This paper reflects preliminary agency thoughts and ideas and the options presented have not been thoroughly analyzed for legal defensibility.

draft 2/28/02

Integration of Air Quality Designations and Classifications for the 8-Hour Ozone and PM2.5 NAAQSs

Issue: What should be the timing of designation, classification and implementation actions for the 8-hr ozone in relation to the timing of activities under the PM2.5 standards?

Background

- The EPA is required to promulgate air quality designations for every area in the United States after promulgation of new or revised NAAQS for any pollutant.
- New ground level 8-hour ozone and PM 2.5 NAAQSs were set by the EPA in July 1997.
- Designation and classification actions by the EPA for these NAAQSs were delayed due to litigation on the standards.
- The EPA believes that it is appropriate to begin discussions on the timing of the designations and whether to coordinate such action for the 8-hour ozone and PM 2.5 NAAQSs.
- Prior to designations and classifications for ozone, EPA plans to release regulations and guidance on implementing these NAAQSs so that states and tribes have information on how to implement a program to attain the NAAQSs.
- It is our hope to have an implementation rule promulgated for PM 2.5 before their designations.
- The focus of this session is the timing of the EPA's action to promulgate 8-hour ozone designations and classifications and whether to mesh dates with those for PM 2.5.
- The criteria that EPA might use to classify areas for ozone is the subject of a separate session.

Options

1. Harmonize the timing of designation, classification and implementation actions for both ozone and PM 2.5. Promulgate regulations at or close to the same time..
   - Both implementation programs to attain the NAAQSs could have similar deadlines.
   - State and tribes could coordinate the design of control programs to lower emissions for both pollutants.
   - Any delay on the part of the states or tribes and EPA could impact all the programs.
   - Resource intensive for states and tribes to design and implement two new programs at the same time although there may be some economies of scale.
2. Designate and classify areas for ozone and PM 2.5 in separate time frames.
3. What would be the appropriate date for designations for both – 2004, 2005?

Timing

- 2003 Final implementation rules for the 8-hour ozone NAAQS.
- 2004 Designations of attainment or nonattainment of ozone areas.

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- The Transportation Equity Act for the 21st Century (TEA-21) requires EPA to have promulgated designations for PM 2.5 by December 2005.

Link to Other Issues:

The resolution of this issue on integration of air quality designations and classifications for the 8-hr ozone and PM2.5 NAAQS has implications for other issues, including: how to classify 8-hr ozone standard nonattainment areas, attainment dates, transport, and incentives for early reductions.

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Optimal Controls for Ozone, PM2.5 and Regional Haze

Issue: What should EPA do to ensure that the 8-hour ozone standard will be implemented in a way that allows an optimal mix of controls for ozone, PM2.5, and regional haze?

Background

- Strategies to reduce tropospheric ozone can also affect formation of PM2.5. For example, considered in isolation, a metropolitan area's ozone strategy might based on additional volatile organic carbon (VOC) emission reductions; if the area needs NOx reductions for PM2.5 attainment, however, an optimal approach might include a more complex ozone strategy using both NOx and VOC reductions.
- Many of the factors affecting concentrations of ozone also affect concentrations of PM2.5. Emissions of NOx and/or VOC will lead to formation of organic particles and the precursors of particulate nitrate, as well as ozone. Presence of ozone itself is an important factor affecting PM2.5 formation; as ozone builds up, hydroxyl radicals do also and these radicals are instrumental in oxidizing gas phase SO2 to sulfuric acid, which gets absorbed by liquid aerosol and converted to acid particles which may then be neutralized or partially neutralized in the presence of ammonia. Further, the local ozone concentrations may be decreased by reaction of ozone with nitric oxide (NO); thus, in some large urban areas, a decrease in local NOx emissions can result in higher local ozone concentrations, leading to higher hydroxyl radical concentrations and increases in secondary PM2.5.
- About 25% of the counties that may be violating either the 8-hour ozone or PM2.5 NAAQS, may be violating <u>both</u> the 8-hour ozone and PM2.5 NAAQS.
- EPA's May 1999 draft 8-hour ozone attainment demonstration guidance "encourages" integration of control strategies to reduce ozone with those designed later to meet NAAQS for PM2.5 and reasonable progress goals to reduce regional haze. The draft guidance presents some modeling/analysis "principles" to help States develop data bases and capabilities for considering joint effects of control strategies for ozone, PM2.5 and regional haze.
- Similarly, EPA's draft attainment demonstration guidance for PM2.5 and regional haze states that models intended to address secondary particulate matter problems need also to be capable of simulating ozone formation and transport. The guidance suggests conducting a "mid-course review" of an approved PM2.5 plan to review changes in air quality resulting from implementation of plans to reduce PM2.5, regional haze, and ozone.

Assumptions

- Attainment demonstrations for 8-Hour ozone and PM2.5 SIPs will be due in similar, but not necessarily identical, time frames. For example, certain PM2.5 SIPs may be due 1 year later than the ozone SIPs.

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- Regional Haze SIPs will be submitted along with PM2.5 SIPS.

Options

Options described below can be independent or combined with other options.

Option 1: Use Current Guidance

- EPA's policy is to encourage integration of control strategies to reduce ozone with those designed later to meet NAAQS for PM2.5 and reasonable progress goals for regional haze.[1]
- The modeling should separately estimate effects of a strategy on the following: mass associated with sulfates, nitrates, organic carbon, elemental carbon, and all other species.[1]
- Models intended to address PM2.5 problems need also to be capable of simulating ozone formation and transport and related factors.[2]

Option 2: Revise and expand guidance or regulation to be more prescriptive in areas nonattainment for both 8-hour ozone and PM2.5.

Require modeling which estimates effects of an ozone strategy on the following: mass associated with sulfates, nitrates, organic carbon, elemental carbon, and all other species.

Option 3: Allow Additional Time (e.g., 12-24 months) for SIP Submittal to Ensure Optimal Plan Development.

- In Areas Nonattainment for Both 8-Hour Ozone and PM2.5.

- Where the State commits to conduct (more sophisticated) analyses that would ensure optimal plan development, consistent with EPA modeling guidance.

Option 4: Mid-Course Review in Areas Nonattainment for 8-Hour Ozone and PM2.5.

- Require the initial plan analyses to include emissions and air quality projections for an intermediate year to be compare with monitored data during a mid-course review of an approved plan.

- The mid-course review analysis would assess and consider interactions from the ozone, PM2.5 and regional haze plans after there have been changes in air quality resulting from implementation.

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[1] From draft 8-Hour Ozone attainment demonstration guidance

[2] From draft PM2.5 attainment demonstration guidance

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- Note: technical guidance would be needed for performing a MCR.

Link to Other Issues:

The resolution of this issue on optimal controls for ozone, PM2.5 and regional haze has implications for other topics, including the attainment demonstration.