

FACT SHEET

PROPOSED “RHODE ISLAND ATTAINMENT PLAN FOR THE ONE-HOUR OZONE NATIONAL AMBIENT AIR QUALITY STANDARD”

Introduction and Attainment Date

Rhode Island, a serious nonattainment area for the one-hour National Ambient Air Quality Standard (NAAQS) for ozone, was required by the Clean Air Act Amendments of 1990 (CAA) to be in attainment of that NAAQS by November 1999. Rhode Island achieved that goal; one-hour ozone levels did not violate the NAAQS during the three-year periods 1996-1998 through 1998-2000.

However, for the three-year period 1999-2001, the one-hour NAAQS was again violated at all three of Rhode Island’s ozone monitors, triggering EPA requirements that Rhode Island submit a demonstration showing that it will attain the NAAQS. According to the terms of a Consent Decree between the EPA and environmental organizations, EPA must approve an attainment demonstration State Implementation Plan (SIP) for Rhode Island by March 31, 2003 or implement a Federal Implementation Plan in the State.

To fulfill this requirement, the Rhode Island Department of Environmental Management (RI DEM), Office of Air Resources, is now proposing the “Rhode Island Attainment Plan for the One-Hour Ozone National Ambient Air Quality Standard.” This attainment demonstration addresses the one-hour ozone NAAQS only. Monitoring data show that the State will also be in nonattainment of EPA’s eight-hour ozone NAAQS, which was promulgated in 1997. When the EPA issues implementation guidance and rulemaking relative to the eight-hour ozone NAAQS, Rhode Island will comply with those requirements.

Since Rhode Island was in monitored attainment of the one-hour NAAQS but has since returned to nonattainment status, the State is considered a new nonattainment area and, as such, is required by the CAA to attain the NAAQS “as expeditiously as practicable.” RI DEM has determined that 2007 is the earliest attainment deadline practicable for the State for several reasons. These reasons include the fact that EPA’s NO_x SIP Call, a requirement that several states with emissions that impact downwind nonattainment areas like Rhode Island reduce emissions of nitrogen oxides (NO_x), a class of ozone precursors, as well as several other federal and state emissions control programs will not be implemented until 2004 and beyond. In addition, the CAA does not require areas in New York and New Jersey with emissions that heavily impact ozone levels in Rhode Island to attain the standard until 2007, and so emissions reductions in those areas will not be fully effective until that date.

Attainment Demonstration

Photochemical modeling was conducted to determine whether the emissions reductions mandated in the CAA would be sufficient to allow Rhode Island and neighboring states to attain the one-hour ozone standard. A photochemical model is a computer simulation of the chemical and physical processes that affect the formation, transport and decay of airborne pollutants like ozone that predicts resultant concentrations of those pollutants. The model predicted that, even with implementation of the CAA controls, the one-hour ozone NAAQS would be exceeded in and downwind of Rhode Island on all five of the historic ozone episode days modeled, indicating that implementation of the 1999 minimum CAA controls would not be sufficient for Rhode Island to attain the one-hour NAAQS. The model further showed that additional reductions in upwind emissions of NO_x would be far more effective in reducing Rhode Island's ozone levels than would reductions in emissions of volatile organic compounds (VOC), another class of ozone precursors.

The modelers then modeled two of the historic ozone episode days to determine whether the emissions reductions associated with EPA's proposed NO_x SIP Call would be sufficient to eliminate predicted exceedances of the one-hour NAAQS in the New England area. The model predicted that, for both episodes, implementation of the NO_x SIP Call would substantially reduce the ozone plume in Rhode Island and in other parts of New England. However, for one of the episodes, the model showed that a substantial portion of Rhode Island continued to exceed the one-hour ozone NAAQS. Therefore, the photochemical modeling by itself did not meet EPA's strict deterministic test for showing that Rhode Island would attain the one-hour NAAQS by 2007, even with the implementation of the NO_x SIP Call.

However, the strict deterministic test, which requires that modeling results show attainment for every ozone episode, is quite conservative and does not account for the fact that the one-hour NAAQS allows up to three exceedances at each monitor during a three-year period. Therefore, EPA allows states to use a "weight of evidence" approach to demonstrate attainment of the NAAQS when modeling does not meet the deterministic criteria. This approach permits the use of additional evidence to demonstrate that attainment will to be achieved. Rhode Island's attainment demonstration uses that approach.

The Rhode Island attainment demonstration provides the following evidence to support its conclusion that Rhode Island will attain the one-hour ozone NAAQS by 2007:

1. Trajectory, photochemical and source apportionment models clearly demonstrate that NO_x emissions in upwind states are the major cause of elevated ozone levels in Rhode Island.
2. Emissions inventories for Rhode Island and upwind areas show that substantial reductions in ozone precursor emissions will occur by 2007. For instance, NO_x emissions in the upwind states of Connecticut, New York and New Jersey, areas that contribute substantially to ozone levels in the State, will decrease by 14% between 2002 and 2007.

- Analyses of the relative reductions in ozone levels associated with the NO_x SIP Call, of the additional benefits associated with implementation of EPA's Tier 2/Low Sulfur Gasoline program and of ozone concentration trends show that those emissions reductions will be sufficient for Rhode Island to achieve attainment by 2007.

Emissions Inventory and Mobile Source Emission Budget

As part of the attainment demonstration, RI DEM developed 1999, 2002 and 2007 NO_x and VOC emissions inventories for stationary point, stationary area, non-road mobile and on-road mobile sources in Rhode Island. 1999 point (large stationary) source emissions were calculated from information provided by the facilities; those emissions were then projected to 2002 and 2007 using industry-specific economic growth factors. 1999 area (small stationary) source emissions were calculated from census, fuel consumption and other data using EPA recommended procedures and were similarly projected to 2002 and 2007.

1999, 2002 and 2007 emissions for non-road mobile sources were estimated using EPA's NONROAD model, V.2.1. The model includes applicable state and county growth factors and takes into account projected emissions reductions from planned federal control programs such as Phase II Small Engine Standards. The NONROAD model does not calculate emissions for aircraft, commercial marine vessels and locomotives; 1999 emissions for those categories were calculated using methods specified in the EPA Mobile Source Procedure Document and were projected to 2002 and 2007 using applicable economic growth factors.

On-road mobile source emissions for 1999, 2002 and 2007 were calculated using EPA's MOBILE6.2 model. The modeling took into account the implementation of the State's Motor Vehicle Inspection/Maintenance program, the implementation of the National Low Emissions Vehicles program in the State beginning with model year 1999 vehicles, the national implementation of the Federal Tier 2/Gasoline Sulfur program beginning in 2004, and the use of reformulated gasoline in the State.

The emissions inventory shows that NO_x emissions in the State are expected to decrease by 21% between 1999 and 2007 and by 16% between 2002 and 2007. VOC emissions will decrease by an estimated 16% between 1999 and 2007 and by 8% between 2002 and 2007. On-road and non-road mobile source emissions controls programs are primarily responsible for these reductions.

The CAA requires transportation plans, programs and projects to conform with air pollution SIPs. Conformity to a SIP means that transportation activities will not produce new air quality violations, worsen existing violations, or delay timely attainment of National Ambient Air Quality Standards. States are required to establish on-road mobile source emissions budgets in attainment demonstration SIPs; future transportation plans, programs and projects must meet those budgets, thus assuring conformity with the SIP. The 2007 on-road emissions inventory in the Rhode Island attainment demonstration, 30.37 tpsd of VOC and 33.62 tpsd of NO_x, will be the used in transportation conformity determinations until replaced by an updated budget in a future SIP.

Reasonably Available Control Measures Analysis

The attainment demonstration lists 25 State and Federal emissions reduction measures that have been implemented in Rhode Island. The CAA requires States to adopt all Reasonably Available Control Measures (RACM) necessary to allow an area to achieve attainment as expeditiously as practicable. Based on EPA guidance, RI DEM evaluated potential additional control measures for stationary and mobile sources to determine if emissions reduction measures exist that are not being implemented which meet the following criteria and which thus would be considered RACM:

1. Implementation of the control measure would accelerate attainment of the one-hour NAAQS in Rhode Island; and
2. The control measure is both economically and technically feasible.

No additional measures were identified which meet these criteria, although RI DEM did identify several measures which may help the State attain the eight-hour ozone NAAQS in the future, including a list of measures recommended in the Rhode Island Greenhouse Gas Action Plan.

Conclusion

The attainment demonstration concludes that the weight of evidence shows that if emissions control programs are implemented as currently promulgated, Rhode Island will attain the one-hour ozone standard by 2007.

A public hearing regarding the proposed "Rhode Island Attainment Plan for the One-Hour Ozone National Ambient Air Quality Standard" will be held in Room 300 of the RI DEM building at 235 Promenade Street, Providence, RI on Thursday, 27 February 2003 at 10:00 AM, at which time interested parties will be heard. Written comments may be sent to the address below until the close of the public comment period at 4:00 PM on 27 February 2003. Copies of the proposed plan may be obtained at:

RI Department of Environmental Management
Office of Air Resources
235 Promenade Street
Providence, RI 02908

or by contacting the Office of Air Resources at 401-222-2808 (TCDD 401-222-6800). The plan, hearing notice and this fact sheet are also available on the Air Resources section of RI DEM's web site at www.state.ri.us/dem/.

Questions about the proposed plan should be directed to Barbara Morin at the above address and telephone.