

State of Rhode Island  
Department of Environmental Management  
Office of Air Resources

**In Re: Adoption of the “Rhode Island Attainment Plan for the 8-Hour Ozone National Ambient Air Quality Standard” and the “Revision of the Rhode Island State Implementation Plan to Address Interstate Transport of Pollutants Affecting Attainment and Maintenance of the 8-Hour Ozone and Fine Particulate Matter (PM<sub>2.5</sub>) National Ambient Air Quality Standards”**

DECISION

**Introduction**

On 14 February 2008 a notice was published in the Providence Journal-Bulletin and was mailed to interested parties announcing a public hearing and comment period to accept comments on the proposed adoption of the “Rhode Island Attainment Plan for the 8-Hour Ozone National Ambient Air Quality Standard” and the “Revision of the Rhode Island State Implementation Plan to Address Interstate Transport of Pollutants Affecting Attainment and Maintenance of the 8-Hour Ozone and Fine Particulate Matter (PM<sub>2.5</sub>) National Ambient Air Quality Standards.” The public hearing was held on 20 March 2008 in Room 300 of the Department of Environmental Management Building, 235 Promenade Street, Providence, Rhode Island. The public comment period closed at 4:00 PM on 20 March 2008.

In fulfillment of Federal Clean Air Act (CAA) requirements, the attainment plan uses modeling and other technical analyses to demonstrate that Rhode Island will attain the 8-hour National Ambient Air Quality Standard (NAAQS) by the end of the 2009 ozone season. The attainment plan also includes the following elements required by the CAA:

- The 2002 Base Year Emissions Inventory for Rhode Island,
- A Reasonable Further Progress (RFP) demonstration that VOC and/or NO<sub>x</sub> emissions in the State will be reduced by at least 15% by 2008,
- An analysis showing that Rhode Island’s regulatory requirements will be consistent with Reasonably Available Control Technology (RACT) for major sources of VOC and NO<sub>x</sub> and for sources with Control Technique Guidelines by 2009,
- A Reasonably Available Control Measures (RACM) analysis showing there are no additional emissions control requirements for point and nonpoint sources that could be adopted in Rhode Island that would advance the State’s attainment year,

- A commitment to adopt additional control measures for the asphalt paving, industrial solvent cleaning, flat wood paneling and adhesives source categories before 2009 consistent with RACT,
- Contingency measures to be implemented upon failure to meet RFP or attainment milestones, and
- A mobile source emissions budget for the years 2008 and 2009, which will be used for Transportation Conformity purposes.

The transport plan demonstrates that emissions in Rhode Island do not contribute significantly to elevated levels of ozone and fine particulate matter in areas in other states that are not in attainment of the NAAQS for those pollutants.

### **Response to Comments**

This section will present the Rhode Island Department of Environmental Management's (RI DEM's) response to the comments received at the public hearing and during the public comment period. Each comment has been paraphrased and is followed by RI DEM's response.

#### **Comments on the Attainment Demonstration**

**Comment:** The American Lung Association of RI (ALARI) generally supports the attainment plans submitted, particularly the commitment to adopt additional control measures consistent with EPA guidelines. The ALARI supports the adoption of ozone standards even more stringent than the recently finalized amended standard, but believes that it is moving in the right direction. (ALARI)

**Response:** RI DEM appreciates ALARI's support and will implement the emissions control programs indicated in the attainment demonstration.

The following comments are from the United States Environmental Protection Agency (USEPA), Region I:

**Comment:** Growth factors are listed in Appendix 2B that Rhode Island used to project its 2002 emission estimates to 2008 for the RFP. In the sheet labeled "point data," a number of facilities have 0.0 as their growth multiplier, and therefore have zero emissions reported for 2008. Does that mean these facilities closed between 2002 and 2008? If so, a note should be added to this sheet explaining this fact. Additionally, if Rhode Island intends to take emission reduction credit from these facility closures within its 15% emission reduction plan, the emission reductions from these facilities can not be used within any banking or trading programs.

**Response:** The facilities with the 0.0 growth factor were permanently closed between 2002 and 2008, as is explained in Section 2.2 of the attainment SIP document. A note was added to the point source spreadsheet in Appendix 2B to further clarify this issue. The facilities identified

have not requested that the emissions reductions generated by the closures be banked or traded.

**Comment:** The sheet labeled “state summary np” in Appendix 2B indicates that Rhode Island will use emission reduction credit generated from federal control measures for AIM coatings and consumer products within its 15% plan. As noted in Section 3.3 on page 18, EPA issued a memo on May 30, 2007 committing to adopt federal rules with requirements for these categories effective January 1, 2009. This memo also provided guidance on calculating reductions from these measures for 2008 and 2009. Rhode Island should confirm that it followed this guidance in calculating the reductions assumed for these measures within its 15% plan.

**Response:** Since updated emissions limits for Consumer Products and AIM will not be effective in Rhode Island until 2009, RI DEM has removed the emissions reductions associated with those measures from the 2008 projected inventory, as presented in Appendix 2B and discussed in Sections 2.4, 4.5 and 4.6. Since the limits on those products will be in effect during the 2009 ozone season, the reductions associated with those measures can be used to help fulfill contingency requirements, as discussed in Section 8.3. Calculations of the predicted emissions reductions for 2009 associated with regulation of Consumer Products and AIM are shown in Appendix 8A and were calculated according the EPA guidance cited in the comment.

**Comment:** In Section 5, EPA requests that a Table be included to clearly identify the “Beyond On the Way” (BOTW) Control Measures assumed for Rhode Island in the 8-hour attainment modeling and the status of these measures in Rhode Island.

**Response:** A BOTW measure status table has been added as Table 5-3A.

**Comment:** EPA would like to see more information about the emissions that were used in the Ozone Transport Commission (OTC) modeling that is part of Rhode Island’s attainment demonstration. Specifically, we are interested in information on daily emissions by sector for both the base case and future years. It is our understanding that in the OTC modeling, the month-by-month point source NOx emissions were allocated to a daily basis, with some variation between weekdays and weekends, but no variation based on actual emissions. Actual daily emissions from electric generating units (EGUs) can, however, vary greatly based on the ambient temperature.

**Response:** The 2002 and 2009 ozone precursor emission inputs (pre-SMOKE and post-SMOKE processed files) used for the CMAQ SIP modeling runs are available in electronic format upon request to NYS DEC. RI DEM does not have the resources to construct the daily 2002 and 2009 emission files requested. The NYS DEC, which served as the lead OTC Modeling Center, may be able to extract detailed daily emission files by state, source sector and time of year from CMAQ input files. However, it is not clear that inspection of these daily emission files is needed to determine if the EGU control program is being accurately quantified

in the CMAQ SIP-quality modeling runs. Future year EGU emission inventory documentation is contained in Appendix 5M to Section 5, "Attainment Demonstration."

The CMAQ SIP-quality modeling runs performed on behalf of the OTC and used by RI DEM did not incorporate daily variations in EGU emissions associated with weather-induced electricity demand. The OTC approach was to use the SMOKE model to apportion annual emissions (based on annual CEM data) provided by the states in order to prepare consistent emission files using month-of-year, day-of-week, and hour-of-day temporal profiles. No adjustments for ozone or non-ozone episodes were attempted; none of the control strategies are day-specific or aimed specifically at high ozone episodes.

RI DEM recognizes that on some days actual hourly emissions may be higher than CMAQ model run emissions and that on other days actual hourly emissions may be lower than CMAQ model run emissions. However, using the CMAQ model in a relative way (as recommended by EPA guidance) helps minimize the effects of any under-estimated or over-estimated emissions in the base case (2002) that are grown out to and controlled in the future case (2009).

Future case emissions projections for the energy sector were estimated using the IPM model which was considered to be the best available tool at the time the OTC CMAQ SIP-quality modeling runs were performed (2006). The IPM model produced summer season and annual emissions, reflecting the CAIR program, the national control strategy for this sector. For consistency, the same month-of-year, day-of-week, and hour-of-day temporal profiles used to prepare 2002 hourly emission files were also used to prepare 2009 hourly emission files. To apply temporal files based upon actual 2002 hourly emission rates was considered to be guesswork since IPM does not assume that the same sources in 2002 would be operating in the same way in future-case years.

In summary, RI DEM believes that the use of consistent temporal files for 2002 and 2009 and using the CMAQ model in a relative way (calculating the percent reduction in ozone levels instead of using the actual predicted 2009 ozone levels) is the most appropriate way of assessing the effectiveness of ozone control strategies in the OTC at this time. The 2002 and 2009 ozone precursor emission inputs (pre-SMOKE and post-SMOKE processed files) used for the CMAQ SIP modeling runs are available in electronic form upon request to NYS DEC (contact Gopal Sistla at [gsistla@dec.state.ny.us](mailto:gsistla@dec.state.ny.us)).

**Comment:** Section 6.1 indicates that Rhode Island DEM has analyzed its existing RACT rules and determined that they are sufficient to meet RACT under the 8-hour ozone standard with the exceptions of the state's rules on solvent metal degreasing and asphalt paving. Section 6.6 contains a commitment from Rhode Island to submit to EPA amended rules for these two source categories by January 1, 2009, as revisions to the state's SIP, and also commits to these rules having effective dates of no later than April 1, 2009. Rhode Island will need to meet these commitments in order for EPA to approve the State's 8-hour ozone RACT submittal.

**Response:** RI DEM is in the process of drafting amendments to the solvent metal degreasing requirements in APC Regulation No. 36 and the asphalt paving requirements in APC Regulation No. 25 and fully intends to adopt and submit the updated regulations as SIP revisions by the commitment dates specified in Table 3-2. RI DEM understands that the RACT SIP will not be approved until those regulations are promulgated and submitted as SIP revisions.

**Comment:** Section 6.4.2 contains a discussion of Rhode Island DEM's evaluation of the source categories covered by the CTGs adopted by EPA in October, 2006. This section indicates that there may be one source in the state covered by the flat wood paneling CTG, that the state's solvent cleaning rule (APC No. 36) will be amended to conform with the EPA's industrial cleaning solvents CTG, and that RI-DEM has not yet determined whether its existing rules for printers are as stringent as EPA's new CTGs for the three printing categories. For all of the above, RI DEM commits to adopt rules (if necessary) and submit them to EPA by January 1, 2009, and further commits that these rules will become effective no later than April 1, 2009. Rhode Island will need to meet these commitments in order for EPA to approve the state's 8-hour ozone RACT submittal. Similarly, RI DEM will need to meet its commitment to analyze the need for new or amended rules in light of the new CTGs EPA promulgated in October, 2007, and make any necessary SIP submittals to EPA that stem from that review.

**Response:** RI DEM fully intends to submit amendments to the flat wood paneling requirements in APC Regulations No. 19 and 35 and to the cleaning solvents requirements in APC Regulation No. 36 consistent with the CTGs by the dates specified in Table 3-2. RI DEM understands that the RACT SIP will not be approved until those regulations are promulgated and submitted as SIP revisions. Similarly, RI DEM will amend the requirements for printers in Regulation No. 21 and the requirements for surface coaters in Regulation 19 if necessary to be consistent with the 2007 CTG for those categories by the dates specified in Table 3-2.

**Comment:** On page 73, within Table 6-1, it is noted with regards to the Shipbuilding and Repair CTG that, "2 possibly applicable sources, Senesco and General Dynamics, both are subject to permit limits consistent with the CTG." Rhode Island's final submittal to EPA should include a final determination as to whether these sources are subject to the Shipbuilding and Repair CTG, and if so, verification that the permits for these sources include emission limits that are at least as stringent as those found in the CTG, and confirmation that the permits are federally enforceable.

**Response:** RI DEM has determined that both Senesco and General Dynamics are subject to the Shipbuilding and Repair CTG and that both are operating under federally enforceable permit requirements consistent with the CTG. Senesco was issued preconstruction permits (Approval Nos. 1991-1993) in July 2007 pursuant to APC Regulation No. 9, "Air Pollution Control Permits," which is a federally enforceable regulation. Those approvals contain the emission limits specified in the CTG for the shipbuilding and repair operations conducted at the facility. General Dynamics' shipbuilding and repair operations are subject to Regulation No. 9 Approval

No. 1882, issued in Feb. 2006, and Title V Operating Permit No.RI-32-03, issued in Oct. 2003, both of which contain the shipbuilding and repair operations emission limits that are specified in the CTG. The requirements in Approval No.1882, which was issued for new operations conducted at the facility including shipbuilding and repair, will be incorporated into General Dynamics Title V permit at the time of renewal, which is due in Oct. 2008. Table 6-1 was modified to include this information.

**Comment:** Section 6.5, NO<sub>x</sub> RACT Analysis, should be expanded to include additional details on how Rhode Island DEM determined that its existing NO<sub>x</sub> RACT rule, APC regulation No. 27, meets RACT under the 8-hour ozone standard. This is particularly important in light of the fact that the state's NO<sub>x</sub> Budget rule, APC No. 41, expires at the end of the 2008 ozone season and a replacement for that program has not been identified.

For example, EPA recommends that RI DEM give further consideration to adoption of more stringent regulations for industrial, commercial, and institutional (ICI) boilers as part of meeting the NO<sub>x</sub> RACT obligation. As mentioned on page 39 of Rhode Island's proposed attainment demonstration, further regulation of this sector is one of the control options that the Ozone Transport Commission (OTC) states agreed to explore as they develop SIPs to address the 8-hour ozone standard. Rhode Island indicates, on page 40 of the proposed attainment demonstration, that it does not believe adoption of a more stringent rule will yield significant emission reductions. EPA requests that Rhode Island reexamine this issue, and if adoption of more stringent limits for this sector is not pursued, include additional technical support justifying that position.

Additionally, glass manufacturing is one of the categories that the OTC recommended, in 2006, states evaluate for possible additional controls. Rhode Island notes on page 40 of the proposed attainment demonstration that there is one glass manufacturing facility in the state, and that it is currently subject to emission limits that are more stringent than those found in the OTC 2006 recommended control measure for this sector. Rhode Island should include documentation of this fact, and confirmation that the limits are federally enforceable, within its final attainment SIP submittal to EPA.

**Response:** RI DEM has reexamined this issue and continues to maintain that adoption of more stringent requirements for ICI boilers would not yield significant emission reductions in the State. The February 2007 OTC document entitled "Identification and Evaluation of Candidate Control Measures, Final Technical Support Document," which is Appendix 5k of Rhode Island's attainment SIP, estimates that implementation of the ICI boiler control measures recommended in that document would reduce summer day NO<sub>x</sub> emissions in Rhode Island by 0.5 tons. Almost all of the ICI boilers located at major sources in Rhode Island are currently equipped with low-NO<sub>x</sub> burners with flue gas recirculation. Replacing that equipment to meet the recommended OTC limits would be cost prohibitive to the sources, administratively burdensome for RI DEM, and would only marginally reduce emissions. A paragraph has been added to Section 6.5 to address this issue.

Nitrogen oxides emissions from the one glass furnace in the state (Osram Sylvania Products, Inc.) are limited to 3.5 lbs per ton of glass produced in a federally enforceable Regulation No. 9 minor source permit (Approval No. 1350) and in the facility's federally enforceable Title V operating permit (RI-07). Table 7-1 was updated to include this information. Note also that, in a stack test conducted at the facility in July 2004, the actual emissions rate measured was 2.15 lbs per ton of glass produced. .

**Comment:** EPA New England was consulted regarding MOBILE6.2 files, assumptions, parameters, and development of the motor vehicle emissions budgets (MVEBs). A new development, however, is the Rhode Island Statewide Planning Program's request of February 1, 2008, that the on-road mobile source emission projections be increased by a half-ton of VOC and NOx when identifying the transportation conformity budgets for 2008 (the RFP MVEB) and 2009 (the attainment year MVEB). The proposed MVEBs include this increase as shown below:

Rhode Island State-wide On-Road Mobile Inventory (in tons per summer day, tpsd)				
	VOC Inventory	VOC Proposed MVEBs	NOx Inventory	NOx Proposed MVEBs
2008	24.14	24.64	27.76	28.26
2009	22.91	23.41	25.62	26.12

For purposes of transportation conformity, motor vehicle emissions budgets must be the projected motor vehicle emissions, unless those emissions are less than the amount of emissions that satisfy the control strategy, in which case safety margins can be added.

The RFP analysis in Section 4 adequately demonstrates excess emissions exist within the 2008 total inventory (which are in excess of the 15 percent emission reduction required for achieving Rhode Island's RFP milestones) to apply a half-ton of VOC and NOx safety margin to the 2008 Motor Vehicle Emissions Budgets.

In the Section 5 attainment demonstration, however, it is not clear if the 2009 increased (adjusted) on-road emission inventory was accurately reflected in the regional modeling demonstrating attainment in 2009 (although it is unlikely, due to the timing of the request vs. that of the modeling activities). Since it has not been demonstrated that the extra half-ton of VOC and NOx are in excess of that assumed in the modeling to demonstrate attainment, the motor vehicle emissions budgets for year 2009 must be restricted to the projected 22.91 tpsd of VOC and 25.62 tpsd of NOx for on-road mobile sources.

**Response:** The mobile source budget for 2009 in Table 5.1 has been adjusted to remove the 0.5 ton buffer and the discussion in Section 5.4 has been modified to discuss a buffer for 2008 only.

**Comment:** The report titled, “Rhode Island 2008 And 2009 Mobile Source Emissions,” prepared by Vanasse Hangen Brustlin, Inc. (which was submitted as adobe acrobat file named: 2008 2009 On-road Mobile Source Emissions Summary Document.pdf) has errors in the 2009 MOBILE6.2 input file.

On page twenty-nine of the air quality report, the first scenario record for average freeway speed of 60.7 miles per hour (92 percent freeway travel and 8 percent ramp travel) is correct as shown in the box below:

```
SCENARIO RECORD : Scenario Title : RI speed 60.7 (= maximum allowed freeway speed)
> 2009 Speed 60.7 mph (Freeway)
* This text is for annotating this file and is otherwise ignored.
CALENDAR YEAR   : 2009
EVALUATION MONTH : 7
ALTITUDE        : 1
AVERAGE SPEED   : 60.7 Freeway 92.0 0.0 0.0 8.0
SCENARIO RECORD : Scenario Title : RI speed 60.7 (= maximum allowed freeway speed)
```

However, four scenarios follow for the same 60.7 average freeway speed<sup>1</sup> that use an incorrect calendar year of 2007 to generate emission factors. See text in box below:

```
SCENARIO RECORD : Scenario Title : RI speed 60.7 (= maximum allowed freeway speed)
> 2007 Speed 60.7 mph (Freeway)
* This text is for annotating this file and is otherwise ignored.
CALENDAR YEAR   : 2007
EVALUATION MONTH : 7
ALTITUDE        : 1
AVERAGE SPEED   : 60.7 Freeway 92.0 0.0 0.0 8.0
SCENARIO RECORD : Scenario Title : RI speed 60.7 (= maximum allowed freeway speed)
```

This error was also found in the original 09RIOZ.inp MOBILE6.2 input file supplied by RI DEM. This error may not have been carried over into the 2009 Motor Vehicle Emissions Budgets if there were no freeway speeds greater than 60.7 in the on-road inventory; or the emission factors from the first RI freeway speed of 60.7 was used for all 60.7 and greater freeway speeds. However, if this error was carried over into the calculation of the 2009 MVEB, then a slightly higher 2007 emission factor would have been used for freeway speeds greater than 60.7.

Please confirm that the 2007 freeway emission factors were not used in developing the 2009 MVEBs. If the 2007 emission factors were used, please re-run the 60.7 average freeway speeds

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<sup>1</sup> While the MOBILE Program limits average “freeway and ramp” speed to 60.7 miles, (60.7 average freeway and ramp speed is used for all freeway speeds greater than 60.7 mph) users often run additional scenarios of 60.7 to represent speeds for 62 mph, 63 mph, 64 mph and 65 mph which may be utilized by macros in calculating emissions within a database.

for calendar year 2009, or use the emission factor from the first/correct 60.7 average freeway and ramp speed for all speeds greater than 60.7 mph, and re-calculate the 2009 MVEBs for volatile organic compounds (VOC) and oxides of nitrogen (NO<sub>x</sub>).

**Response:** These errors have been corrected. The corrected 2009 emissions inventory is 22.75 tons of VOC (a decrease of 0.16 tons from the amount in the proposed SIP) and 25.29 tons of NO<sub>x</sub> (a decrease of 0.33 tons). The 2009 emissions inventory and budget in Table 9-1 have been revised to reflect this correction. Note that this error did not affect the 2008 emissions.

**Comment:** The on-road emission modeling for year 2008 and year 2009 does not include Rhode Island's Low Emission Vehicle (LEV) Program, hence no credit for this program is assumed in the 2008 or 2009 on-road motor vehicle emissions budgets prepared for use in transportation conformity.

Page 60 of the Attainment Demonstration, however, indicates that state LEV programs were included in the regional 8-hour ozone modeling for attainment. Before Rhode Island can take credit for the Rhode Island LEV program, this program must be submitted to, and approved by, EPA as a SIP revision.

Therefore, Table 3-2 "RI DEM Control Technology Regulatory Action Commitments," on page 20, should be revised to include the Rhode Island LEV program and a date certain by which DEM will submit this program to EPA as a SIP revision.

**Response:** Table 3-2 has been revised to include a commitment that RI DEM will submit the LEV program (Regulation No. 37) to the EPA as a SIP revision by 1 June 2008.

**Comment:** After a hearing in March of 2007, the State of Rhode Island revised its regulations by which it is implementing its vehicle emission testing program. Additionally, the State of Rhode Island's vehicle testing is being implemented under a new contract. Therefore, Rhode Island should submit the revised program to EPA as a SIP revision and Table 3-2 should list this program and a date certain by which DEM will make this submittal to EPA.

**Response:** Table 3-2 has been revised to include a commitment that RI DEM will finalize the amendments to the inspection/maintenance requirements in Regulation No. 34 and submit the amended regulation to EPA as a SIP revision by 1 June 2008.

**Comment:** The text on page 17 of Appendix 2A indicates that rule effectiveness adjustments were made in accordance with an EPA guidance document from November, 1992. In future emission inventories (i.e., for the inventory years 2005 and beyond), Rhode Island DEM should use EPA's updated guidance on rule effectiveness which is contained in the document available at the following web-site, as appendix B:

[http://www.epa.gov/ttn/chief/eidocs/eiguid/eiguidfinal\\_nov2005.pdf](http://www.epa.gov/ttn/chief/eidocs/eiguid/eiguidfinal_nov2005.pdf)

**Response:** The updated guidance will be used for future inventories.

**Comment:** Section 5.0 of Appendix 2A indicates that due to resource constraints, a quality assurance program was not implemented for the 2002 inventory. Quality assurance, which is a system of review by personnel not actively involved in development of the inventory, is an important means of verifying the large number of calculations within the inventory. Rhode Island needs to address this shortcoming in its inventory program.

**Response:** RI DEM plans to develop a Quality Assurance Project Plan for the emissions inventory to address this issue.

**Comment:** On page 40 of the attainment plan, the last paragraph of Section 5.11 should be revised to reference “additional emissions reductions in the State in 2009.” On page 87, in the last paragraph, the reference to “Section 6.5, “Mobile Source RACM Analysis for Rhode Island,” appears to be incorrect. The correct reference is to Section 7.5.

**Response:** These typographical errors have been corrected.

### **Comments on the Transport SIP**

**Comment:** EPA previously reviewed an earlier draft version of this SIP and sent comments to the DEM in a letter dated September 14, 2007. We have reviewed the proposed SIP and have found that it is consistent with EPA’s guidance and that the DEM has adequately addressed our previous comments.

**Response:** No response required.

### **Decision**

It is the decision of the Hearing Officer to adopt the proposed “Rhode Island Attainment Plan for the 8-Hour Ozone National Ambient Air Quality Standard” with the revisions noted above and the “Revision of the Rhode Island State Implementation Plan to Address Interstate Transport of Pollutants Affecting Attainment and Maintenance of the 8-Hour Ozone and Fine Particulate Matter (PM<sub>2.5</sub>) National Ambient Air Quality Standards” as proposed. The final Plans are appended to this Decision.

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Date

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Stephen Majkut,  
Hearing Officer

