



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
1650 Arch Street  
Philadelphia, Pennsylvania 19103-2029

George S. Aburn, Director  
Maryland Department of the Environment  
1800 Washington Boulevard  
Baltimore, Maryland 21230

Dear Mr. Aburn:

The purpose of this letter is to notify you the U.S. Environmental Protection Agency (EPA) will soon announce in the *Federal Register* EPA's determination that the motor vehicle emission budgets (MVEBs) for the Baltimore 1997 8-Hour Ozone Rate of Progress Budgets for volatile organic compounds (VOCs) and nitrogen oxides (NO<sub>x</sub>) for the year 2012, contained in the latest Baltimore 1997 8-Hour Ozone Nonattainment Area State Implementation Plan (SIP), submitted by Maryland Department of the Environment (MDE), are adequate for transportation conformity purposes. The SIP revision incorporates the latest available demographic projections into the MVEBs, and establishes the modeled budget year. The budgets will become effective 15 days after the Federal Register publication date.

Pursuant to 40 CFR 93.118(e)(4) of the Transportation Conformity Rule (40 CFR part 93, subpart A), EPA has reviewed the MVEBs contained in the Baltimore SIP revision, which were developed with the use of EPA's Motor Vehicle Emission Simulator (MOVES2014). EPA has determined that these MVEBs are adequate for transportation conformity purposes. However, this adequacy finding does not relate to the merits of the SIP submittal nor does it indicate whether the submittal meets the requirements for approval.

Maryland's Baltimore SIP revision has 2012 reasonable further progress (RFP) MVEBs for NO<sub>x</sub> and VOCs for 2012 shown in Table 1. The MVEBs are 93.5 tons per day of NO<sub>x</sub> and 40.2 tons per day of VOCs. These MVEBs meet the standard requirement that any MVEB must meet before it can be used to determine conformity for a transportation improvement program or long range transportation plan. As a result of EPA's finding, the State of Maryland must use the 2012 RFP MVEBs for future conformity determinations.



<b>Table 1. 2012 RFP Mobile Budgets for the Baltimore 1997 8-Hour Ozone Nonattainment Area</b>		
Year	Motor Vehicle Emissions Budgets for NO <sub>x</sub> in tons per day	Motor Vehicle Emissions Budgets for VOCs in tons per day
2012	93.5	40.2

EPA opened the public comment period on the adequacy of the submitted SIP by posting to the EPA Office of Transportation and Air Quality's adequacy review website (<http://www.epa.gov/otaq/stateresources/transconf/adequacy.htm>) on November 23, 2015. The comment period closed on December 23, 2015, and no comments were received. EPA has concluded that 2012 RFP MVEBs satisfy the requirements of 40 CFR 93.118(e)(4)(iv), and are therefore adequate for transportation conformity purposes. EPA will soon publish a notice in the Federal Register announcing this adequacy finding. The Federal Register will also announce the date that the adequacy finding becomes effective. The MVEBs will be available for use on the effective date.

If members of your staff have any questions regarding this finding, they may direct them to Mr. Gregory Becoat, at (215) 814-2036.

Sincerely,



Cristina Fernandez, Associate Director  
Office of Air Program Planning

Enclosure

cc: Brian Hug (MDE)  
Colleen Turner (MDOT)  
Regina Aris (BMC)



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
**REGION III**  
**1650 Arch Street**  
**Philadelphia, Pennsylvania 19103**

**DATE:** Technical Support Document (TSD) - Adequacy Finding for the Baltimore 1997 8-Hour Ozone Rate of Progress Budgets for Volatile Organic Compounds (VOCs) and Nitrogen Oxides (NO<sub>x</sub>) for 2012.

**SUBJECT:** Hour Ozone Rate of Progress Budgets for Volatile Organic Compounds (VOCs) and Nitrogen Oxides (NO<sub>x</sub>) for 2012.

**FROM:** Gregory Becoat *Gregory D. Becoat 1/14/16*  
Office of Air Program Planning (3AP30)

Asrah Khadr *Asrah Khadr 1/14/16*  
Office of Air Program Planning (3AP30)

**TO:** Administrative Record for the Adequacy Finding for the Baltimore 1997 8-Hour Ozone Rate of Progress Budgets for Volatile Organic Compounds (VOCs) and Nitrogen Oxides (NO<sub>x</sub>) for 2012.

**THRU:** *Cristina Fernandez 1-14-16*  
Cristina Fernandez, Associate Director  
Office of Air Program Planning (3AP30)

## **I. Background**

On July 22, 2013, Maryland Department of the Environment (MDE) submitted a formal revision to its State Implementation Plan (SIP). The SIP revision included a plan demonstrating rate of progress for 1997, 2011, and 2012, a revision to the 2002 base year emissions, revised 2012 reasonable further progress (RFP) motor vehicle budgets (MVEBs), and a serious area attainment demonstration. On October 9, 2015, MDE submitted a supplemental letter to EPA clarifying that the 2012 attainment MVEBs mentioned in the July 22, 2013 submittal was an administrative issue and truly represent the 2012 RFP MVEBs based on additional evidence provided.<sup>1</sup> EPA believes that the evidence provided within MDE's supplemental letter specifically corresponds to the 2012 RFP budgets, incorporates the latest available demographic projections into the MVEBs, and establishes the modeled budget years.

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<sup>1</sup> See Table 4.7, "2012 Projected Controlled VOC and NO<sub>x</sub> Emission (tons/day) Baltimore Nonattainment Area" and Section 7.0 of the SIP submittal, which gives the 2012 projected controlled emissions for attainment, by sector. The total 2012 emissions to meet RFP on pages 39 and 53 are the same (i.e. RFP and attainment inventories are equal). The mobile budgets in Section 10, "Mobile Source Conformity," on page 91 of the SIP submittal are the same as the mobile source controlled emissions in Table 4.7 of the SIP submittal.

## **II. Transportation Conformity Requirements**

Transportation conformity is required under section 176(c) of the Clean Air Act (CAA) to ensure that federally supported highway, transit projects, and other activities are consistent with (conform to) the purpose of the SIP. The CAA requires federal actions in nonattainment and maintenance areas to “conform to” the goals of SIP. This means that such actions will not cause or contribute to violations of a NAAQS; worsen the severity of an existing violation; or delay timely attainment of any NAAQS or any interim milestone. Actions involving Federal Highway Administration (FHWA) or Federal Transit Administration (FTA) funding or approval are subject to the Transportation Conformity Rule (40 CFR part 93, subpart A). Under this rule, metropolitan planning organizations (MPOs) in nonattainment and maintenance areas coordinate with state air quality and transportation agencies, EPA, FHWA, and FTA to demonstrate that their metropolitan transportation plans and transportation improvement plans (TIPs) conform to applicable SIPs. This is typically determined by showing that estimated emissions from existing and planned highway and transit systems are less than or equal to the MVEBs contained in a SIP.

For MVEBs to be approvable, they must meet, at a minimum, EPA’s adequacy criteria found at 40 CFR 93.118(e)(4). EPA’s adequacy criteria are: (1) the submitted control strategy implementation plan was endorsed by the Governor or designee and was subject to a State public hearing; (2) consultation among Federal, State, and local agencies occurred; full implementation plan documentation was provided to EPA; and EPA’s stated concerns, if any, were addressed before the control strategy implementation plan was submitted; (3) the MVEBs are clearly identified and precisely quantified; (4) the MVEBs, when considered together with all other emissions sources, are consistent with applicable requirements for maintenance; (5) the MVEBs are consistent with and clearly related to the emissions inventory and the control measures in the submitted control strategy implementation plan; and (6) revisions to previously submitted maintenance plans explain and document any changes to previously submitted budgets and control measures; impacts on point and area source emissions; any changes to established safety margins; and reasons for the changes (including the basis for any changes related to emission factors or estimates of vehicle miles traveled).

## **III. Review of Motor Vehicle Emissions Modeling**

To evaluate the submitted motor vehicle emissions inventory, it was necessary to review the supporting modeling completed using EPA’s Motor Vehicle Emission Simulator (MOVES2014). MDE’s submitted files include run specifications (RunSpecs) describing the scenario parameters, input databases containing local fleet data, and output databases containing the modeling results. The submitted RunSpecs, input databases, and output database(s) were reviewed against the EPA document: *MOVES2014 Technical Guidance: Using MOVES to Prepare Emissions Inventories for State Implementation Plans and Transportation Conformity*. This document provides guidance on the use of the MOVES model to develop inventories for SIPs as well as analysis of emissions for transportation conformity determinations.

EPA carefully reviewed the RunSpecs, input databases, and output databases used in the analysis to ensure that all was completed consistently with the recommendations outlined in the above mentioned MOVES Technical Guidance and are appropriately representative of the modeling domain and analysis year. Table 1 presents a summary of the review of the RunSpecs and the selections made for each parameter. Table 2 presents a summary of the review of each MOVES input parameter from MDE's submittal. Table 3 presents a summary of the review of the output and post-processing methodology.

The RunSpecs, input databases, and output database were reviewed and found to have followed the applicable EPA guidance provided in the *MOVES2014 Technical Guidance: Using MOVES to Prepare Emissions Inventories for State Implementation Plans and Transportation Conformity*. Additionally, sufficient documentation was provided by MDE to support the data, decisions, and assumptions made for each parameter.

<b>Table 1. Review of RunSpecs for 2012 for the Baltimore 1997 8-Hour Ozone Rate of Progress Budgets for Volatile Organic Compounds (VOCs) and Nitrogen Oxides (NO<sub>x</sub>)</b>	
Domain/Scale	County scale was selected – allowing for appropriate detail necessary for regulatory analysis.
Time Spans Panel	Hourly time aggregation was selected. All appropriate months, days, and hours were selected. The appropriate year was selected for the scenario being modeled.
Geographic Bounds	Baltimore City, Anne Arundel County, Baltimore County, Carroll County, Harford County, and Howard County was selected.
Vehicles/Equipment	Gasoline, ethanol, diesel, and compressed natural gas (CNG) fuels were selected. All source types were selected.
Road Type	All road types were selected.
Pollutants and Processes	NO <sub>x</sub> and VOCs were selected. All processes were included in the analysis.

<b>Parameter</b>	<b>Submittal</b>
Age Distribution	All source types were included with fractions for ages (0-30 years).
Average Speed Distribution	Average speed distributions were provided for all source types, for each combination of road type and hour of the day.
Fuel (fuel formulation, fuel supply, fuel usage, and alternative vehicle fuels and technologies (AVFT))	<ul style="list-style-type: none"> <li>• A complete fuel supply table was provided with all fuel types present in the region.</li> <li>• Appropriate fuel properties were included in the fuel formulation table, including Reid Vapor Pressure (RVP), ethanol content, and sulfur levels.</li> <li>• The fuel usage table was provided and described the ethanol use by E-85 capable vehicles.</li> <li>• The AVFT table was provided.</li> </ul> <p>Any and all changes to the default fuels have been sufficiently documented.</p>
Meteorology Data	Local meteorology data (temperature and humidity) was provided for each hour of the day for each month.
Ramp Fraction	Local fractions of ramp driving times were provided for restricted access roadways.
Road Type Distribution	The vehicle miles traveled (VMT) fraction for each road type was provided for each source type and road type.
Source Type Population	The number of vehicles of each source type was provided.
Vehicle Type VMT (includes inputs for annual VMT, daily VMT fraction, hourly VMT fraction, and monthly VMT fraction)	<ul style="list-style-type: none"> <li>• Annual VMT was provided for the five MOVES highway performance management system (HPMS) vehicle categories.</li> <li>• Monthly VMT fractions were provided for all source types and month.</li> <li>• Daily VMT fractions were provided for all days and source types.</li> <li>• Hourly VMT fractions were provided for each day type and source type.</li> </ul>
Inspection/Maintenance (I/M) Programs	The existing I/M program was accurately described.

MOVES run table	Appropriate version of MOVES was used. All calculation bundles were processed.
MOVES error table	No errors were produced in any of the runs.
MOVES output	The output contains emission results for all necessary source types, processes, and pollutants.
Output processing	The output was appropriately summed to generate the emissions

inventory. The methodology was documented.

#### IV. Administrative Requirements for Making Adequacy Finding

This TSD is only addressing the 2012 RFP MVEBs contained in the Baltimore 1997 8-Hour Ozone SIP revision. EPA followed the process for determining the adequacy of the submitted SIP MVEBs in accordance with the procedures listed in the January 1997 Conformity Regulations contained in 40 CFR part 93, 118(f) "Adequacy review process for implementation plan submissions."

On November 23, 2015, a notice was posted on EPA's website entitled, "Baltimore, Maryland, 1997 8-hour ozone rate of progress (budgets for VOC and NO<sub>x</sub> for 2012)," located at: <http://www3.epa.gov/otaq/stateresources/transconf/adequacy.htm>, for the purpose of opening EPA's 30-day public comment period on the proposed 2012 RFP MVEBs in the Baltimore SIP revision.

EPA's public comment period closed on December 23, 2015. EPA received no comments on the proposed MVEBs. This TSD will be an enclosure to the letter from EPA to MDE informing the State of EPA's findings on the 2012 RFP MVEBs for the Baltimore 1997 8-Hour Ozone SIP revision submitted on July 22, 2013.

EPA will publish a Federal Register notice announcing our adequacy findings. The effective date of the adequacy findings will be 15 days after the publication date of that notice. Once EPA has published the Federal Register notice, the letter EPA sent to MDE and this TSD will be posted at <http://www3.epa.gov/otaq/stateresources/transconf/adequacy.htm>.

Shown in Table 4 are the 2012 RFP MVEBs from the Baltimore 1997 8-Hour Ozone SIP revision. The MVEBs in Table 4 for year 2012 for NO<sub>x</sub> and VOCs will be applied to all future transportation conformity determinations and analyses for the ozone national ambient air quality standard (NAAQS).

Year	Motor Vehicle Emissions Budgets for NO <sub>x</sub> in tons per day	Motor Vehicle Emissions Budgets for VOCs in tons per day
2012	93.5	40.2

#### V. Evaluation of the Adequacy of the MVEBs in the Baltimore 1997 8-Hour Ozone Rate of Progress Budgets for VOCs and NO<sub>x</sub> for 2012 Submitted by the Maryland Department of the Environment

In this TSD, EPA is evaluating the 2012 RFP MVEBs associated with the Baltimore 1997 8-

Hour Ozone Nonattainment Area for conformity purposes. EPA is using the evaluation criteria detailed in the Transportation Conformity Rule, 40 CFR part 93.118(e)(4)(i) through 93.118(e)(4)(vi) and 93.118(e)5. The evaluation is presented in Table 5, below.

<b>Table 5. Adequacy of the 2012 RFP MVEBs contained in the Baltimore 1997 8-Hour Ozone SIP Revision</b>		
<b>Transportation Conformity Rule 40 CFR Part 93</b>	<b>Review Criteria</b>	<b>Was the Criterion Satisfied? If Yes, How was this Criteria Satisfied?</b>
Sec. 93.118(e)(4)(i)	Was the submitted revised plan endorsed by the Governor (or his or her designee) and subject to a State public hearing?	Yes. The SIP was endorsed and submitted by the Governor's designee, Robert M. Summers, the Secretary of the Maryland Department of the Environment. A public hearing on the SIP proposal was held on July 19, 2013.
Sec. 93.118(e)(4)(ii)	Before the implementation plan was submitted to EPA, did consultation between federal, State and local agencies occur; was full implementation plan documentation provided to EPA, and was EPA's stated concerns, if any, addressed?	Yes. Consultation has occurred among all required Federal, State, and local agencies. This included the following: MDE, EPA, FHWA, FTA, Maryland Department of Transportation (MDOT), and the Baltimore Regional Transportation Board (BRTB).
Sec. 93.118(e)(4)(iii)	Were the MVEBs clearly identified and precisely quantified?	Yes, the budgets are clearly identified on pages 93-94 of the Baltimore 1997 8-Hour Ozone Nonattainment Area SIP revision prepared by the Maryland Department of the Environment and Appendix E prepared by Michael Baker, Jr., Inc. Additional clarification of the budgets can be found in the supplemental letter sent to EPA from MDE at: <a href="http://www.mde.state.md.us/programs/Air/AirQualityPlanni">http://www.mde.state.md.us/programs/Air/AirQualityPlanni</a>



		ng/Pages/programs/airprogram s/air_planning/index.aspx.
Sec. 93.118(e)(4)(iv)	Are the motor vehicle emissions, when considered together with all other emission reductions, consistent with applicable requirements for maintenance strategies?	EPA believes the budgets can be declared adequate because in conjunction with the other emission reductions, the mobile emissions budgets for 2012 for VOCs and NO <sub>x</sub> reflect a continuation of a downward trend in mobile emissions over time.
Sec. 93.118(e)(4)(v)	Are the motor vehicle emissions consistent with and clearly related to the emissions inventory and the control measures in the Plan?	EPA believes that the motor vehicle emissions have clearly related to the emissions inventory and control measures in the SIP submittal.
Sec. 93.118(e)(4)(vi)	Revisions to previously submitted maintenance plan: explain and document any changes to previously submitted budgets and control measures; impacts on point and area source emissions; any changes to established safety margins (see Sec. 93.101 for definition); and reasons for the changes (including the basis for any changes related to emission factors or estimates of vehicle miles traveled).	There are no revisions to the maintenance plan because MDE has yet to submit a redesignation request and the associated maintenance plan for the Baltimore 1997 8-Hour Ozone Nonattainment Area.
Sec. 93.118(e)(5)	Did they provide and we review public comments and the State's responses to those comments with the submitted control strategy SIP?	There were no comments on the proposed motor emission budgets in the SIP.

## VI. Findings

Based upon EPA's review and evaluation of the 2012 RFP MVEBs contained in the Baltimore 1997 8-Hour Ozone SIP revision, EPA finds the MVEBs adequate for transportation conformity purposes. The applicable MVEBs for purposes of determining conformity are 93.5 tons per day of NO<sub>x</sub> and 40.2 tons per day of VOCs for 2012.