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LAKE MICHIGAN AIR DIRECTORS CONSORTIUM

POSITION PAPER ESTABLISHMENT OF FUTURE YEAR BOUNDARY CONDITIONS

The purpose of this position paper is to describe our proposed approach for dealing with future year boundary conditions as part of the attainment demonstrations for the Lake Michigan region. An interim ozone boundary condition concentration of 60 ppb (and correspondingly lower ozone precursor boundary condition concentrations) are proposed to allow the States to move forward with development of revised State Implementation Plans (SIPs). We believe that the ultimate solution to the boundary condition problem will require a longer-term effort under USEPA's leadership involving additional technical analyses and a national control strategy.

The question of long-range transport of ozone and its precursors has made the establishment of realistic future-year boundary conditions for nonattainment areas a difficult task. Yet its importance in the development of our regional attainment demonstration cannot be overstated. Our modeling has shown that, without a reduction in ozone levels coming into the Lake Michigan region, reductions in local VOC emissions of at least 90% may be necessary to show attainment. A reduction of this magnitude is impossible to achieve. Even with reductions in incoming ozone levels, the requirements for local VOC reductions are expected to be very burdensome.

We believe that it is critical for USEPA to continue to pursue its research on the issue of long-range transport. Long-range transport is a national problem of sufficient magnitude that USEPA should take a strong leadership role in developing a national policy through cooperative research using all the tools available. This better understanding of the impacts of long-range transport will lead to a coordinated, cost-effective superregional control strategy involving appropriate VOC and NO_x controls for the eastern United States. We recognize that such a superregional strategy may lead to changes to our current approach for dealing with boundary conditions and the control measures we will be adopting. To ensure implementation of the superregional strategy, USEPA should use its regulatory authority; however, we firmly believe that the use of such authority should not occur until after the technical work has been completed and the superregional strategy is clearly defined.

The Lake Michigan Air Directors Consortium has begun an effort to improve the "superregional" modeling, using an updated inventory and the UAM-V model. This modeling is being undertaken in cooperation with USEPA as well as a number of other states and private organizations, and represents a good-faith effort on our part to assist USEPA in obtaining the needed technical information to address the general transport problem in the eastern United States. Given the concerns with USEPA's present regional modeling (e.g., validity of ROM, number of episodes, and quality of emissions inputs), we believe that our "superregional" modeling, in conjunction with the modeling by the Modeling Ozone Cooperative (MOCA) in the Northeast, represents a valuable contribution to USEPA's research efforts.

It may be some time, however, before sufficient technical information is available to make informed policy decisions on the general transport problem. In the meantime, as stated in the opening paragraph, it is important that states have the tools necessary to develop approvable SIPs and that they continue making progress in nonattainment areas. After careful consideration, we believe that an ambient ozone concentration at the upwind boundaries of the Lake Michigan modeling domain of 60 ppb) is appropriate, for the following reasons:

- * it is consistent with projections of future year ozone boundary conditions as estimated by USEPA's current ROM modeling;
- * it is consistent with the current average daily maximum ozone values in summer at rural sites in the eastern United States¹; and
- * it represents a reduction of about one-third in current boundary conditions, which is an equitable application (between incoming ozone levels and locally-generated ozone levels) of the approximate reduction in domain-wide peak ozone concentrations needed to achieve attainment.

By using this interim estimate of 60 ppb for future-year boundary conditions, the States can proceed with developing appropriate controls for nonattainment areas which will be required to reach attainment, and can begin rulemaking in a timely manner. It is our intent that these rules will result in substantial reductions in emissions and improvements in air quality up to, and including, attainment of National Ambient Air Quality Standard for ozone. Our preliminary modeling analysis indicates that, with a 60 ppb boundary condition, a 48% reduction in VOC emissions may be required in some of our nonattainment areas in order to demonstrate attainment.

¹ As support for the regional nature of the ozone problem in the eastern United States during ozone episodes, the 1991 report by the National Research Council ("Rethinking the Ozone Problem in Urban and Regional Air Pollution") notes on page 106 that "(m)aximum values of non-urban ozone commonly exceed 90 ppb during these episodes, compared with average daily maximum values of 60 ppb in summer."

In summary, our approach consists of the following elements:

- (1) States will assume an ozone concentration of 60 ppb (and correspondingly lower ozone precursor concentrations) for future-year boundary conditions, based on the best evidence to date, so that the current round of SIP development may move forward in a timely manner;
- (2) USEPA, with assistance from the states, will improve the characterization of future-year boundary conditions through "superregional" modeling and a cooperative federal-state research effort;
- (3) USEPA, with assistance from the states, will develop a coordinated, cost-effective superregional control strategy to address the transport problem; and
- (4) USEPA will exercise appropriate regulatory authority to implement its superregional control strategy after completion of the technical work and development of the strategy.