be achieved in a way to stimulate local leaders' protection of air resources, promoting health, quality of life, and the economic vitality of our cities and communities.

- This recommendation also relates to ecosystem protection and creates stronger opportunities for local government air quality management that may also assist environmental justice goals.

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<u>Recommendation 7:</u> Encourage pollution prevention, energy efficiency and renewable energy - *Analyze existing laws to determine the extent to which they can be used to encourage pollution prevention, energy efficiency, and renewable energy as they may be effective in reducing emissions.*

Background/Explanation:

Tremendous progress has been made in the U.S. over the past 30 years in reducing air pollution using primarily command and control approaches under the CAA. In addition, several environmental and energy statutes directly or indirectly address energy efficiency, cleaner energy, and renewable energy and may present another means of achieving CAA air quality objectives. These statutes are potentially amenable to a number of legally permissible interpretations and the regulations implementing them are amenable to a number of legally permissible regulatory frameworks.

For example, the CAA Amendments of 1990 establish prevention as "a primary goal" of the Act (see Title 1, Part A, section 101 (a) (3) and section 101 (c)). The Act also addresses concerns related to multi-media transfer of pollutants.

The Pollution Prevention Act establishes as national policy:

> "…that pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and that disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner."

Similarly, the Energy Policy Act in Section 2108 (a) (titled Energy Efficient Environmental Program) states:

> "(a) PROGRAM DIRECTION- The Secretary, in consultation with the Administrator of the Environmental Protection Agency, is authorized to continue to carry out a five year program to improve the energy efficiency and cost effectiveness of pollution prevention technologies and processes, including source reduction and waste minimization technologies and processes. The purposes of this section shall be to
>
> > (1) apply a systems approach to minimizing adverse environmental effects of industrial production in the most cost effective and energy efficient manner; and
> >
> > (2) incorporate consideration of the entire materials and energy cycle with the goal of minimizing adverse environmental impacts."

A clean air strategy that takes full advantage of opportunities to use pollution prevention, energy efficiency and renewable energy measures may offer three advantages. First, such an approach could, with a single investment, reduce multiple emissions and reduce and/or

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eliminate pollutants and emissions to other media, as well as emissions that are currently unregulated but which may be in the future. Second, viewed from a systems perspective (as the Energy Policy Act dictates) pollution prevention, energy efficiency and renewable energy measures may be more cost effective than command and control strategies. Third, such measures may help the U.S. accomplish important public policy goals outside the environmental and clean air arena, such as energy security, national security, and homeland security. Many states have established pollution prevention programs that have garnered tremendous successes.

Problems/Challenges Addressed:

- Coordinating air quality and energy strategies;
- Meeting the NAAQS for ozone and PM2.5 and reducing regional haze; and
- Addressing impacts on specific communities (environmental justice).

Recommended Actions:

A. EPA should examine the scope and extent of pollution prevention-based strategies permissible under the CAA, Pollution Prevention Act and Energy Policy Act; assess the cost effectiveness of such strategies as compared to current regulatory strategies; and identify opportunities for taking advantage of pollution prevention-based approaches that may exist in the current legal framework. In addition, EPA should examine the potential for new enforceable regulatory requirements which allow for use of pollution prevention strategies where they prove to be more effective from cost- and performance-based perspectives.

B. Existing and prospective prevention-based strategies should be identified and implemented, particularly where they offer the opportunity to achieve national goals such as greater energy independence and energy security, and/or where they allow the nation to accomplish reductions in greenhouse gas emissions as an ancillary benefit that imposes low net costs.

Implementation:

- For recommended action A, EPA should convene a team including state and local officials, the Environmental Law Institute, Energy and Environmental Analysis, Inc., the National Association of Clean Air Agencies (NACAA), National Association of State Energy Officials (NASEO), American Council for an Energy Efficient Economy (ACEEE), DOE's energy laboratories, Electric Power Research Institute, Environmental Council of States (ECOS), and representatives from tribes, industry, and environmental advocacy groups, to thoroughly examine the scope and extent of pollution prevention-based strategies permissible under the CAA, the Pollution Prevention Act and the Energy Policy Act, including pertinent rules, regulations, and other policy documents. The review and analysis should include examples of where pollution prevention strategies that have been tried, used, and where opportunities exist to further the use of these strategies.

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- Second, for recommended actions A and B, EPA should convene an analytical team including state and local officials, DOE, National Renewable Energy Laboratory (NREL), NACAA, NASEO, ECOS, and representatives from tribes, industry, and environmental advocacy groups, to gather all information and data on the pollution prevention provisions of all pertinent statutes, rules, guidance, and policies. In addition, the team should gather and analyze performance and cost data on energy efficiency and renewable energy technologies to examine their performance and cost-effectiveness as compared to current regulatory strategies in achieving air quality objectives and providing other ancillary benefits.

- The above two teams should be asked to merge their findings and any proposed recommendations into a single document and to present that document to EPA and DOE for consideration.

Benefits:

- This recommendation promotes meeting air quality objectives in the most cost-effective manner, with lower compliance and administrative costs, conservation of fuels and resources, enhanced national and energy security, and reductions of greenhouse gases at little or no additional expense while providing new and clean sources of electricity generation, and enhanced local and regional economic development.

Implementing Air Quality Strategies

The Subcommittee recommends an integrated approach for implementation that calls for air quality goals, strategies, and plans to be implemented in coordination with a range of related issues. EPA should work with state air and energy organizations, tribal governments, and regional air quality planning organizations to overcome potential barriers to clean energy/air quality integration. Incentives (including, but not limited to, more flexible forms of credit, regulatory incentives and economic incentives) for voluntary and innovative land use, energy, and transportation technologies or approaches need to be developed and promoted. In addition a federal inter-agency liaison group should be established with EPA and other federal agencies to coordinate land use, energy, transportation, greenhouse gas, and air quality goals.

The AQM Subcommittee is making five recommendations related to implementation of a comprehensive AQM system (Recommendations 8 through 12).

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Recommendation 8: Expand the use of episodic controls - *Expand the use of episodic control measures to help attain and maintain national ambient air quality standards in areas where all reasonable continuous and seasonal control measures have already been required.*

Background/Explanation:

The U.S. AQM system relies on the use of continuous (i.e., year-round) and seasonal control measures. A number of communities have supplemented the use of continuous and seasonal control measures with public information campaigns and voluntary programs designed to reduce emissions on specific days when high ozone or PM concentrations are expected. In 1977, Congress rejected the use of "intermittent" controls as part of a SIP for achieving the NAAQS. Since that time, EPA has concluded that the CAA does not restrict SIP approval (or credit) for peak day (i.e., episodic) reduction measures that apply to: (1) consumer products or services (2) certain consumer actions, (3) episodic transportation control measures, and (4) certain other mobile source measures that may be approved for SIP credit. EPA maintains, however, that the CAA limits the use of intermittent controls at stationary sources as part of an approvable SIP.

Recommended Actions:

A. Expand federal research and technical assistance to communities regarding the design, implementation and evaluation of successful programs to reduce peak day emissions from non-stationary sources

B. Expand the use of stationary source episodic control measures as a backup insurance mechanism (i.e., outside the scope of an approved SIP) for areas struggling to attain or maintain the short-term ambient standards.

Implementation

If the use of episodic control measures is to be expanded, a number of implementation issues must be addressed, including:

- How the results of such programs are measured;
- How well high pollution days are predicted and how best episodic measures can be called into effect in a timely manner; and,
- What types of episodic control measures will be practical, enforceable, and cost effective?

Benefits

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- Episodic control measures can provide an expanded set of cost-effective control opportunities for states and local communities that are capable of yielding emission reductions.
- A variety of measures that could not be implemented on a continuous or seasonal basis could prove to be suitable and cost effective for episodic use.
- For areas that are working to attain or maintain a NAAQS, episodic control measures can serve as a backup insurance mechanism by preventing air quality violations on days when meteorological conditions might otherwise cause a violation.
- By reducing peak concentrations on the highest pollution days, episodic control measures may provide considerable health and environmental benefits to all affected populations.

Recommendation 9: Overcome potential barriers to clean energy/air quality integration - *EPA should work with state, tribal, and local air agencies, energy organizations, and regional air quality planning organizations to overcome potential barriers to clean energy/air quality integration.*

Background/Explanation:

Many states and tribes have developed programs to implement energy efficiency/renewable energy measures. Several states and tribes have expressed interest in implementing these energy related measures to help achieve their air quality objectives. Toward that end, EPA has established the Clean Energy-Environment State Partnership Program, a voluntary state-federal partnership to support state efforts to increase the use of clean energy to achieve environmental, energy and economic benefits.

To support state, tribal, and local clean energy programs, EPA has issued three key documents:

1. “Guidance on State Implementation Plan Credits for Emission Reduction Measures from Electric-sector Energy Efficiency and Renewable Energy Measures,” August 2004 (hereinafter, EPA SIP Energy Guidance);
2. "A Toolkit for States: Using Supplemental Environmental Projects (SEPs) To Promote Energy Efficiency (EE) and Renewable Energy (RE)," January 2005; and,
3. “Clean Energy-Environment Guide to Action: Policies, Best Practices and Action Steps for States,” February 2006.

The requirement for SIP and TIP revisions to meet the new 8-hour ozone standard and the PM 2.5 standard provides an opportunity for clean energy and air quality integration. This integration can be achieved through the inclusion of energy efficiency and renewable energy measures into SIPs/TIPs utilizing state and EPA programs and resources like the ones cited above.

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There is limited precedent for adoption of energy efficiency and renewable energy measures within SIPs and TIPs. States must submit ozone and PM2.5 SIPs over the next two years, leaving little time to accommodate the lengthy process required for incorporating energy efficiency and renewable energy measures into the plans. Notwithstanding, EPA should lead the way now to overcome real and perceived obstacles to including energy efficiency and renewable energy measure adoption and inclusion in SIPs and TIPs.

Barriers to clean energy/air quality integration:

- Some states have indicated that they are unlikely to pursue energy efficiency and renewable energy measures as part of their SIPs to meet the ozone and PM standards because they believe that an insignificant amount of SIP credit may be obtained or that EPA requirements (including inconsistent application of requirements across the regions) for documenting the benefits within the SIP will be too burdensome. For example, the EPA SIP Energy Guidance is unclear as to what extent states and local governments can rely on existing modeling under the Clean Air Interstate Rule (CAIR) to document upwind areas, thereby avoiding the need for extensive new modeling.

- EPA is currently working with the states, tribes, and local governments on incorporating energy efficiency and renewable energy measures into SIPs and TIPs. The effort is not sufficient to provide many governments with the necessary assurances that EPA will approve their proposals for inclusion of energy efficiency and renewable energy measures into SIPs when they are submitted to the Agency. For example, some interpretations of the applicable guidance are more restrictive than EPA intended. For example, the extent of documentation necessary to obtain SIP credit for renewable energy and energy efficiency measures undertaken as part of a Renewable Portfolio Standard or Alternative Portfolio Standard is unclear.

- Some states, tribes, and local governments do not realize the extent of the opportunities they have for incorporating energy efficiency and renewable energy measures into SIPs/TIPs, and do not realize they can work with EPA and its regional offices on proposals during early SIP planning discussions.

- When a Best Available Control Technology (BACT) determination in the context of New Source Review (NSR) involves the use of an add-on control device, it appears that some EPA regional offices and some states believe that the determination requires that the permittee must always use that control device to achieve the related emission limit. This should not always be the case. If, after the permit is issued, the permittee is able to achieve the required emission limit without using the control device (e.g., through pollution prevention by replacing a solvent-borne coating with a water-borne coating containing much less VOCs), the permittee should be allowed to discontinue using that control device and thus eliminate the associated energy use, assuming the reformulation of the coating is consistent with the air toxic requirements of the state. For example, a permittee with a coating line is initially subject to a BACT determination based on the use of an oxidizer to meet a volatile organic compound (VOC) emission limit. The

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permittee subsequently reformulates its coating material to use a water-borne coating with an inherently lower VOC content and can now meet the VOC limit without using the oxidizer. Assuming the reformulation of the coating is consistent with the air toxic requirements of the state, the permittee should be allowed to turn off the oxidizer thereby saving energy and eliminating the emissions associated with the oxidizer while at the same time continuing to ensure compliance with the VOC emissions and/or performance limit.

- In addition, new permit applicants should not be required to install control devices if they are able to comply with a comparable or equivalent BACT limit using other means. For example, if a permittee is able to use a more advanced low NOx burner that has emissions that are comparable to or better than BACT limits, the permittee should not be required to install an add-on control device, such as Selective Catalytic Reduction.

- Incorporation of energy efficiency and renewable energy measures into SIPs/TIPs raises significant national policy issues that require time to resolve. For example, in some locations, due to the nature of the electric grid, it can be challenging to determine how the emissions benefits will occur in locations that are relevant to the nonattainment area in question. Some states are uncertain how to interpret EPA guidance on determining where net emissions reductions need to occur for clean energy measures with respect to a nonattainment area for that area to be able to take credit. There are also unrealized opportunities for regional cooperation to credit the dispersed emissions reductions.

- The relationship between cap and trade programs and SIP credits for energy efficiency and renewable energy actions can be complex. Some state, tribal, and regional air agencies may not realize that they need to retire allowances to receive SIP credit for NOx emission reductions if the state is subject to CAIR. Some state air agencies may not realize that they must create energy efficiency and renewable energy set-aside or other allocation mechanism under their CAIR implementation rules to obtain SIP credits for energy efficiency and renewable energy measures for the period from 2009 forward.

- State, tribal and local governments are often unaware of existing resources, including the timing, and amount of DOE, EPA, and DOT funding of clean energy/air quality integration measures. Interest by government and tribal entities in energy efficiency and renewable energy measures will be greatly enhanced if they are provided with readily accessible information on funding sources.

- State, tribal, and local governments are facing budgetary constraints that may limit their ability to adopt energy efficiency and renewable energy measures. Increased provision of information on creative financing approaches (e.g., performance contracting for solar/efficiency in schools) that overcome the financial barriers posed by high upfront capital costs can greatly spur the adoption of energy efficiency and renewable energy measures.

Problems/Challenges Addressed:

- Meeting the NAAQS for ozone and PM2.5 and reducing regional haze.

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- Coordinating air quality and energy planning strategies.

Recommended Actions:

EPA should expedite actions to overcome the barriers to clean energy/air quality integration. All relevant EPA regional and headquarters offices should work with state, tribal, and local air permitting authorities and air planning organizations to:

A. Communicate with state air agencies, tribal governments, local planning organizations, and related non-profit organizations (ECOS, NACAA, NASEO, NARUC) using different formats such as conference calls and webcasts to determine actual and perceived barriers to clean energy/air quality integration and to resolve policy issues on including energy efficiency and renewable energy measures in SIPs/TIPs.

B. Serve as a facilitator and mediator to ensure a consistent approach encouraging use and incorporation of clean energy measures and to help resolve policy issues and encourage the inclusion of energy efficiency and renewable energy measures into SIPs/TIPs.

C. Engage with state, tribal, and local air planning organizations in early discussions regarding energy efficiency and renewable energy measures being considered for inclusion in SIP/TIP submittals. This will help resolve any issues of interpretation or other technical concerns, including reconciliation of the anticipated locations of the clean energy measure emissions reductions with any SIP requirements in EPA guidance and rules.

D. Issue guidance confirming that energy-consuming control devices may be shut down if, through pollution prevention, a permittee is able to meet the associated emission limits without using controls.

E. Clarify that, a permit applicant is not required to the add-on BACT control if they demonstrate a pollution prevention measure is a substitute to BACT through a “top-down” BACT analysis.

F. Clarify that, a permit applicant is not required to install an additional add-on control devices if they use pollution prevention approaches to meet an emission limit as long as it is comparable/equivalent to the limit that would be achieved by the add-on control device.

G. Provide outreach to EPA regional officials, state officials, and state, tribal, and local governments on the interface between the CAIR regulations and energy efficiency and renewable energy measures in SIPs/TIPs.

H. Define a sample of energy efficiency and renewable energy control measures currently under consideration by state, tribal, and local governments to meet the ozone and PM standards and anticipate and proactively work through the issues that will arise during the SIP/TIP review process. For example, the Control Measures Work Group of the Technical Advisory Committee of the Metropolitan Washington Air Quality Committee

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would be one good candidate for such a proactive review since this Work group already has developed a number of potential energy efficiency and renewable energy measures.

I. Increase awareness among state, tribal, and local governments of existing funding opportunities made available by DOE, EPA, and DOT relating to clean energy/air quality, including eligibility, funding levels, and amount of awards. This includes making these governments aware of such information sources as the Clean Energy Environment State Partnership online funding guide provided by EPA. EPA should also make funding information available on the EPA Air Innovations web site and other high visibility EPA websites. This suggestion was presented to EPA at the 2005 Air Innovations Conference and EPA implementation would help overcome a major information barrier.

J. Identify innovative financing strategies (e.g., state performance contracting laws) to assist state, tribal, and local governments in implementing clean energy/air quality integration measures. For example, EPA should make information available on the development of financing strategies, such as performance contracting and effective use of tax incentives provided in the Energy Policy Act of 2005, to spur cash-strapped municipalities to adopt energy efficiency and renewable energy measures.

Implementation:

- For recommended actions A, B, C, and F, EPA should convene an implementation group to convene on a regular basis. This group should discuss the interface between cap and trade programs, such as the CAIR regulations, and energy efficiency and renewable energy measures, identify actual and perceived barriers to clean energy/air integration and develop recommendations for addressing such perceived barriers. The group should focus on facilitating the implementation of energy efficiency/renewable energy measures across the country and incorporating such measures in SIPs/TIPs, including set-asides under CAIR. Membership on the group should include EPA headquarters and regional offices, DOE/NREL, NACAA, NASEO, ACEEE, tribal governments, environmental advocacy groups, industry, and others.

- For recommended actions D and E, EPA should issue clarifying guidance.

- For recommended actions F, G, H, and I, EPA should consult NASEO, DOT, DOE/NREL, ACEEE, states and others to obtain information, consolidate it, and then make it available on an EPA website dedicated to energy efficiency and renewable energy.

Benefits:

- Reducing demand for energy reduces emissions associated with energy production and combustion, which benefits air quality. Renewable energy projects can help improve air quality today by offsetting fossil fuel-fired generation, especially during peak demand.

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Recommendation 10: Provide incentives for voluntary and innovative land use, energy, and transportation approaches - *The AQM process should include incentives (including, but not limited to, more flexible forms of credit, regulatory incentives and economic incentives) for innovative and voluntary land use, energy, and transportation technologies or approaches that provide air quality benefits.*

Background/Explanation:

The AQM process should include incentives for voluntary and innovative land use, energy, and transportation technologies or approaches that benefit air quality in nonattainment and other areas. Encouragement should particularly be given to low emission technologies, smart growth, energy efficiency measures, cogeneration, demand-side management and renewable resources. The AQM process should better integrate incentives that incorporate these technologies and approaches into the NAAQS implementation process. Incentives could include, but are not limited to:

- More flexible forms of SIP and TIP credit;
- Regulatory incentives (such as streamlined or expedited permitting opportunities) and economic incentives (such as tax incentives, public benefits programs);
- State and utility funding programs for energy efficiency projects, where appropriate and properly structured; and,
- Recognition programs or forms of alternative "credit" for communities that implement voluntary and/or innovative land use, energy or transportation policies, programs or practices that benefit air quality.

While EPA has already developed incentives for voluntary and innovative measures that address the above objectives (e.g., 2001 *Improving Air Quality with Economic Incentive Programs*[12]), many stakeholders are unaware of these programs.

Problems/Challenges Addressed:

- Meeting the NAAQS for ozone and PM2.5, and reducing regional haze;
- Addressing air quality on the appropriate geographic scale (locally, regionally, and globally);
- Addressing remaining pollution problems, including unregulated and smaller "area" sources; and,
- Coordinating air quality, energy, transportation, and urban planning strategies.

[12] United States Environmental Protection Agency, *Improving Air Quality with Economic Incentive Programs*, available at http://epa.gov/ttn/caaa/t1/memoranda/eipfin.pdf.

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Recommended Actions:

A. EPA should develop a communication strategy to inform interested stakeholders about land use, energy and transportation-related programs that already exist.

B. EPA should continue to develop new programs that motivate the implementation of voluntary and innovative measures. Appropriate and properly structured incentive programs such as expedited and streamlined permitting opportunities, the Texas Emissions Reduction Plan (TERP) program, EPA's Performance Track Program, and innovative measures such as voluntary mobile emissions reduction programs (VMEP) and projects funded by Congestion Mitigation and Air Quality (CMAQ) funds can, in the aggregate, make greater overall contributions to future SIPs and TIPs than they have in the past.

C. Current SIP/TIP approval requirements have recently been made more flexible in crediting such measures, but they still require a ton-denominated precursor reduction applied to each such measure. The AQM process should allow for additional alternative forms of credit for such measures. EPA should assist in determining and allowing SIP and TIP credits for energy efficiency and renewable energy programs.

D. With respect to community recognition programs, EPA should compile a list of existing recognition programs (e.g., Indiana CLEAN Community Challenge), their strengths and weaknesses, and what the recognizing entity offers as an incentive to areas that implement environmentally beneficial measures (e.g., technical assistance, public recognition, and cash awards). Drawing from this research, in partnership with other organizations that work with local governments, EPA should develop a community recognition or other alternative "credit" program for nonattainment and other areas that adopt voluntary and/or innovative land use, energy or transportation policies, programs or practices that benefit air quality. EPA should develop clear criteria for how an area would qualify for this recognition or alternative "credit."

Implementation:

- For recommended action C, EPA should consider the predicted effects of a package of measures presented in a SIP or TIP, potentially over a longer time horizon than the SIP/TIP review period. Specifically, EPA should identify or develop model land use, transportation and energy planning documents that address SIP/TIP credit issues applicable to each voluntary and innovative measure that is identified under recommended action B. Among other things, the documents should demonstrate how to quantify emission reductions expected from each identified measure in a manner where they can be considered for SIP/TIP credit.
- EPA should also encourage adaptive plan revisions as indirect effects of innovative measures become better understood, which is consistent with current SIP requirements for reasonable emission reduction progress checks. The implementation challenge for this recommendation will be identifying appropriate targets for emission reduction initiatives and quantifying the air quality benefits expected or actually achieved as a result of any

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one initiative.

Benefits:

- This recommendation shifts the focus for new programs away from traditional command and control strategies to strategies that are more likely to be effective in achieving additional air pollution gains in the areas of land use, transportation and energy planning.

Recommendation 11: Develop programs to reduce public demand for polluting activities - *Develop programs that focus on reducing public demand for polluting activities. Such programs could include incentive programs for encouraging use of lower-polluting activities, reduction programs, and tax and use restrictions.*

Background/Explanation:

Much of air quality management has been directed at large scale sources of pollution, from all sectors of the inventory. While additional reductions from such sources are possible, further reductions may also be achieved by encouraging the public to reduce activities that produce pollution or to pursue less polluting alternatives.

Problems/Challenges Addressed:

- Meeting the NAAQS for ozone, PM2.5, and reducing regional haze.
- Addressing air quality on the appropriate geographic scale (locally, regionally, and globally).
- Addressing remaining pollution problems, including unregulated and smaller "area" sources.
- Coordinating air quality, energy, transportation and urban planning strategies.

Recommended Actions

A. EPA should develop a social marketing and outreach strategy that includes, but is not limited to, helping the public make environmentally beneficial choices and understand the impact their decisions have on air quality. This marketing and outreach strategy should include approaches such as California's 3-star recreational watercraft labeling program and DOT/EPA's "Best Workplaces for Commuters" and "It All Adds Up to Cleaner Air" programs. EPA efforts should discourage activities that create more air pollution and encourage alternative activities that minimize environmental harm. As appropriate, EPA should consult with other federal agencies and stakeholders in developing the strategies.

B. EPA should evaluate options for discouraging higher polluting activities (e.g., education, taxes, fees imposed on federal lands, and use restrictions) and encouraging less polluting activities (e.g., economic incentives, education, and expedited or streamlined permitting

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opportunities). For example, energy demand might be reduced through programs that educate the public about energy efficient practices or provide funding for energy efficiency and renewable energy projects.

Implementation:

- One implementation challenge will be possible resistance from industries that serve the demand for polluting activities. This resistance may be reduced by shaping programs to create opportunities for such industries to serve demand for activities with less air pollution impact.

Benefits:

- This recommendation would reduce air pollution at its source, which is the demand for activities that cause it. It also would involve the public directly in the decisions individuals make that affect air pollution.

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Recommendation 12: Establish an inter-agency liaison group to coordinate land use, energy, transportation, climate change, and air quality goals - *An inter-agency liaison group should be established with EPA and other federal agencies (e.g., FAA, HUD, DOE, NRC, FERC, USDA, CDC, DOI, and DOT) to explore issues and opportunities for coordinating land use, energy, transportation, climate change, and air quality goals.*

Background/Explanation:

Land use, transportation, energy, and climate-related policies and programs are inextricably intertwined with air quality. Such policies and programs can conflict with attaining national air quality goals. Conversely, air quality policies and programs can conflict with or frustrate national transportation and energy goals.

Federal agencies already coordinate their activities to some extent. For example, when EPA undertakes a major rulemaking, the Office of Management and Budget's (OMB) Office of Information and Regulatory Affairs (OIRA) facilitates an inter-agency review process to ensure other federal agencies have an opportunity to review and provide comment on EPA rulemakings. Moreover, Executive Orders 13211 (May 18, 2001) and 12866 (September 30, 1993) require federal agencies to prepare a Statement of Energy Effects when undertaking certain rulemaking actions that are likely to have a significant adverse effect on the supply, distribution or use of energy. A Statement of Energy Effects must include, among other things, detailed information regarding any adverse effects the agency action will have on energy supply, distribution, or use (including a shortfall in supply, price increases and increased use of foreign supplies). OIRA uses the Statements of Energy Effects to ensure that one federal agency's proposed actions do not conflict with another agency's policies or actions. Federal agencies must also publish their Statements of Energy Effects, or a summary in each notice of proposed rulemaking and in any resulting final rule.

With the objective of enhancing the above efforts and facilitating earlier and more meaningful coordination between federal agencies and national programs and objectives, an Inter-agency Liaison Group should be established based on the guiding principle that our nation's land use, transportation, energy, climate change, and air quality programs and objectives must be aligned to serve consistent goals. The Liaison Group should include EPA and several other federal agencies such as FAA, HUD, DOE, NRC, FERC, USDA, CDC, DOI, and DOT.

The creation of a federal coordination group has precedent. In the late 1970s EPA participated in the Interagency Regulatory Liaison Group or "IRLG." This group brought together high-level officials from EPA and other federal agencies to discuss policies and issues of common concern. At least two current AQM Subcommittee members recall participating in the effort and believe it was highly effective.

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Problems/Challenges Addressed:

- Coordination of air quality, energy, transportation and urban planning strategies.
- Maintenance of AQM efficiency in the face of changing climate.

Recommended Actions:

A. EPA should proactively work with its federal partners (e.g., FAA, HUD, DOE, NRC, FERC, USDA, CDC, DOI, and DOT) to establish an Inter-agency Liaison Group to explore issues and opportunities for coordinating and aligning federal agency goals and objectives on energy, land use, transportation, climate change, and air quality. The purpose of the group would be to help ensure federal agencies work together in achieving coordinated and integrated solutions to these issues.

B. In addition to periodically meeting, sharing information and working to align national programs and objectives, the group should work with OMB, CEQ and other interested stakeholders to develop a protocol under which federal agencies would (a) formally analyze major proposed federal rulemakings that are likely to have significant impacts on national land use, energy, transportation, climate change, and/or air quality programs or objectives; (b) for those proposed major regulations that are likely to have such significant impacts, prepare a Statements of Effects similar in content to the Statements of Energy Effects that Executive Orders 13211 (May 18, 2001) and 12866 (September 30, 1993) currently require; and (c) subject such Statements of Effects to public review and comment.

Implementation:

- The Inter-agency Liaison Group should be established at the political or senior career level. It should include representatives from EPA's air office and from other federal agencies. EPA should also create a lower-level working group to implement future recommendations of the group. The liaison group should use a Memorandum of Understanding (MOU) or other vehicle to establish a common understanding of its purpose and activities. The group should meet at least quarterly to share information and coordinate policies and programs.

- In exploring and developing a protocol for analyzing and disseminating information regarding major proposed federal rulemakings, the liaison group (working with OMB, CEQ and other interested stakeholders) should consider and address several issues, including what proposed federal regulations are covered and the appropriate scope and extent of analysis and public participation. In addition, to avoid duplicative analyses, to the extent that a federal agency is required to prepare an impacts analysis pursuant to another statutory or regulatory requirement (e.g., the National Environmental Policy Act) that is substantially similar to the analysis that the protocol requires, the protocol should allow the federal agency to use that analysis in lieu of preparing a new duplicative impacts analysis.

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Benefits:

- This recommendation encourages policy makers to better coordinate national air quality, energy, transportation and greenhouse gas programs and objectives. The rulemaking protocol would provide information on significant impacts proposed major federal rulemakings may have. It would allow policy makers and interested stakeholders to understand the degree to which proposed major federal rulemakings would further or undermine national air quality, energy, transportation, and greenhouse gas programs and objectives, including identifying opportunities to reduce the potential for adverse air quality impacts.

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VIII. Need for Tools to Improve Air Quality

Today's air quality problems pose difficult and in many ways different challenges to EPA, states, and tribes than the challenges of the past. While traditional air quality management has focused on reducing emissions from large stationary sources, fuels, and new car and truck engines, such strategies alone may no longer ensure attainment and maintenance of the nation's air quality and public health goals. To meet the air quality challenges, EPA, states, and tribes must utilize and enhance existing tools, while simultaneously developing new and innovative tools to address emissions from a variety of sources such as existing cars and trucks (so-called "legacy fleets"), a wider range of engine and vehicle types (e.g., marine vessels), and many types of small and mid-size emission sources. Furthermore, although new engine emission standards promise to reduce dramatically (sometimes to near zero) the emissions from new cars, trucks, and from off-road vehicles and products such as lawn mowers, boats, and all-terrain vehicles, the continued growth in travel and the delivery of goods spurred by increasing population and personal income will likely make it necessary to go beyond technology-focused air pollution control strategies to address transportation, land use and energy efficiency concerns in major metropolitan areas. Although the nation now boasts some of the world's cleanest products, fuels and vehicles, much can still be done to accelerate the turnover of existing fleets and to increase penetration of the cleanest products by implementing demand-side strategies to a greater extent than in the past.

The Subcommittee focused on several types of sources whose relatively uncontrolled or undercontrolled emissions contribute significantly to ozone or fine particle nonattainment in several areas of the country. The specific categories identified are legacy vehicle and engine fleets, ports and goods movement-related sources (e.g., trucks, ships and rail), airports, agricultural emissions, small sources (e.g., bakeries, restaurants, dry cleaners), consumer products, and industrial boilers.

The AQM Subcommittee also discussed a range of measurement-related tools needed. For criteria pollutants, these include the need for improved baseline emissions inventory data and ambient air quality data (e.g., due to existing gaps in monitoring). Measurement tool needs for toxic air pollutants are considered even more pressing. There is a need for data in many areas, including ambient concentrations, better risk assessment and speciation data improvements, significance levels, and potential impacts of air toxics on sensitive populations. The Subcommittee identified other measurement challenges, including consideration of the co-benefits and impacts of various control strategies, and potential local impacts associated with emissions trading.

The AQM Subcommittee discussed a number of other air quality planning challenges related to tools, including how to ensure SIP or TIP credit for non-traditional strategies, such as diesel reduction programs or innovative and voluntary incentive programs. The Subcommittee recognized resource limitations faced by many state, tribal, and local agencies. The AQM Subcommittee also recognized the lack of incentives available for attainment and nonattainment areas to encourage air quality problems from developing or worsening. For example, the Subcommittee discussed the need to encourage conservation on both the user and supplier side in several priority areas, including energy efficiency and consumer travel and purchasing choices.

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Potential Tools to Address Air Quality Challenges and Planning Needs

The AQM Subcommittee evaluated a variety of tools that could be used to address these challenges. Current tools, such as emissions limits, add-on controls, and emissions cap and trade programs, have been and will continue to be successful in improving air quality. The purpose of this evaluation was to identify and characterize additional tools that air pollution control officials could use in their efforts to manage air quality. The Subcommittee believes that a few of these tools are likely to prove valuable in areas of the country where, for example, there is a shared need to address older, higher-emitting vehicles or to address relatively uncontrolled or undercontrolled large stationary sources. Other tools may be appropriate for use in areas that face unique difficulties, such as ports and large airports. At large regional ports, for example, the existing and anticipated high density of engines requires that engine turnover or retrofits be accelerated. In these cases, strategies are needed to promote rapid and large-scale investment in clean fuels and technologies to help attain and maintain the ozone or PM 2.5 standards and thereby, protect public health. The use of tools such as emissions trading, pricing, or other financial strategies may raise novel or significant public policy questions (e.g., the use of acceptable risk benchmarks, inter-pollutant trading, emissions banking and borrowing, "in lieu" compliance strategies) that would need to be carefully considered at local, regional, and national levels.

The AQM Subcommittee selected four areas to be given additional priority and review for developing tools for improving air quality. Examples of these programs include:
(1) Financial tools for fleet turnover and diesel retrofits;
(2) Financial tools for land use and transportation planning;
(3) Information programs for land use and transportation planning; and,
(4) Emission limits for industrial, commercial, residential boilers and heaters, and legacy equipment and sources.

The AQM Subcommittee has prepared a matrix of potential tools which is presented in the appendix B to this report. The matrix focuses on specific newer tools that could be effective at reducing emissions for various sources or sectors. An outline of the needs and tools that have been identified can also be found in appendix B.

(1) Financial Tools for Fleet Turnover and Diesel Retrofits

Financial tools and financial demand-side strategies that encourage fleet turnover and diesel retrofits include tax strategies, loans, equity strategies, and targeted rebates.

Carl Moyer Program

California's Carl Moyer Memorial Air Quality Standards Attainment Program is a state and local partnership that provides incentive grants to cover the incremental costs of cleaning up heavy-duty engines more than is required by air pollution regulations. The program, established in 1998, was recently expanded and given a 2015 sunset date. Heavy-duty on-road and off-road equipment may qualify for grants, including farm and construction equipment, marine vessels,

locomotives, and airport ground support equipment. Projects are diverse and range from the purchase of new alternative-fuel heavy-duty vehicles, such as transit buses, to engine replacements for construction equipment and marine vessels.

Grants are issued and monitored locally by air pollution control districts and air quality management districts, following guidelines developed by the California Air Resources Board. The program achieves near-term reductions in emissions of NOx, PM, and reactive organic gas.

The California Air Resources Board and local air districts fund the program jointly. Sources of revenue include smog check fees and tire fees. Local districts can also use vehicle registration fees. Districts match $1 in local funds for every $2 in Moyer funds. In recent years, about $140 million of incentive funding has been available annually through the Carl Moyer Program. Demand for the program is expected to remain high, given that the cost of cleaning up the state's existing diesel engine fleet is estimated to be at least ten times the available Carl Moyer Program funds.

Each California district is eligible to receive a minimum funding allocation. More populous districts in nonattainment areas are eligible for additional funding. In districts with populations over one million, at least 50 percent of Carl Moyer Program funds must benefit low income communities.

In its first six years, the Carl Moyer Program provided over $140 million to clean up more than 6,300 heavy-duty engines, reducing NOx emissions by over 18 tons per day at a cost of about $2,600 per ton of NOx reduced. It is estimated that the program reduced lost workdays by about 17,000, prevented 2,800 asthma attacks and 100 premature deaths.

TERP

Another example of the use of incentive grants to encourage fleet turnover and diesel retrofits is the Texas Emissions Reduction Plan (TERP), established in 2001 and administered primarily by the Texas Commission on Environmental Quality (TCEQ). TERP includes a number of financial incentive and other assistance programs to help improve air quality. The main financial incentive programs are the Emissions Reduction Incentive Grants Program and the New Technology Research and Development Program.

The Emissions Reduction Incentive Grants Program provides funds to eligible projects in nonattainment and near-nonattainment areas to offset incremental costs associated with reducing NOx emissions from high-emitting internal combustion engines. The Rebate Grants Program is a simplified application process available only for diesel on-road and off-road replacement and repower projects. Funds are also set aside for small business.

The New Technology Research and Development Program offers grants to encourage research, development, and commercialization of pollution-reducing technologies.

Other TERP programs include the Clean School Bus Program, which funds projects including diesel oxidation catalysts, diesel particulate filters, and add-on equipment to reduce

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exposure to diesel exhaust from school buses; the Small Business Grants Program, which helps small businesses participate in TCEQ incentive programs; the Heavy-Duty Motor Vehicle Purchase or Lease Incentive Program, which can reimburse the purchaser or lessee of a new on-road heavy-duty vehicle for incremental costs of purchasing or leasing the vehicle in lieu of a higher-emitting diesel powered vehicle; and the Light-Duty Motor Vehicle Purchase or Lease Incentive Program, which provides rebates for the purchase or lease of an eligible new car or light truck.

TERP grants are allocated through an annual or bi-annual application process. Sources of funding for TERP include a surcharge on some registration fees, a surcharge on the sale, lease or rental of off-road heavy-duty equipment, a surcharge on the sale or lease of diesel on-road vehicles, and a fee on commercial vehicle inspections. Revenues have been predicted to average about $150 million per year. About $130 million is allocated to the Emissions Reduction Incentive Grants Program, including about $2 million for small business incentive grants. About $14 million is allocated for the New Technology Research and Development Program.

More information on financial incentives and other strategies to encourage fleet turnover and diesel retrofits may be found in the April 2006 report to the CAAAC from the Mobile Sources Technical Review Subcommittee, *Recommendations for Reducing Emissions from the Legacy Diesel Fleet*, at http://www.epa.gov/cleandiesel/publications.htm#caaac-apr06.

(2) Financial Tools for Land Use and Transportation Planning

Financial tools and financial demand-side strategies used as incentives to encourage land use and transportation planning include differential pricing and tax strategies.

Differential Pricing

One innovative example of the use of differential pricing to reduce sprawl and emissions as part of a land use and transportation plan is occurring in Madison, Wisconsin. Beginning in 2001, Dane County and the University of Wisconsin encouraged public transit through more accurate price signals. The introduction of marginal cost pricing for parking at the University was linked to the expansion of fixed price universal transit passes. According to initial estimates, participation by 500 employees who curtail driving by one day per week can reduce vehicle miles traveled by 350,000 per year, resulting in hydrocarbon reductions of four tons.

Another example of differential pricing that has controlled sprawl and reduced emissions is occurring in Portland, Oregon. A plan was designed in the mid 1970s to increase transit use by eliminating free parking, reducing the number of parking spaces, encouraging dense development around transit stations, and providing free transit service for workers and shoppers within the central business district, called the Fareless Square. In the last ten years, the economically depressed Lloyd district on the edge of downtown has become Portland's fastest growing economic district. That growth prompted transportation planners to focus on reducing use of cars for trips between downtown and the Lloyd district, to increase shopping and recreational opportunities through an extended downtown, and to increase the potential for new development downtown and in the Lloyd district. To meet these goals, the Fareless Square was

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extended to include the Lloyd district, and new parking meters and regulations were implemented to decrease car use. Development and zoning codes have been put in place to encourage high density, mixed use development along transit corridors. Ride sharing programs, guaranteed rides home, and reserved parking places for carpools and vanpools in the Lloyd district have contributed to Portland's commitment to smart growth through innovative transportation and planning tools.

Tax Strategies

In 2007, the federal tax code allows tax-free transportation fringe benefits of up to $110 per month per employee for transit or vanpool expenses. Unlike ordinary wage payments, employers do not have to pay their share of federal payroll taxes on tax-free transit benefits, and the cost of providing tax-free transit benefits can be deducted as a normal business expense. These benefits can be deducted from corporate gross income for purposes of taxation when paid by an employer. Employees pay no federal income tax on commuter benefits. This benefit encourages transit ridership and van or carpooling, both of which reduce vehicle miles traveled and thus reduce emissions that form ozone. Several states have also implemented tax incentive programs to encourage commuter benefits, including Connecticut, Delaware, Georgia, Maryland, Minnesota, New Jersey, and Oregon.

An example of the innovative use of tax strategies is the Eco Pass, an annual photo ID transit pass developed by the Denver Area Regional Transportation District that is distributed to participating employers at significant discounts. The Eco Pass is tax deductible to employers and is a tax-free benefit for employees. If an employee has an unexpected change of schedule or emergency, the Eco Pass will guarantee a free taxi ride home. Pass holders can use all regular transit services seven days per week. The mayor has offered Eco Passes to all City of Denver employees, and expects over 35 percent of them to take advantage of the program.

More information on these examples of financial tools used as incentives to encourage land use and transportation planning, and additional examples, may be found in the 2005 report of the National Association of Local Government Environmental Professionals, "*Clean Communities on the Move*". See http://www.nalgep.org.

(3) Information Programs for Land Use and Transportation Planning

Information programs, reward programs, and non-financial demand-side strategies (collectively referred to in this section as "information programs) for land use and transportation planning include clearinghouses, labeling, performance benchmarking, community "Green Action" lists, surveys, frequent flyer-type programs, and web tools that educate and influence decisions. Information programs can be targeted to a specific audience or designed for general consumption. Here are some examples of successful information programs.

Clearinghouses and Web Tools

The Smart Growth Network operates a web-based clearinghouse aimed at land use and transportation planning. The clearinghouse promotes economic development that simultaneously

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fosters healthy communities, strong neighborhoods, and transportation choices by providing tools, resources, and information sharing. For more information, visit http://www.smartgrowth.org.

Web-based tools to assist in land use and transportation planning are also available. For example, the Smart Growth INDEX model simulates alternative land use and transportation scenarios using GIS sketch models to incorporate smart growth principles into planning processes. See http://www.epa.gov/smartgrowth/topics/sg_index.htm.

Similarly, EPA Region 3's Green Communities Program has a web-based clearinghouse that provides access to tools, technical assistance, and training to integrate environmental goals applicable to urban, suburban, and rural communities. For more information, see http://www.epa.gov/greenkit.

Information and Reward Programs

As part of a program to address air pollution and congestion challenges in Tulsa, the Indian Nations Council of Governments sponsored an innovative information program called Driving Toward Clean Air. The program targeted high school students, providing teen drivers with information about "green" vehicles, carpooling, air pollution, and alternative transportation methods. The Tulsa Air Quality Enhancement and Education Project sponsored a competition where students pledged to carpool, ride the bus, or walk to school during a six-week period. The high school with the most participation received a new Toyota Prius hybrid as a reward. This program was recognized by EPA with a 2004 Clean Air Excellence Award. See http://www.epa.gov/air/caaac/2004awar.html.

(4) Emission Limits for Industrial, Commercial, Residential Boilers and Heaters and Legacy Equipment and Sources

Several examples of efforts addressing this source category are worth highlighting, some of which have been completed and some of which are underway. The examples range from traditional emission limits to voluntary-based approaches and a hybrid of the two.

Hazardous Air Pollutants

In September 2004, EPA promulgated a national emission standards specifying application of MACT to address HAPs from industrial, commercial, and institutional boilers and process heaters. EPA identified this source category as a major source of HAP emissions Implementation of the standard is expected to reduce HAP emissions by 50,600 to 58,000 tons per year. The air toxics emitted by facilities in the boiler and process heater source category include arsenic, cadmium, chromium, hydrogen chloride, hydrogen fluoride, lead, manganese, mercury, nickel, and various organic air toxics. For more information, visit: http://www.epa.gov/ttn/atw/boiler/boilerpg.html.

Criteria Air Pollutants

As part of Phase I, the AQM Work Group recommended to EPA that it complete as soon as possible a review of the contributions from the industrial, commercial, and institutional boiler

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category and the technical and economic feasibility of further controls, given the high priority assigned to this sector (Recommendation 2.1). It indicated that EPA should then initiate development of a regional or national emissions control regulation for the category, or take alternative action consistent with the results of its analysis. To respond, in coordination with EPA, the Regional Planning Organizations will collect and analyze data concerning industrial, commercial, and institutional boilers to effectively characterize these sources and their environmental impacts. EPA plans to include the National Association of Clean Air Agencies (NACAA) and other organizations in this comprehensive approach.

In March 2006, NACAA released a report, "Controlling Fine Particulate Matter under the Clean Air Act: A Menu of Options." Chapter 6 presents control options for industrial and commercial boilers. The report is available at: http://www.4cleanair.org/PM25Menu-Final.pdf .

Residential Units

Voluntary Approaches

In January 2007, EPA launched a voluntary partnership program to reduce emissions from outdoor wood-fired hydronic heaters (OWHH), also called outdoor wood boilers or outdoor wood-fired furnaces. The voluntary program will bring significantly cleaner outdoor wood-fired hydronic heaters (OWHH) to market beginning in 2007. OWHH burn wood to heat water, which is generally piped underground to provide heat for homes. A typical OWHH looks like a small shed with a smokestack, and is usually located next to the building to be heated.

Sixteen OWHH manufacturers have signed a memorandum of understanding with EPA that commits them to use their best efforts to develop, manufacture, and market one or more cleaner models. Under this agreement, the new models must emit no more than 0.6 pounds of particle pollution per million BTUs of heat input (i.e., wood burned). The models must be tested by an accredited third-party laboratory to verify that they meet these levels. The cleaner heaters made available through the voluntary program will be about 70 percent less polluting than current models. Consumers interested in the new, cleaner models should look for an orange hangtag that will show how a specific model compares to EPA's performance specifications. A list of program partners can be found at http://www.epa.gov/woodheaters/partners.htm

In addition to the effort for OWHHs, EPA and many states, tribal and local agencies are continuing the effort begun as far back as the 1980s to change out old and dirty residential woodstoves with EPA certified wood-burning appliances that burn more cleanly and efficiently. EPA has developed a how-to guide for areas to use to determine whether it is feasible for a jurisdiction to develop and implement a Woodstove Changeout program. The how-to guide can be found on EPA's Clean Wood Burning Stoves and Fireplaces website at http://www.epa.gov/woodstoves/.

Regulatory Approaches

In addition to the voluntary OWHH and woodstove programs, EPA has provided technical assistance to the Northeast States for Coordinated Air Use Management (NESCAUM), an

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association of eight northeastern states, to develop a model rule that states, tribes and local governments may use if they choose to regulate OWHH. The rule can be tailored to address specific local situations. The model rule establishes emission limits and labeling requirements for new units. It also contains the following components for both new and existing OWHH:

- Setback requirements from property lines, structures and residences,
- Stack height requirements, and,
- Distributor and buyer notification requirements.

The model rule can be found at: http://www.nescaum.org/topics/outdoor-hydronic-heaters

The State of Vermont recently promulgated regulations for OWHH based on the NESCAUM model rule. Under the new regulation, all new boilers sold/installed in Vermont must certify a particulate emissions limit of 0.44 lb/mmBTU by March 2008. Other states are also developing regulations to address OWHH emissions.

In addition, EPA is assessing other non-regulatory options including labeling to differentiate between regulated and non-regulated units and emission limits.

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IX. Unresolved Areas of Discussion

The AQM Subcommittee was unable to reach substantial consensus with regard to a few proposed recommendations. This section summarizes the key areas where this occurred and the nature of the differences of opinion that arose.

Unresolved Recommendation 1: ***Implement the use of "regional airsheds" to approximate the boundaries of emission source areas most likely to contribute to nonattainment areas.***

Background

Historically, nonattainment area boundaries have been established to focus primarily on local scale (i.e., state- or area-specific) control measures, though some also included control measures for which agreement on regional application was reached outside of the SIP process. The more traditional local-problem and local-control approach that proved successful in the past for many of the criteria pollutants, has more recently had limited success in remedying ozone and fine particle NAAQS nonattainment issues, as well as regional haze problems.

For two important reasons, the current approach to boundaries with respect to nonattainment area designations warrants review. First, the designation process has been based on geo-political boundaries, which causes some difficulties in dealing with problems that transcend such boundaries. Second, many states feel that there is a stigma associated with the label of "nonattainment." This is largely due to the mandatory requirements that take effect in nonattainment areas. As a result, in some areas, there has been a tendency to define nonattainment boundaries as small as possible.

Goals

The AQM Subcommittee discussions regarding boundaries were initiated with the following desired endpoints on the need to:

- Address situations where emissions in upwind areas contribute significantly to violations elsewhere;
- Provide a mechanism that can address interstate transport during the SIP/TIP development process and ensures that areas with contributing sources are involved in the initial SIP/TIP planning process;
- Minimize disincentives for monitoring;
- Reduce the desire/incentive to define areas of violation as small as possible;
- Not punish areas where air quality is poor if they have taken all reasonable steps to reduce local emissions;
- Better define sources that actually contribute to NAAQS violations and have a system that naturally includes those sources in the area subject to control requirements;
- Set boundaries based more on science and less on geo-political boundaries;

- Recognize the increasing necessity for regional programs within which states must work cooperatively and ensure accountability;
- Respect state/tribal rights and balance local and regional control programs with complimentary national control programs; and,
- Recognize the increasing need for national control programs in which the federal government takes the lead and ensures accountability.

Recommendations

The AQM Subcommittee was in substantial agreement on two important concepts related to setting boundaries, and achieved consensus on a set of principles that should guide the development of a new approach to establishing boundaries. The Subcommittee could not, however, reach agreement on the details of how the concept should be implemented. Instead, the Subcommittee substantially agreed on the need for an airshed approach to boundaries (regional, as appropriate) and the following concepts:

A. The current approach to establishing nonattainment area boundaries that define both the area that violates a NAAQS as well as the area within which emissions must be reduced to achieve attainment should be replaced. The new approach should include areas that violate NAAQS and areas where controls are needed and should be defined independently based on scientific assessments.

B. Control areas should encompass all significant contributors to the NAAQS violation, without regard to state/tribal or other geo-political boundaries. By controlling emissions from the sources included within the control area boundary, timely attainment of the NAAQS will be assured.

Consensus was also reached on the following guiding principles:

C. Revisions to the current nonattainment area boundary approach should improve upon the current system, resulting in one or more of the following:
    - More timely emissions reductions;
    - More effective emissions reductions;
    - Less dispute;
    - More flexibility to choose appropriate controls; and,
    - Facilitation of an airshed-based approach to managing air quality.

D. When a NAAQS is violated, people exposed to unhealthful air quality must be informed.

E. When a NAAQS is violated, prompt steps must be taken to restrict emission growth that might aggravate the problem.

F. Defining the area within which air quality is unhealthful, and the area within which emission sources need to be controlled, should be based on scientific factors.

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G. Any new boundary-setting approach should facilitate, or at least not further complicate, efforts to address air quality on a multipollutant basis, as recommended in the NRC report.

The AQM Subcommittee agreed that significantly more in-depth discussion would be needed before a specific recommendation could achieve substantial consensus. Because such a recommendation would need to discuss trade-offs between currently mandated CAA requirements and other (presumably more effective) emission control requirements, further discussions would need to include a broad array of stakeholders potentially affected by the changes.

Summary of Boundaries Discussion

The AQM Subcommittee formed a work group to advise it on recommendations related to boundaries. Based on consensus of the above concepts and principles, and building from the Federal Advisory Committee (FACA) work in the early 1990s on Areas of Violation and Influence (AOV and AOI), the boundaries work group recommended to the AQM Subcommittee that EPA expand its conventional application of nonattainment area boundaries through a concept of "control regions." The work group thought that broader application could maximize effectiveness and establish equity in implementing air pollution controls needed to bring areas that violate the NAAQS into attainment. The concept of "airsheds" was accepted by consensus of the AQM Subcommittee. However, questions regarding the details of its implementation arose during subsequent conversations of the Subcommittee.

The boundaries work group recommended separating areas with NAAQS violations from areas that contribute emissions to those areas. For purposes of the discussion, the boundaries work group referred to areas where air quality does not meet the NAAQS as "areas of violation" and areas where emissions contribute to those violations as "control regions." As envisioned, the area of violation would usually be contained within the control region, though there would be situations in which there is partial or even no overlap.

The basic components of the proposal made by the boundaries work group to the AQM Subcommittee on implementation include:

- An area of violation defined by air quality monitoring data where public education and health advisories are emphasized;
- A control region based on existing scientific information (from the states and EPA) about which types of sources in which geographic areas are contributing to the violations of NAAQS (which in most cases, but not always, will encompass the area of violation);
- A stationary source program for the control region that involves:
    - state of the art controls for entirely new significant sources and significant modifications at existing sources;

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    - reasonable retrofit controls (and continuation of existing requirements) for significant existing sources; and,
    - reasonable retrofit controls for small sources once their actual emissions exceed a significance threshold;
- An emissions offset requirement that targets the emissions reductions needed to offset growth (with a default to the stationary source offset program);
- Local mobile sources programs in the control region to complement the basic federal programs as the state/tribe deems appropriate as part of its SIP/TIP (programs currently required by the Act would remain); and,
- Mechanisms to assure multi-state control programs are implemented when the pollution problems are regional (interstate).

Under this proposal, EPA and regional and state modeling centers would work together to understand meteorology and transport of all NAAQS pollutants, and once an air quality violation was found, they would work to establish preliminary control regions. These preliminary control regions could be refined into more scientifically defined regions through an exercise conducted in a state, multi-state, and tribal collaboration that could be moderated by multi-state organizations with the assistance of EPA. Once such geographic regions are finalized, regional control strategies (through Air Quality Management Plans) could be developed and incorporated in individual enforceable SIPs/TIPs. The value of using SIP calls by EPA under the CAA section 110 at the time of designation was also discussed. The SIP calls would provide the needed forcing function for each state identified in the preliminary analysis to develop enforceable plans that contain all appropriate measures needed for attainment in the affected areas of violation, both in state and out of state. The appropriateness of area of violation and control region boundaries should be periodically reviewed with a technical analysis to ensure appropriate coverage and progress toward attainment.

Reactions to Boundaries Proposal

The Subcommittee focused its discussion on the specifics of mandated levels of controls and the details of how to apply the control region boundaries. Some believed that the control regions should be very large to be highly inclusive of all contributing sources, while others wanted to limit their size to minimize impacts on more remote businesses. One member was concerned about the ability of states to be able to transcend political issues and geo-political consideration, and base boundaries solely on scientific evidence. There was concern that, as a result, boundaries would be smaller, not larger. After considerable discussion, the AQM Subcommittee asked the work group to provide further clarifications on levels of specified controls and their applicability. One member requested that the work group develop a boundary proposal based on existing political boundaries.

After considerable deliberations, the boundaries work group developed a two-option recommendation. The first option built upon and clarified the previously proposed airshed-control region proposal, which would be multi-state, as appropriate. The second option presented a “no-boundary” approach that allows states/tribes to remedy their own

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problems without defining boundaries. It would allow states and tribes to use appropriate flexibility in pollution control requirements to meet attainment while being clearly required to comply with CAA transport provisions. Under this two-option proposal, states/tribes capable of remedying their own attainment problems would be granted greater flexibility in control levels and those controls would be specified without needing to formally define a control region, while states/tribes dealing with regionalized air pollution would be required to work together to develop an acceptable area to control assuming a certain base-level of mandated controls and supplemented by other, more flexible control measures. Both types of nonattainment areas would need to demonstrate that their plan could meet attainment as expeditiously as possible, as required under the CAA. Some members believed that multiple states/tribes needed a formal mechanism to require them to work together upfront in some areas of the country where interstate transport is a factor. Some Subcommittee members also believed that some prescribed control measures are needed to supplement more flexible measures to meet attainment. Others supported a full no boundary approach for all states/tribes where they would be free to use approaches they deemed appropriate and necessary to fix their own problems. Some members were optimistic that revising the boundary setting process would be sufficient to address interstate transport so that all states could attain the NAAQS. Others thought that another mechanism, not yet deliberated or developed, would be needed to address interstate transport.

Following much discussion, the Subcommittee agreed that the boundaries issues could not be resolved within the AQM Subcommittee. For this reason, the Subcommittee agreed to describe the proposed boundaries approaches in this report and provide a summary of views made by Subcommittee participants in hopes that it be useful to any future forum on the boundaries topic.

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Unresolved Recommendation 2: Over a period of time, all sources of air pollution should be required to demonstrate that they are achieving reasonable performance levels (RPLs) to control emissions. The form and substance of this concept should be developed with consideration of applicable emission control regulations, technical feasibility, and costs as well as all fuel, operational, and emission control options.

Background

The Subcommittee considered a concept called "reasonable performance levels" (RPL). It is based on the idea of treating airsheds as a finite and essential resource, and sources are not entitled to pollute that no source would be left uncontrolled. The RPL approach would require all categories of air pollution to take steps to limit their emissions. RPLs would be established and periodically updated for all air pollution sources and all pollutants, beginning with the sources and pollutants that pose the greatest risk to public health and ecosystems. New and expanding sources not otherwise subject to emission control mandates would be required to demonstrate that reasonable performance levels have been achieved at start-up. The RPL approach would provide a foundation for additional controls that might be needed to address existing or potential area-specific problems. For example, due to transport issues from upwind sources implementing RPLs, an area may still violate a NAAQS. Under these circumstances, attainment SIPs with specific deadlines may still be needed to protect public health. An RPL program would likely require amendments to the CAA.

Discussion

Reasonable performance levels could address many of the challenges defined in the NRC report, such as taking an integrated multi-pollutant approach and utilizing performance-based control strategies for under-regulated sources. Criticisms of the recommendation focused on:

- How to define "reasonable control." The discussion centered on two aspects, i.e. would reasonable controls be decided on a case-by-case basis, and what nature and level of cost-effectiveness criteria would apply?
- Whether a regulatory review and control action would be imposed on all sources (without regard to location, age, size or existing regulatory status) or whether the review should be imposed on a subset with the greatest potential for cost-effective and significant emissions reductions. The concern was for the trade 6off between the administrative and control cost and the air quality benefit.
- Whether this would be a one-time review to address "grandfathered" uncontrolled sources or whether this would be a measure imposed at certain time intervals.

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A few alternative approaches were offered to improve the recommendation, such as applying it only to sources that emit 100 tons per year but that have never undergone a Prevention of Significant Deterioration (PSD) permit review. Some Subcommittee members also felt that the recommendation did not do enough to control emissions from under-regulated sources. Based on the varying viewpoints, the Subcommittee decided that substantial consensus on this issue was not possible.

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Unresolved Recommendation 3: "Continuous improvement" should be achieved via a combination of mechanisms to achieve continuous emission improvements nationwide. Mechanisms discussed included voluntary programs at the local level, continuing a national program of command and control emission standards, and several options for strengthening and enhancing various market-based programs to encourage continuous improvements.

Background

The AQM Subcommittee considered mechanisms to achieve continuous emission reductions from all stationary, mobile and area sources that would lead to continuous air quality improvement in all geographic regions of the nation with the improvements going beyond attainment of the NAAQS. Continuous improvement could occur via a flexible system that would accommodate changes in science and air quality planning needs. A work group was convened by the Subcommittee to inform it on the subject of continuous improvement. The work group realized that to be successful, a combination of continuous improvement approaches would be needed to address all appropriate source sectors and provide options to reduce emissions at reasonable cost.

Several options were considered such that, when used in combination, they could provide a new approach to managing air quality. Different geographic or political areas would utilize different combinations of options to custom design an air quality approach that would work best for that area. Two forms of continuous improvement were considered:

The first concept focused on maintaining existing air quality by offsetting emissions increases associated with growth in demand for goods and services. The goal was to improve operational efficiencies to generate more electricity, produce more products, provide more services, and accommodate more vehicles on the road without increasing air pollution emissions. This concept currently exists in components of many SIPs (e.g., reasonable further progress requirements, requirements to maintain the NAAQS), conformity regulations, cap and trade programs (e.g., where industries must accommodate increased production under a fixed cap), and in prescribed offset ratio requirements for certain nonattainment areas. While market-based programs have helped address improvements for large point sources, improvements in certain mobile and area source sectors have been more difficult to achieve.

The second concept focused on health and environmental improvements that would be achieved by gradually reduce ambient air pollution levels over time to lower levels than currently foreseen under the current NAAQS. The concept was intended to realize public health and environmental benefits through a program that would result in continuous improvement in emission rates and ambient air pollution concentrations.

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Recommendations and Options

The continuous improvement work group recommended that a combination of options be considered and implemented to achieve continuous emission improvements across multiple source sectors (i.e., mobile, stationary, and area). Recommendations included voluntary and incentive-based programs at the national, state, tribal, and local levels. This included options for strengthening and enhancing various market-based programs to encourage continuous improvements. The work group agreed that a one-size-fits-all requirement could not be justified and that multiple programs should be pursued simultaneously. It agreed that there should be an emphasis placed on demand-side or end-use efficiencies, as well as on mobile and less regulated emission sources.

Based on historical successes with market-based systems and the general preference of businesses and individuals to control their own decisions, the work group supported, where appropriate, the use of market-based incentive programs as a component of continuous improvement. Examples of such programs include:

- Public emissions reporting/product use emission information (all source types) similar to the Toxic Release Inventory (TRI) program to apply public pressure for "cleaner" products;
- Emission fees (all source types) with revenues used to pay for other environmental initiatives; and,
- Emission fee system based on an industry average performance.

The work group also acknowledged that there might be advantages to greater use of cap and trade approaches to continuous improvement where SIP/TIP strategies require specific source sector emissions reductions. These might include:

- Traditional emissions cap and trade, especially for high growth industries; and,
- Emissions cap and trade with a continuously declining cap or allowance retirement.

The work group first reviewed a wide range of continuous improvement options ranging from doing nothing to mandated controls to achieve ongoing improvements. Many options were eliminated quickly because they were unattractive to industry in that the concept of continually improving emission controls introduces uncertainty that could hamper long-term investments, and that could possibly cause them to be outdated before being paid off.

Reactions to the Continuous Improvement Proposal

There was a wide range of reaction within the AQM Subcommittee to the continuous improvement concept that ultimately led to the conclusion that substantial consensus would not be possible. Some Subcommittee members supported the concept. Other members stated that the proposed options lacked certainty, and would constrain the business activities at affected facilities. Some believed cost-effectiveness criteria would

be needed to limit such a program and those criteria would be redundant with the emissions reductions achieved through the NAAQS and national emission standards. Some members advocated a voluntary program and suggested that a voluntary emission reporting program similar to mandatory Toxics Release Inventory (TRI) reporting would produce the needed improvements. Others stated that mandatory programs would be necessary to drive needed improvements and push technology development.

General concerns expressed:

- Proposal was targeted at stationary sources and did not focus enough on emissions from other sources;
- Proposal could be costly and the role of cost effectiveness was not defined;
- Programs incorporating a fixed glide slope forces technology development that may be beyond source's ability to produce and/or may be too expensive;
- Voluntary programs will not work without a mandatory backstop and a reasonable amount of time to produce results; and,
- Continuous improvements set unreasonable expectations, left open the question of "when is enough continuous improvement enough?" and creates too much uncertainty for the business and industry constituents.

Again, following much debate on this issue, the AQM Subcommittee decided to include continuous improvement as an area worthy of future discussions. The intent here is to document the discussions and viewpoints to help inform those future discussions.

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X. Conclusions

The Clean Air Act continues to deliver significant benefits both in terms of protection of public health and the environment. As described in the report for the first phase of this AQM review (January 200 Phase I Report) and in the 2004 NRC report that spawned this process, the nation has made enormous strides since 1970 at improving air quality during a period of economic prosperity and population growth.

The future of air quality management offers tremendous opportunities to continue the Clean Air Act's record of progress toward protecting public health and the environment. With these opportunities come unique challenges. New scientific information indicates an ongoing need to address significant threats to public health and the environment from air pollution. Climate change and improved understanding of the risk posed by hazardous air pollutants will also challenge air quality management planners by highlighting the need for new approaches and strategies.

The AQM Subcommittee strongly believes that moving from the pollutant by pollutant approach of the current air quality management system to the comprehensive multipollutant approach outlined in this report will substantially help meet the air quality challenges of the 21st century. This more holistic approach calls for collective efforts of governmental organizations, including states, tribes, local communities, EPA, DOE, DOT, and others to develop and implement this comprehensive planning approach. The AQM Subcommittee recommends that the concept for a comprehensive air quality management system be implemented in its entirety. The Subcommittee also believes that the 12 recommendations contained in this report stand on their own merits and can, therefore, be implemented separately to improve the current approach to air quality management in this country. Continuing to protect and preserve clean air is a duty and responsibility that this Subcommittee has taken seriously and these recommendations have been considered with the goals of protecting public health and the environment.

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XI. Appendices

Additional documentation of the work completed by the Air Quality Management Subcommittee can be found at the Clean Air Act Advisory website at http://www.epa.gov/air/caaac.html. The additional documentation includes meeting summaries, draft ideas considered by the work groups not adopted by the Subcommittee, and presentations from the Subcommittee meetings.

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Appendix A: Membership and Organizational Structure of the Air Quality Management Subcommittee

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AQM Subcommittee Chairs

Gregory A. Green
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Patrick Cummins
Western Governors' Association

AQM Subcommittee Members

Michael Bradley (CAAAC)
M.J. Bradley Associates Inc.

Don Clay (CAAAC)
Koch Industries, Inc.

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Janice Nolen (CAAAC)
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Margie Perkins
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US Dept of Transportation

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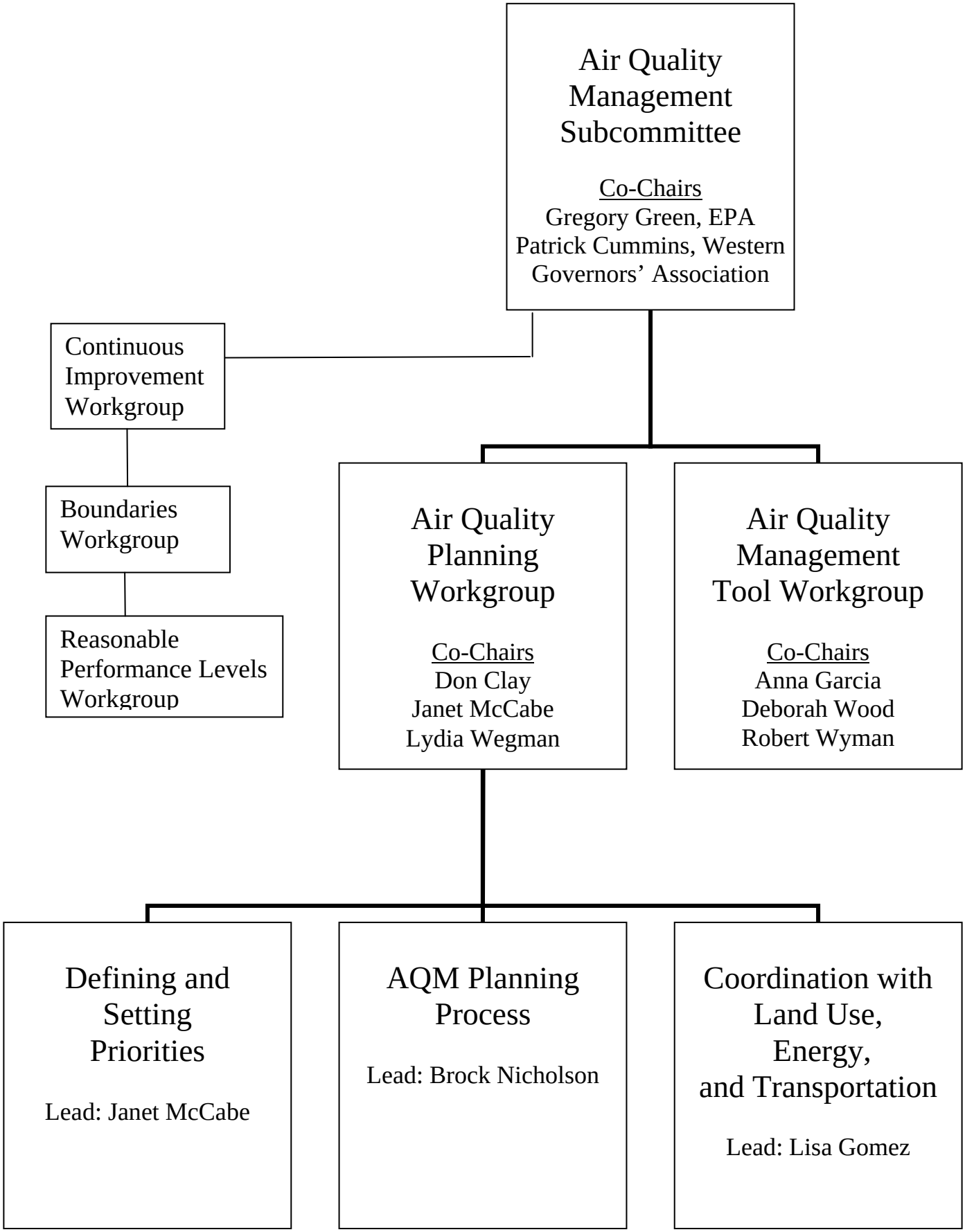

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Appendix B: Matrix of Tools to Improve Air Quality

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Matrix of Potential Tools to Address Air Quality Challenges and Planning Needs

Sources or Sectors (not in priority order)	Recommended Tool Type	Specific Tool Options	Pollutant Targeted
(1) Fleet turnover & diesel retrofits	A. Financial tools and financial demand-side strategies	A. Tax strategies, loans, equity strategies, and targeted rebates are financing strategies that may encourage fleet turnover (e.g., TERP, DERA, Moyer).	PM, NOx, VOCs, CO
	B. Emissions Trading	B. Emissions trading may offer an appropriate private sector source of financing to accelerate turnover. Approaches that might work best for fleet turnover purposes include inter-sector trading strategies as well as fleet averaging programs.	
	C. Information programs, reward programs and non-financial demand-side strategies	C. Clearinghouses can disseminate information on technology and incentives to educate and promote the use of technologies that have a positive impact on air quality. Labeling can be used to inform the general public of the relative benefits of choices they are making and to promote the use of new and innovative technologies and resources. Performance benchmarking can be used to highlight the positive characteristics of new and innovative technologies through comparison of these technologies against standard market practices and/or the continued use of existing products. Surveys can be used to gauge the effectiveness of the programs and to inform federal, state, tribal and local entities of program results and market changes. Frequent flyer-type programs can be used to provide incentives for entities that make frequent purchases by offering discounts, rebates, credits or other offerings to promote repeated use of the product(s) being promoted. Web tools can be used to move product information. This information can be targeted to a specific audience or for general consumption to inform, promote, educate and influence decisions.	
	D. Planning tools	D. Modeling to estimate the emission reduction benefits of fleet turnover and retrofit is recommended. An inventory of the number of diesel engines that could benefit from retrofit is recommended.	
	E. Retrofit strategies	E. Retrofit strategies include converting existing engines to an alternative fuel, engine recalibration, adding additional emission controls, replacement with a new, cleaner engine, anti-idling, and other changes in operating strategies that reduce emissions.	
	F. Enforcement enhancements	F. Use Supplemental Environmental Projects (SEP) funding to encourage fleet turnover and retrofits. Use remote sensing to measure reductions.	
	I. Emission limits	I. Require mandatory diesel retrofit. Require scrapage programs. Use green contract conditions in government contracts. Use state and federal leadership programs.	

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Sources or Sectors (not in priority order)	Recommended Tool Type	Specific Tool Options	Pollutant Targeted
(2) Land use & transportation planning (including road exposures)	A. Financial tools and financial demand-side strategies	A. Financial demand-side strategies like differential pricing and tax strategies can be used as an incentive.	PM, NOx, VOCs, CO
	C. Information programs, reward programs and non-financial demand-side strategies	C. Clearinghouses can disseminate information on technology and incentives to educate and promote the use of technologies that have a positive impact on air quality. Labeling can be used to inform the general public of the choices they are making and to promote the use of new and innovative technologies and resources. Performance benchmarking can be used to highlight the positive characteristics of new and innovative technologies through comparison of these technologies against standard market practices and/or the continued use of existing products. Community "Green Action" lists can be utilized to provide access to tools and information that will help promote the use of more sustainable "Green Community" concepts, including on line tutorials in the use of modeling software, model codes and ordinances, sample plans, community involvement practices and funding opportunities. Surveys can be used to gauge effectiveness of the programs and to inform federal, state, tribal, and local entities of program results and market changes. Frequent flyer-type programs can be used to provide incentives for entities that make frequent purchases by offering discounts, rebates, credits or other offerings to promote repeated use of the product(s) being promoted. Web tools can be used to move product information. This information can be targeted to a specific audience or for general consumption to inform, promote, educate, and influence decisions.	
	D. Planning tools	D. Provide modeling software for scenario envisioning and to quantify emission reductions. Modeling to project VMT for transportation planning is recommended.	
	H. Targeted strategies	H. Non-measured VOC sources can be detected by thermal IR camera (e.g., floating roof storage tanks, VOC loading racks, pipeline operations, marine vessels, and marine loading operations).	

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(3) Ships and ports, airports, and rail systems	A. Financial tools and financial demand-side strategies	A. Tax strategies, loans, equity strategies, and targeted rebates are strategies that provide financial incentives to reduce emissions. FAA grants through the VALE program are available.	PM, NOx, VOCs, SO2, air toxics
	B. Emission trading	B. Emissions trading can work together with appropriate emissions performance standards to provide private sector financing and to accelerate engine turnover. Depending upon the overall compliance program, the emissions trading element could consist of one or some combination of a performance averaging program (e.g., by a terminal operator or among fleets), inter-sector trading, banking, and a cap and trade program.	
	C. Information programs, reward programs and non-financial demand-side strategies	C. Clearinghouses can disseminate information on technology and incentives to educate and promote the use of technologies that have a positive impact on air quality. Performance benchmarking can be used to highlight the positive characteristics of new and innovative technologies through comparison of these technologies against standard market practices and/or the continued use of existing products. Web tools can be used to move product information. This information can be targeted to a specific audience or for general consumption to inform, promote, educate, and influence decisions.	
	D. Planning tools	D. Modeling to estimate emission reduction benefits of various strategies is recommended.	
	E. Retrofit strategies	E. Retrofit strategies include converting existing engines to an alternative fuel, engine recalibration, adding additional emission controls, replacement with a new and cleaner engine, and anti-idling and other changes in operating strategies that reduce emissions.	
	F. Enforcement enhancements	F. Use SEP funding to accelerate emission reductions through electrification.	
	H. Targeted strategies	H. Non-measured VOC sources can be detected by thermal IR camera (e.g., floating roof storage tanks, VOC loading racks, pipeline operations, marine vessels and marine loading operations).	
	I. Emission limits	I. Use green contract conditions when facilities are enlarged or rebuilt, or when leases are up. Emission limits would be effective for any source with discrete, measurable points of emissions.	
	J. Work practice standards	J. Imposing work practice restrictions on intermittent sources can be effective to address high ozone levels (like taxiing on one engine).	

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(4) Rural Sources (a) Agriculture (including potential effect on PM formation and acid deposition)	A. Financial tools and financial demand-side strategies	A. Predicate approval of loans on agreement to implement best management practices (BMPs).	PM, VOCs, ammonia
	C. Information programs, reward programs and non-financial demand-side strategies	C. Clearinghouses can disseminate information on technology and incentives to educate and promote the use of technologies that have a positive impact on air quality. Performance benchmarking can be used to highlight the positive characteristics of new and innovative technologies through comparison of these technologies against standard market practices and/or the continued use of existing products. Web tools can be used to move product information. This information can be targeted to a specific audience or for general consumption to inform, promote, educate, and influence decisions.	
	D. Planning tools	D. Permit streamlining replaces redundant and unnecessary requirements in favor of practically enforceable limits that can reduce administrative costs, reduce timing, and improve enforcement. Modeling to estimate emission reduction benefits of various strategies is recommended.	
	E. Retrofit strategies	E. Retrofit strategies include converting existing engines to an alternative fuel, engine recalibration, adding additional emission controls, replacement with a new and cleaner engine, anti-idling, and other changes in operating strategies that reduce emissions.	
	J. Work practice standards	J. Work practice standards (referred to as BMPs) are currently in use and effectively controlling emissions from many agricultural sources.	
(b) Dust	A. Financial tools and financial demand-side strategies	A. Predicate approval of loans on green clauses in development contracts.	PM
	C. Information programs, reward programs and non-financial demand-side strategies	C. Clearinghouses can disseminate information on technology and incentives to educate and promote the use of technologies that have a positive impact on air quality. Web tools can be used to move product information. This information can be targeted to a specific audience or for general consumption to inform, promote, educate and Influence decisions.	
	J. Work practice standards	J. Work practice standards are effective tools for dealing with “area” type sources such as dust.	

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(5) Small Emitters (e.g., dry cleaners, bakeries, restaurants)	C. Information programs, reward programs, and non-financial demand-side strategies	C. Clearinghouses can disseminate information on technology and incentives to educate and promote the use of technologies that have a positive impact on air quality. Labeling can be used to inform the general public of the choices they are making and to promote the use of new and innovative technologies and resources. Performance benchmarking can be used to highlight the positive characteristics of new and innovative technologies through comparison of these technologies against standard market practices and/or the continued use of existing products. Community "Green Action" lists can be utilized to provide access to tools and information that will help promote the use of more sustainable "Green Community" concepts. Surveys can be used to gauge effectiveness of the programs and to inform federal, state, tribal and local entities of program results and market changes. Frequent flyer-type programs can be used to provide incentives for entities that make frequent purchases by offering discounts, rebates, credits or other offerings to promote repeated use of the product(s) being promoted. Web tools can be used to move product information. This information can be targeted to a specific audience or for general consumption to inform, promote, educate, and influence decisions.	PM, NOx, VOCs, air toxics
	D. Planning tools	D. Permit streamlining replaces redundant and unnecessary requirements in favor of practically enforceable limits that can reduce administrative costs, reduce timing, and improve enforcement. Assessing inventory and population density is recommended.	
	H. Targeted strategies	H. Non-measured VOC sources can be detected by thermal IR camera (e.g., floating roof storage tanks, VOC loading racks, pipeline operations, marine vessels, and marine loading operations).	
	I. Emission limits	I. Emission limits would be effective for any source with discrete, measurable points of emissions. With very small sources, it may not be cost effective to conduct routine or continuous source sampling.	
	J. Work practice standards	J. Work practice standards would be an effective alternative to emission limits for most of these sources.	

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(6) Consumer Products (e.g., VOC-containing consumer products)	A. Financial tools and financial demand-side strategies	A. Financial strategies such as targeted rebates have proven successful.	PM, NOx, VOCs, SO2, air toxics
	B. Emissions trading	B. One or more emissions trading tools may be effective in this area, including averaging and banking.	
	C. Information programs, reward programs, and non-financial demand-side strategies	C. Clearinghouses can disseminate information on technology and incentives to educate and promote the use of technologies that have a positive impact on air quality. Labeling can be used to inform the general public of the choices they are making and to promote the use of new and innovative technologies and resources. Performance benchmarking can be used to highlight the positive characteristics of new and innovative technologies through comparison of these technologies against standard market practices and/or the continued use of existing products. Community "Green Action" lists can be utilized to provide access to tools and information that will help promote the use of more sustainable "Green Community" concepts. Surveys can be used to gauge effectiveness of the programs and to inform federal, state, tribal and local entities of program results and market changes. Frequent flyer-type programs can be used to provide incentives for entities that make frequent purchases by offering discounts, rebates, credits, or other offerings to promote repeated use of the product(s) being promoted. Web tools can be used to move product information. This information can be targeted to a specific audience or for general consumption to inform, promote, educate, and influence decisions.	
	I. Emission limits	I. Emission limits would be effective for any source with discrete, measurable points of emissions. With certain types of sources, it will not be cost effective to conduct routine or continuous source sampling.	

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(7) Industrial, Commercial and Residential Boilers and Heaters, and Legacy Equipment and Sources	B. Emissions trading	B. Emissions trading tools such as plant-wide applicability limits may be effective.	PM, NOx, VOCs, SO2
	C. Information programs, reward programs, and non-financial demand-side strategies	C. Clearinghouses can disseminate information on technology and incentives to educate and promote the use of technologies that have a positive impact on air quality. Labeling can be used to inform the general public of the choices they are making and to promote the use of new and innovative technologies and resources. Performance benchmarking can be used to highlight the positive characteristics of new and innovative technologies through comparison of these technologies against standard market practices and/or the continued use of existing products. Surveys can be used to gauge effectiveness of the programs and to inform federal, state, tribal and local entities of program results and market changes. Web tools can be used to move product information. This information can be targeted to a specific audience or for general consumption to inform, promote, educate, and influence decisions.	
	D. Planning tools	D. Permit streamlining replaces redundant and unnecessary requirements in favor of practically enforceable limits that can reduce administrative costs, reduce timing, and improve enforcement. Modeling to estimate emission reduction benefits of various strategies is recommended. Inventory assessment is recommended.	
	I. Emission limits	I. Emission limits can be an effective tool to address these types of sources.	
	J. Work practice standards	J. Work practice standards might be an effective alternative to emission limits for some of these sources.	

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Needs, Tools, and Attributes

1. List of "Needs" or Problems:

A. Priority Emission Reduction Areas

(1) Vehicles and Engines:

(a) Issues related to vehicle and engine emissions:

i. Insufficient turnover of existing fleets
ii. Need to encourage higher market penetration of clean engines and fuels
iii. Need for greater implementation of retrofits

(b) Issues related to vehicle and engine use (i.e., vehicle miles traveled (VMT)):

i. lack of land use planning to reduce VMT
ii. lack of transportation planning to reduce VMT

(2) Special Under-Managed Problem Areas:

(a) ports and goods movement (including some related on-road engines, e.g., trucks)
(b) airports
(c) other federally preempted sources (e.g., railroads, ships, etc.)
(d) agricultural emissions (including both their potential effect on PM formation and on acid deposition; includes, e.g., ammonia, dust from tillage, land clearing burning)
(e) dust emissions

(3) Small Emitters (e.g., dry cleaners, bakeries, restaurants)

(4) Consumer Products (e.g., VOC-containing consumer products)

(5) Industrial Boilers and Other Under-Regulated Stationary Sources

B. Problems and Needs Related to Measurements (of Problem or Actions Taken) and Performance Tracking

(1) Baseline Air Quality Data

(a) Current Disincentives - Current program discourages data development and other efforts to update the technical underpinning of attainment

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SIPs. Currently, areas are penalized for discovering that their problem is worse than previously understood.

(b) Need for More Refined Data – we need more information regarding speciation of fine particulates if we are to identify the most appropriate sources to target for controls.

(c) Inventory Gaps – we have not yet adequately estimated emissions from many source categories, including:
- marine emissions
- locomotive emissions
- off-road diesel emissions

(d) Insufficient ambient air quality monitoring networks- lack of ambient data

(2) Hazardous Air Pollutants

(a) Limited or non-existent monitoring data.
(b) Need better risk assessment methodology that incorporates both scientific and traditional knowledge.
(c) Lack of understanding regarding levels of significance
(d) Lack of ambient thresholds.
(e) Need more understanding of potential impact of hazardous air pollutants on sensitive populations.

(3) Planning Challenges

(a) Co-benefit evaluations – we lack the tools or metrics to account properly for co-benefits of various strategies.
(b) Difficulty of evaluating local impacts of trading programs.

C. Problems or Needs Related to Authority or Jurisdiction

(1) Preemption – states and tribes are preempted from regulating many source Categories.

(2) Limitations – e.g., many states and tribes can't go beyond federal measures or can't regulate minor sources.

(3) International and Border Emissions.

(4) Authority and jurisdictional regulatory "patchwork" of state/local regulations versus national regulations.

D. Other SIP Challenges

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(1) SIP Credit – how should credit for non-traditional strategies be allocated, including:
- Mobile source strategies (e.g., diesel reduction programs).
- Voluntary/incentive programs.

E. Resources – many state, tribal and local agencies lack sufficient resources

F. Other Needs

(1) Lack of incentives to prevent air quality problems (e.g., in attainment areas)

(2) Conservation, both user and supplier side, including:
- Energy efficiency.
- User side behavior/choices.
- Purchasing/consumption.
- Mass transit.

2. List of Potential "Tools:"

A. Financial Tools and Financial Demand-Side Strategies

Tax strategies (e.g., deductions, credits, accelerated depreciation, etc.)
Loans
Equity strategies
Clean air investment funds
Emission fees
Fees in lieu of offsets
Targeted rebates
Differential pricing

B. Emissions Trading Tools

Cap and trade
Open market strategies
Bubbles (e.g., by category of equipment, facility, industry, port or airport)
Plant-wide applicability limits
Mobile to stationary trading
Interpollutant trading
Risk-based trading
Reactivity-based trading

C. Information Programs, Reward Programs and Non-Financial Demand-Side Strategies

Clearinghouses for Technology, Regulations, Incentives

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Labeling (e.g., star programs, nutrition label model)
Performance Benchmarking
Community "green" action lists
Surveys (e.g., impacts of personal choices)
Frequent flyer-type programs (e.g., points for personal clean air actions)
Web tools (e.g., info availability, personal clean air web account)

D. Planning Tools

Permit streamlining
Model local ordinances and guidance
Quantification models to project impacts of land use choices
Federal agency ombudsman for assisting local governments to identify available funds, good land use models, etc.
Memoranda of understanding
Remote sensing
Monitoring tools for dealing with inventory uncertainties

E. Retrofit Strategies (other than financial incentives, which are listed separately above)

Useful life limits on equipment
Retrofit requirements (Super RACT)
Minimum technology standards based on pollutant focus
Fuel type and usage
Operational protocol
Compliance flexibility
Direct regulations requiring retrofits

F. Enforcement Enhancements

Incentives for self certification
Source specific emission limit agreements
Privatization Strategies

G. Targeted Strategies

Sensitive zones
Sensitive receptors
Time of day restrictions
Seasonal restrictions

H. Emission Limits

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3. Attributes – for evaluating and comparing tools:

DIRECT:

A. Environmental benefits and dis-benefits (e.g., emission reductions, air quality benefits, public health benefits, cultural benefits, ecological benefits, aesthetic benefits), including a statement of which "need" is being addressed.

B. Economic impacts (e.g., cost and cost effectiveness).

C. Time (e.g., lead time, duration in years, continuity of benefit during day and week).

D. Ease of monitoring and accountability.

AUTHORITY, JURISDICTION AND MECHANISMS:

E. Jurisdictional attributes (e.g., do states and tribes have necessary authority, are there limits, who would implement – business, local, state, tribe, federal, international).

F. Would the strategy require CAA amendment?

G. Replicability.

INDIRECT:

H. Impact on personal choice and quality of life.

I. Benefits and dis-benefits of energy efficiency and greenhouse gas reductions.

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Appendix C: Proposed Framework for an Air Quality Management Plan

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Proposed Framework for an Air Quality Management Plan

The following framework for an AQMP is based, in part, on the South Coast Air Quality Management District (AQMD) 2003 air quality management plan (http://www.aqmd.gov/aqmp/AQMD03AQMP.htm).

Elements of an AQMP and a Proposed Framework

1) Executive Summary
   a) Presents philosophy and direction
   b) Summarizes key components and discusses how they will be implemented
2) Overview
   a) Explains concept of AQMP and provides context for current plan versus the past
   b) Discusses how the plan developed, who is involved in the process
   c) Discusses benefits and impacts of an AQMP
3) Air Quality Requirements and Goals
   a) Purpose – *why are we doing an AQMP?*
   b) Challenges
   c) Current requirements and goals addressed by the AQMP (both federal and state, tribal, or local)
4) Air Quality, Health, and Ecosystem Effects
   a) Explains current air quality issues in the area covered by the plan – *what are the problems in the area?*
   b) Includes both criteria and non-criteria pollutants
   c) Discusses health effects and other issues for all pollutants covered by the plan
5) Air Emissions Assessment
   a) Provides a picture of where the area is and may be in terms of its current and future emissions inventories from all sources – *what does it look like now and in the future*?
   b) Discusses how emissions will be monitored, what modeling has been done, and what/how information is being provided to stakeholders and the public
6) Strategy for Managing Emissions from New and Existing Sources
   a) Outlines the various control strategies and other measures the planning agency is undertaking in the stationary, area and mobile sectors – *what are we doing about it*?
   b) Covers all pollutants addressed by the AQMP
7) Future Air Quality
   a) Provides the future air quality picture based on implementation of the strategies and measures in the AQMP – *where do these actions get us*?
8) Implementation
   a) Explains how the organizations involved in the AQMP will execute the programs and strategies outlined in the AQMP – *how would we get this done?*
9) Looking Beyond Current Requirements
   a) Provides a forward look at air quality problems and requirements on the horizon and how the area is approaching those issues
10) Glossary and Appendices
   a) Provides detailed technical support documents and information

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Appendix D: Letter Transmitting Final Report to EPA

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Honorable Stephen L. Johnson
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Administrator Johnson:

On behalf of the Clean Air Act Advisory Committee (CAAAC), we are pleased to present to you a report and recommendations from the Committee for your consideration. The CAAAC is a senior-level policy committee consisting of managers and experts representing State and local government, environmental and public interest groups, academic institutions, unions, trade associations, utilities, industry, and others. The Committee provides advice and counsel to EPA on a variety of important air quality policy issues.

In 2004, the National Research Council (NRC) of the National Academies released a report entitled, "Air Quality Management in the United States." In this report, the NRC outlined the many substantial achievements of the U.S. Air Quality Management (AQM) system over the past 30 years. The NRC also identified areas where additional changes in the AQM system would provide further benefits to human health and the environment. The NRC advanced recommendations for change in the AQM system on a number of levels. Some of the NRC's recommendations involve short-term changes of limited scope and immediate impact. Other NRC recommendations involve sweeping changes to the Nation's approach to AQM over the mid- to long-term.

For the past 2 years, a CAAAC Subcommittee has examined the latter category of the NRC recommendations and has developed this report detailing options for long-term, systemic ways to improve the AQM system in this country. The Subcommittee's findings support a shift from the current pollutant-by-pollutant AQM system to a fully integrated multipollutant, comprehensive AQM system that functions in coordination with energy, land use, and transportation plans. The AQM Subcommittee included representatives from State and local organizations, Tribes, regional organizations, environmental and public health organizations, industry, and the EPA.

On behalf of the Committee, we thank you for the opportunity to provide advice on developing air quality management strategies for the future.

Sincerely,

Gregory A. Green, Co-Chair
Air Quality Management Subcommittee

Patrick Cummins, Co-Chair
Air Quality Management Subcommittee

Robert J. Meyers, Chair
Clean Air Act Advisory Committee

Enclosure

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Appendix E: Commentary from Stakeholders

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NESCAUM
www.nescaum.org

The Clean Air Association of the Northeast States
101 Merrimac Street, 10th Floor Boston, MA 02114
Phone 617-259-2000 Fax 617-742-9162
Arthur N. Marin, Executive Director

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June 8, 2007

Patrick Cummins and Gregory Green, Co-Chairs
Air Quality Management Subcommittee of the Clean Air Act Advisory Committee
U.S. Environmental Protection Agency
Mail Code C304-01
Research Triangle Park, NC 27711

Dear Mr. Cummins and Mr. Green:

As participants in the Clean Air Act Advisory Committee's Air Quality Management (AQM) Subcommittee's deliberations over the past few years and on behalf of the NESCAUM states, we submit these comments to you in response to the May 2, 2007 draft report of the AQM Subcommittee, entitled *Recommendations to the Clean Air Act Committee; Air Quality Management Subcommittee Recommendations, Phase II, June 2007*. The NESCAUM states are Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont.

With regard to the statement in the report that the recommendations in the report are "the AQM Subcommittee's vision of a comprehensive AQM system that can assist in meeting future air quality challenges in this country" (see page 15), we can only agree in part. Without opportunity for in-depth discussion of climate change, it proved impossible to develop what constitutes, in our minds, a truly comprehensive AQM system. As such, the recommendations represent some good initial steps toward a more comprehensive paradigm of integrated multi-pollutant planning and management that is yet to be achieved.

Contextualizing the Phase II Recommendations - Process Observations

Phase II of the AQM deliberations proved to be more challenging than Phase I for several reasons, including process dynamics. We feel it important to describe some of these process dynamics in order to place the report in context for readers who may wish to pursue future discussions on new approaches to air quality management with this report in hand.

First, the group was charged to look broadly at longer term, possibly more large-scale changes to the air quality management system. While brainstorming on new ideas sounds like a stimulating and uncomplicated task, the policy context in which the Subcommittee was operating compelled many participants to consider the potential and substantial regulatory impacts of such innovative ideas, particularly with respect to impacts on their constituencies. As mentioned in the AQM Subcommittee report, coming to consensus on more groundbreaking proposals such as the ones listed in the *Unresolved Areas of Discussion* section (i.e., airshed-based boundaries, reasonable performance levels, and continuous improvements) would have required deliberating on and conceding to regulatory and policy tradeoffs. Many Subcommittee members found that this forum did not allow -- and may not have been the place -- for such specific considerations. As a

result, there was discomfort among participants, particularly in engaging in conversations on how an innovative concept might be envisioned or implemented.

Second, in the context of brainstorming new approaches, we observed a concern on the part of many Subcommittee members that formally endorsing a new concept could be erroneously interpreted to imply that the corresponding concept currently in place was no longer supported or deemed adequate. This further affected the Subcommittee's ability to explore new approaches as a group with rigor.

Third, early on in the deliberations, it became clear that the Subcommittee could not reach consensus as to whether or not to discuss climate change as part of the AQM process. Participants on both sides of the issue felt strongly about their positions. Rather than expending time and resources further debating the issue, a compromise position was reached that climate change would only be discussed within a very narrowly defined context, i.e., as presented in the three action items contained in Recommendation #4: *Take climate change into account in air quality management strategies.* We believe that such a narrow bounding of the topic of climate change significantly disadvantaged the deliberations. Our specific thoughts on this are elucidated below.

Fourth, while Subcommittee and workgroup deliberations were at times engaging and truly exploratory, the open-ended nature of the Subcommittee's charge, coupled with the process concerns, ultimately resulted in constrained dialogue. We suggest that, for future CAAAC subcommittee deliberations, specified goals or endpoints accompany the charge so that ideas and draft recommendations can be more easily compared to and assessed with respect to those goals. Such an approach could greatly enhance that group's overall deliberative process.

Multi-Pollutant Planning without Climate Change - Scratching the Surface

From the NESCAUM states' perspective, the Subcommittee's inability to discuss climate change in the context of criteria pollutant planning and management was disappointing. During the time period coinciding with the AQM Subcommittee's deliberations, the NESCAUM states were actively working together and with states across the nation on several key climate initiatives, including the Regional Greenhouse Gas Initiative (RGGI) and The Climate Registry, as well as developing State Implementation Plans for ozone, particulate matter, and regional haze. The NESCAUM states have started to confront some critical policy challenges concerning climate, criteria pollutant, and air toxics integration, and would have welcomed an opportunity to discuss them with a larger constituency. Some of the key issues specifically involve climate-criteria pollutant tradeoffs, and include: (1) science and analytical assessment needs for assessing multi-pollutant interactions and tradeoffs; (2) policy challenges and needs for addressing multi-pollutant interactions and tradeoffs; (3) institutional barriers that need to be addressed in order to move to more integrated multi-pollutant planning and management; (4) local, state, tribal, and federal roles in integrating climate change into multi-pollutant planning; and (5) building

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capacity at the state, tribal, and federal levels to successfully implement multi-pollutant planning and management.

Moving Forward

We are pleased that the U.S. Environmental Protection Agency (EPA) has initiated steps to launch a pilot program, in response to the Subcommittee's recommendation, for developing statewide Air Quality Management Plans over the next few years. We agree that federally sponsored pilots aimed at building capacity at the state level to conduct multi-pollutant analyses, as well as identifying policy, regulatory, and institutional challenges and ways to address them during the integration process, will prove beneficial. We recommend that a series of pilots be launched and subsequently documented, evaluated, and made publicly available so that we can learn from those experiences. We hope to work with EPA in the near future on such efforts.

We greatly appreciated the work of the EPA staff in convening the AQM Subcommittee meetings and writing and producing the final report. We thank you for your efforts in shepherding this process to its conclusion. If you have any questions on our comments, do not hesitate to contact us.

Sincerely,

David Shaw, Director
Division of Air Resources
NY DEC

Jeffrey Underhill, Chief Scientist
Air Resources Division
NH DES

Michael Sheehan, Chief
Mobile Source Planning Section
Division of Air Resources, NY DEC

Leah Weiss, Senior Policy Advisor
NESCAUM

cc: NESCAUM Directors
Arthur Marin, NESCAUM

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