

Narragansett, RI, East Providence, RI and West Greenwich, RI) support the Rhode Island DEM trajectories and the CALGRID modeling which shows that the most probable source region of the exceedances at these sites is areas to the south and west of Rhode Island, including Connecticut and the New York City area. Connecticut is less than 20 miles from West Greenwich or less than 2 hours of typical meteorological transport time. Details of this analysis are found in the TSD for this action. Both the analyses done by the Rhode Island DEM and EPA support the conclusion that without the influence of emissions from upwind, no exceedances would have occurred at the Rhode Island ozone monitors. This further supports the conclusion that the Rhode Island ozone nonattainment area will attain in 2007.

F. Are the Causes of the Recent Violation Being Addressed?

The Rhode Island ozone nonattainment area was in attainment for three consecutive, three-years periods from 1998–2000 (*i.e.*, 1996–1998, 1997–1999, and 1998–2000). CALGRID sensitivity runs looked at the effectiveness of NO_x reductions versus VOC reductions by reducing each pollutant individually within the domain by varying percentages (*i.e.*, 25%, 50%, 75% and 100%). These sensitivity runs concluded that reducing nitrogen oxide emission reductions is a more effective ozone control strategy for the New England Domain. Furthermore, in order to assess the role of transport into the New England domain, sensitivity modeling runs were performed using very clean boundary conditions. These runs use boundary conditions from the OTAG run IN60, which assumed the reductions similar to NO_x SIP call emissions, plus an additional 60 percent reduction in NO_x from the ozone nonattainment areas classified as serious or above. These runs show that upwind NO_x reductions would be effective at reducing ozone throughout southern New England, including in Rhode Island where the current one-hour ozone violations occur. From these sensitivity runs as well as its trajectory analyses, EPA concludes that elevated ozone levels at the Rhode Island monitors are principally due to ozone and NO_x generated in Connecticut and upwind areas. Rhode Island DEM further concluded based on CAMx Source Apportionment Modeling described in EPA's October 27, 1998 Final Rulemaking on the NO_x SIP Call (63 FR 57355), that reducing NO_x emissions in adjacent upwind areas—Connecticut,

New York City and New Jersey—will significantly reduce ozone levels at the Rhode Island monitors. Emissions of NO_x and VOC will also be lowered in Rhode Island as well, as a result of the emission control programs listed in Table 2. These local controls, combined with upwind controls will result in the Rhode Island ozone nonattainment area attaining in 2007.

As part of its submittal, Rhode Island DEM included the NO_x emission reductions anticipated to occur in Connecticut, New York City and New Jersey between 1999 and 2007 and between 2002 and 2007. The reduction between 2002 and 2007 was intended to illustrate the reductions that can be expected to reduce current air quality levels being monitored in Rhode Island. The NO_x reduction expected to occur in Connecticut, New York City and New Jersey between 1999 and 2002 is expected to be 126.5 tons per summer day. Those emission reductions have already occurred, and presumably affect the current ozone levels measured in 2002. Between 2002 and 2007, the NO_x reduction expected to occur in Connecticut, New York City and New Jersey is expected to be a bit higher, at 137 tons per summer day. These reductions, which largely have not occurred yet, will benefit future ozone levels in Rhode Island and will help the Rhode Island ozone nonattainment area meet attainment by 2007.

As part of its submittal, Rhode Island DEM also calculated the NO_x and VOC emission reductions projected to occur between 1999 and 2007 in the Rhode Island area. VOC emissions in Rhode Island are projected from 1999 to 2007 to go from 141.1 tons per summer day (tpsd) to 119.0 tpsd, which is a reduction of 22.1 tpsd or 15.6 percent. NO_x emissions in Rhode Island are projected from 1999 to 2007 to go from 93.1 tpsd to 73.6 tpsd, which is a reduction of 19.5 tpsd or 20.9 percent. When combined with the significant reductions in NO_x emissions expected in upwind states by 2007, the Rhode Island emissions inventory data provides additional reason to anticipate that the area will attain the one-hour ozone standard by 2007.

G. Is the Rhode Island Mid-Course Review Consistent With EPA Guidance?

As discussed above, the Rhode Island serious ozone nonattainment area attained the ozone standard based on ozone data collected in 1997–1999 and 1998–2000, but is now violating the standard. Rhode Island DEM has submitted an attainment demonstration supplemented with a weight-of-evidence analysis; therefore, Rhode

Island DEM needs to commit to a mid-course review. The Rhode Island DEM has committed to perform a mid-course review for this area by December 31, 2004.

H. Is the Rhode Island RACM Analysis Consistent With the CAA and EPA Guidance?

The EPA has reviewed the SIP and the RACM analysis submittal for the Rhode Island area to determine if it includes all required RACM measures and sufficient documentation concerning available RACM measures. The RACM analysis will be subject to a public hearing on February 27, 2003.

The trajectory analyses, which are discussed in greater detail in section VII.E, indicate that elevated ozone levels at the three Rhode Island monitors are largely the result of local transport from upwind high emission areas in Connecticut, New York City and New Jersey.¹⁴ In addition to what the Rhode Island DEM submitted, EPA performed a trajectory analysis of each of the days during 1999 through 2001 when exceedances of the one-hour ozone NAAQS were monitored in the Rhode Island ozone nonattainment area. That analysis shows similar results, *i.e.*, that the source region for these exceedances is areas to the south and west of Rhode Island.

The CAM-x source apportionment modeling showed that emissions in Connecticut and Rhode Island combined contribute only 5% to the anthropogenic one-hour ozone levels in Rhode Island. This CAM-x modeling also shows that Rhode Island cannot attain the one-hour NAAQS without substantial NO_x emission reductions in upwind states, and that, since upwind controls will not be fully implemented prior to 2007, the adoption of additional in-state emission reduction measures would not advance the State's attainment date.

The trajectory analyses and both the CALGRID and CAM-x modeling discussed above indicate that Rhode Island must rely on significant emission reductions from upwind states in order to attain the one-hour ozone standard, and that additional emission reduction measures adopted in Rhode Island alone would have a sufficiently small impact on ozone levels that they could not advance the attainment date in the Rhode Island area. Nonetheless, the Rhode Island DEM RACM analysis does review control measures that could

¹⁴ These areas have approved attainment demonstrations and also have EPA-enforceable emission reduction strategies to bring about attainment of the one-hour standard by 2007.