Discussion Paper
Air Resources Board SIP Symposium
Concepts for State and Federal Measures

Introduction

New plans for federal 8-hour ozone and PM2.5 standards are under development in a joint effort by local air districts and the Air Resources Board (ARB.) The South Coast and San Joaquin Valley Air Basins are designated as nonattainment for both standards. Other areas, including the Sacramento region, Ventura, San Diego, and a number of air districts downwind of urban areas, are nonattainment for the ozone standard. The plans (State Implementation Plans or SIPs) for ozone are due to the U.S. Environmental Protection Agency (U.S. EPA) by June 15, 2007. PM2.5 SIPs are due April 15, 2008.

The South Coast Air Quality Management District is developing a plan that addresses PM2.5 and ozone concurrently. This is an ideal planning approach since oxides of nitrogen (NOx) are a key common precursor for both. In terms of timing, the attainment deadline for PM2.5 comes first, in 2015. More time is allowed for ozone, up to 2024. The San Joaquin Valley Air Pollution Control District is also developing draft SIPs for ozone and PM2.5. More time may be needed to complete the Valley's PM2.5 SIP, so the ozone SIP may be adopted first with a reconciliation of the ozone and PM2.5 strategies later if necessary. Ozone SIPs for California's other nonattainment areas are also under development.

ARB staff is preparing a statewide strategy for mobile sources, fuels, and consumer products that is designed to address the needs of each nonattainment area in California. The attached emission inventory summaries for South Coast and San Joaquin Valley show the relative emissions contribution of these sources.

ARB's October 12, 2006 Symposium is the first step in the public process for statewide planning. As part of this effort, the control strategy will incorporate measures in the Goods Movement Emission Reduction Plan recently approved by ARB, measures under development as part of ARB's Diesel Risk Reduction Plan, and additional new control concepts. The scope of the final statewide strategy will be driven by the needs of the regions with the most challenging air quality problems – the South Coast and the San Joaquin Valley. Given the severity of their ozone problems, both these regions will likely be classified as "extreme" for ozone with 2024 attainment deadlines. The PM2.5 attainment deadline of 2015 for these areas already includes allowed extensions.

Substantial new emission reductions, beyond those provided by existing programs, are needed by 2015 to attain the annual PM2.5 standard. These

reductions are also essential for meeting the progress requirements for the ozone standard. ARB's initial analysis for South Coast indicates that new regional emission reductions of at least 25 percent NOx, 10 percent ROG, and 50 percent SOx will be needed by 2015. This is beyond the additional reductions that will accrue from existing programs. Further reductions may be needed to address parts of the air basin with the most persistent PM2.5 problems. The preliminary South Coast air quality modeling suggests that even larger reductions may be necessary. ARB will be working with South Coast District staff to further refine the PM2.5 modeling. ARB staff will also work with staff from the South Coast and San Joaquin Districts, and other ozone nonattainment areas, on refining emission reduction targets for ozone.

Proposed Control Concepts

As an initial statewide strategy, ARB staff has proposed for public review a comprehensive list of control measure concepts for full implementation by 2015 (attached). Additional long-term measures will be needed for extreme ozone areas. By 2015, these concepts, together with the benefits of previously adopted measures, would reduce the South Coast's current NOx emissions by another 50 percent and reduce ROG emissions by another 35 percent. The proposed concepts would reduce SOx emissions from mobile sources by about 80 percent in South Coast. This comprehensive strategy would help reduce both PM2.5 and ozone levels statewide, ensuring progress towards State as well as federal standards.

ARB staff has developed a short description of the proposed statewide concepts and estimated benefits for South Coast and San Joaquin Valley (see attachment). As the statewide SIP development process proceeds, ARB staff will further refine the proposal and calculate the benefits for each nonattainment area. Districts and transportation agencies are in the process of identifying potential emission reductions from their respective programs. Together these emission reductions will be used for attainment demonstration purposes in the upcoming SIPs. These SIPs must be adopted at the local level and approved by ARB prior to submittal to U.S. EPA.

Scientific Foundation

One of the most challenging aspects of this round of SIPs will be addressing PM2.5 for the first time. The science is complex, and the South Coast and San Joaquin Valley still exceed the standard by a wide margin. The good news is that PM2.5 levels are clearly declining in these regions and statewide. The federally compliant PM2.5 monitoring program initiated in 1999 provides the most current data showing the progress made. Earlier data from California's particulate matter monitoring program show similar trends for both PM10 and PM2.5 in the 1990s. Measured values of pollutants that form PM2.5 (i.e., precursors) in the atmosphere also show a parallel downward trend. Lastly, the

PM2.5 air quality trends track well with the downward trend in emissions in California.

The next step in the SIP process is to forecast what additional reductions will be needed to continue this progress and reach the PM2.5 standard by the deadline. While recognizing the scientific uncertainties, we must establish emission targets and design an attainment strategy to meet those targets. This proposed statewide strategy builds on the substantial reductions that are already on track to be achieved by 2015 and adds a first level analysis of what more it will take given today's PM2.5 levels.

ARB and South Coast scientists are using a variety of tools to do the first level analysis of how much more it will take. So far, ARB has focused on analyses of measured PM2.5 trends and emission forecasts. South Coast scientists have been developing computer models that simulate the process in chemical reactions that occur in the air. U.S. EPA guidance calls for states to use both techniques in SIPs (i.e., a "weight-of-evidence" analysis).

Given the scope and complexity of California's PM2.5 problem, it is essential that we continue to improve the technical foundation of our SIPs. Improvements to the emission inventories will continue to be made as will refinements to air quality modeling and analysis of the monitoring data. At the October 12 Symposium, ARB staff will discuss where the technical foundation stands today and the improvement efforts underway.

ARB and South Coast scientists have also been working to identify emission reduction targets for the ozone standard. The work to date shows that we will need large reductions in both NOx and reactive organic gases (ROG) beyond those that will come from existing controls. In developing the attached concepts, ARB staff has focused on the near-term actions needed to meet the 2015 PM2.5 deadline. Because NOx is a key common precursor to both PM2.5 and ozone, this near-term strategy also provides the first increment of new reductions needed for ozone attainment. As ARB and air districts refine the ozone targets over the next few months, we will be asking for input and developing a longer-term strategy for the last increment of reductions needed post-2015.

Attachments:

Top 10 Source Categories for ROG and NOx in the South Coast and San Joaquin Valley Air Basins

Emission Reduction Estimates from Draft Near-Term State and Federal Control Concepts for the South Coast and San Joaquin Air Basins

Descriptions of Draft State and Federal Control Concepts