

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

June 6, 2001

**SUBJECT:** Technical Support Document - Adequacy Findings for the Motor Vehicle Emissions Budgets in the Revised One-Hour Ozone Attainment Demonstration Plan Submitted on 12/28/00 by the Maryland Department of the Environment for the Baltimore Ozone Nonattainment Area: Revised to Reflect the Benefits of the Tier 2/Sulfur- in-Fuel Rule

**FROM:** Paul T. Wentworth, P.E.  
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**TO:** Administrative Record for the Adequacy Findings for the Motor Vehicle Emissions Budgets in the Revised One Hour Ozone Attainment Demonstration Plan Submitted on 12/28/00 by the Maryland Department of the Environment for the Baltimore Nonattainment Area: Revised to Reflect the Benefits of the Tier 2/Sulfur- in-Fuel Rule

**THRU:** Robert Kramer, Chief  
Energy, Radiation and Indoor Environment Branch (3AP23)

**I. Administrative Requirements for Making Adequacy Findings**

We have followed the process for determining the adequacy of the submitted SIP budgets in accordance with the November 3, 1999 EPA Memorandum from Merrylin Zaw-Mon entitled: "Guidance on Motor Vehicle Emissions Budgets in one-hour Ozone Attainment Areas."

On December 28, 2000, the Maryland Department of the Environment (MDE) formally submitted a revised version of the one-hour ozone attainment demonstration plan (hereafter the attainment demonstration plan) for the Baltimore Nonattainment Area as State Implementation Plan (SIP) revision. The reason that Maryland once again revised the one-hour attainment demonstration plan for the Baltimore area was to reflect the emissions reduction benefits associated with the Tier 2/Sulfur fuel rule in its motor vehicle emissions budgets (hereinafter referred to as MVEBs). The Tier2/Sulfur fuel rule's emission reductions were credited in the Baltimore attainment demonstration plan for which EPA proposed approval on December 16, 1999. (See 64 FR 70397) Therefore, EPA's December 16, 1999 notice of proposed rulemaking required that Maryland revise the one hour ozone attainment demonstration plan such that its MVEBs reflected the Tier 2/Sulfur fuel rule's emission reductions.

On January 17, 2001, a notice was posted on EPA's web site entitled, "Adequacy Review of SIP Submissions for Conformity," located at: <http://www.epa.gov/oms/transp/conform/pastsips.htm>

(Referred to as “EPA’s website”), for the purpose of opening EPA’s 30-day public comment period on the revised MVEBs budgets in the Baltimore one hour ozone attainment demonstration plan.

EPA’s public comment period closed on February 16, 2001. On February 16, 2001, the University of Maryland School of Law’s Environmental Law Clinic submitted comments on behalf of its client, the 1000 Friends of Maryland.

Section II of this technical support document (TSD), below, provides a summary of those comments and EPA’s responses. This TSD will be an enclosure to the letter from EPA to the Maryland Department of the Environment informing the State of our findings on MVEBs of the revised attainment plan for the Baltimore area submitted on December 28, 2000.

We 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 announcement notice. Once EPA has published the Federal Register announcement notice, the letter we sent to MDE and its enclosure, this TSD, will be posted on EPA’s website at <http://www.epa.gov/oms/transp/conform/pastsips.htm> .

## **II. Public Comments Received on the MVEBs Contained in the Plan for the Baltimore Ozone Nonattainment Area**

As stated above, comments were submitted by University of Maryland on behalf of its client, 1000 Friends of Maryland on February 16, 2001. A copy of these comments has been placed in the Administrative Record for this adequacy finding of the budgets contained in the Plan.

At this time, EPA is only considering and responding to those comments germane to the finding of adequacy of those revised MVEBs identified in the December 28, 2000 revised attainment plan for the Baltimore area. Comments on whether or not EPA should approve or disapprove the one hour ozone attainment demonstration plan for the Baltimore area will be considered pursuant to and as part of the Agency’s rulemaking on that SIP revision. EPA proposed to approve that plan as a SIP revision on December 16, 2000. EPA intends to complete rulemaking on the one hour attainment demonstration plan for the Baltimore area by October 15, 2001.

This adequacy process for MVEBs is separate from the notice and comment rulemaking process conducted by EPA to approve or disapprove the SIP which contains the MVEBs. The rulemaking process to approve or disapprove the attainment demonstration plan itself involves approval of its associated control strategies and a more detailed examination of the technical analyses submitted by the State to meet the requirements of the Clean Air Act.

EPA’s adequacy process for MVEBs involves our making findings that MVEBs in submitted SIPs are or are not consistent with, in the case of this SIP revision, the attainment demonstration for conformity purposes. EPA’s actual approval or disapproval of the MVEBs budgets occurs when we have completed the rulemaking process on the attainment demonstration plan and have

either approved or disapproved it as a SIP revision. The adequacy process considers certain criteria specified in 40 CFR 93.118 in order to allow the use of these submitted budgets in conformity determinations while EPA is completing its formal review process to determine whether to approve or disapprove the SIP in which they are submitted.

Therefore, we are deferring addressing those comments which are germane to the approvability of the attainment demonstration plan at this time rather than addressing them in the context of this TSD prepared in support of our adequacy findings on the MVEBs. We will address those comments on approvability of the one hour attainment demonstration in our upcoming final rulemaking on that SIP revision.

**1. Comment:** The commenter asserts that the only analytical method for demonstrating attainment are those promulgated in Appendix W to 40 CFR Part 51. The commenter further asserts that this revision to the MVEBs is a new attainment demonstration that requires a new photochemical grid modeling analysis that demonstrates attainment of the standard in order to ensure the adequacy of the adequacy of the new attainment MVEBs.

**EPA's Response:**

**a. EPA disagrees with the commenter's assertions regarding what methods are acceptable for demonstrating attainment under the statute and applicable regulations.<sup>1</sup>**

Under section 182(c)(2) and (d) of the Clean Air Act (CAA), serious and severe ozone nonattainment areas were required to submit by November 15, 1994, demonstrations of how they would attain the 1-hour standard. Section 182(c)(2)(A) provides that “[t]his attainment demonstration must be based on photochemical grid modeling or any other analytical method determined by the Administrator, in the Administrator’s discretion, to be at least as effective.” As described in more detail below, the EPA allows states to supplement their photochemical modeling results, with additional evidence designed to account for uncertainties in the photochemical modeling, to demonstrate attainment. This approach is consistent with the requirement of section 182(c)(2)(A) that the attainment demonstration “be based on photochemical grid modeling,” because the modeling results constitute the principal component of EPA’s analysis, with supplemental information designed to account for uncertainties in the model. This interpretation and application of the photochemical modeling requirement of section 182(c)(2)(A) finds further justification in the broad deference Congress granted EPA to develop appropriate methods for determining attainment, as indicated in the last phrase of section 182(c)(2)(A).

The flexibility granted to EPA under section 182(c)(2)(A) is reflected in the regulations EPA promulgated for modeled attainment demonstrations. These regulations provide, “The adequacy

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<sup>1</sup> EPA is not responding to statements made about requirements for approving a change to an approved attainment demonstration. Because EPA and the commenter are in agreement that the December 28, 2000 submittal is not a revision to an approved SIP element any comments regarding such a scenario are not germane to the December 28, 2000 submittal.

of a control strategy shall be demonstrated by means of applicable air quality models, data bases, and other requirements specified in [40 CFR part 51 Appendix W] (Guideline on Air Quality Models).”<sup>2</sup> 40 CFR 51.112(a)(1). However, the regulations further provide, “Where an air quality model specified in appendix W...is inappropriate, the model may be modified or another model substituted [with approval by EPA, and after] notice and opportunity for public comment...” Appendix W, in turn, provides that, “The Urban Airshed Model (UAM) is recommended for photochemical or reactive pollutant modeling applications involving entire urban areas,” but further refers to EPA’s modeling guidance for data requirements and procedures for operating the model. 40 CFR 51 App. W section 6.2.1.a. The modeling guidance discusses the data requirements and operating procedures, as well as interpretation of model results as they relate to the attainment demonstration. This provision references guidance published in 1991, but EPA envisioned the guidance would change as we gained experience with model applications, which is why the guidance is referenced, but does not appear, in Appendix W. With updates in 1996 and 1999, the evolution of EPA’s guidance has led us to use both the photochemical grid model, and additional analytical methods approved by EPA.

The modeled attainment test compares model predicted 1-hour daily maximum ozone concentrations in all grid cells for the attainment year to the level of the national ambient air quality standards (NAAQS). The results may be interpreted through either of two modeled attainment or exceedance tests: a deterministic test or a statistical test. Under the deterministic test, a predicted concentration above 0.124 parts per million (ppm) ozone indicates that the area is expected to exceed the standard in the attainment year and a prediction at or below 0.124 ppm indicates that the area is expected to not exceed the standard. Under the statistical test, attainment is demonstrated when all predicted (i.e., modeled) 1-hour ozone concentrations inside the modeling domain are at, or below, an acceptable upper limit above the NAAQS permitted under certain conditions (depending on the severity of the episode modeled).<sup>3</sup>

In 1996, EPA issued guidance<sup>4</sup> to update the 1991 guidance referenced in 40 CFR 50 App. W, to make the modeled attainment test more closely reflect the form of the NAAQS (i.e., the statistical test described above), to consider the area’s ozone design value and the meteorological conditions accompanying observed exceedances, and to allow consideration of other evidence to address uncertainties in the modeling databases and application. When the modeling does not conclusively demonstrate attainment, EPA has concluded that additional analyses may be presented to help determine whether the area will attain the standard. As with other predictive tools, there are inherent uncertainties associated with air quality modeling and its results. The inherent imprecision of the model means that it may be inappropriate to view the specific

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<sup>2</sup>The August 12, 1996 version of “Appendix W to Part 51 –Guideline on Air Quality Models” was the rule in effect for these attainment demonstrations. EPA is proposing updates to this rule which will not be in effect until the new rule is promulgated.

<sup>3</sup> Guidance on the Use Of Modeled Results to Demonstrate Attainment of the Ozone NAAQS. EPA- 454/B-95-007, June 1996.

<sup>4</sup> Ibid.

numerical result of the model as the only determinant of whether the SIP controls are likely to lead to attainment. The EPA's guidance recognizes these limitations, and provides a means for considering other evidence to help assess whether attainment of the NAAQS is likely to be achieved. The process by which this is done is called a weight of evidence (WOE) determination. Under a WOE determination, the state can rely on, and EPA will consider in addition to the results of the modeled attainment test, other factors such as other modeled output (e.g., changes in the predicted frequency and pervasiveness of 1-hour ozone NAAQS exceedances, and predicted change in the ozone design value); actual observed air quality trends (i.e. analyses of monitored air quality data); estimated emissions trends; and the responsiveness of the model predictions to further controls.

In 1999, EPA issued additional guidance<sup>5</sup> that makes further use of model results for base case and future emission estimates to predict a future design value. This guidance describes the use of an additional component of the WOE determination, which requires, under certain circumstances, additional emission reductions that are or will be approved into the SIP, but that were not included in the modeling analysis, that will further reduce the modeled design value. An area is considered to monitor attainment if each monitor site has air quality observed ozone design values (4th highest daily maximum ozone using the three most recent consecutive years of data) at or below the level of the standard. Therefore, it is appropriate for EPA, when making a determination that a control strategy will provide for attainment, to determine whether or not the model predicted future design value is expected to be at or below the level of the standard. Since the form of the 1-hour NAAQS allows exceedances, it did not seem appropriate for EPA to require the test for attainment to be "no exceedances" in the future model predictions. The method outlined in EPA's 1999 guidance uses the highest measured design value from all sites in the nonattainment area for each of three years. The three year "design value" represents the air quality observed during the time period used to predict ozone for the base emissions. This is appropriate because the model is predicting the change in ozone from the base period to the future attainment date. The three yearly design values (highest across the area) are averaged to account for annual fluctuations in meteorology. The result is an estimate of an area's base year design value. The base year design value is multiplied by a ratio of the peak model predicted ozone concentrations in the attainment year (i.e., average of daily maximum concentrations from all days modeled) to the peak model predicted ozone concentrations in the base year (i.e., average of daily maximum concentrations from all days modeled). The result is an attainment year design value based on the relative change in peak model predicted ozone concentrations from the base year to the attainment year. Modeling results also show that emission control strategies designed to reduce areas of peak ozone concentrations generally result in similar ozone reductions in all core areas of the modeling domain, thereby providing some assurance of attainment at all monitors.

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<sup>5</sup> "Guidance for Improving Weight of Evidence Through Identification of Additional Emission Reductions, Not Modeled." U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emissions, Monitoring, and Analysis Division, Air Quality Modeling Group, Research Triangle Park, NC 27711. November 1999. Web site: <http://www.epa.gov/ttn/scram>.

In the event that the attainment year design value is above the standard, the 1999 guidance provides a method for identifying additional emission reductions, not modeled, which at a minimum provide an estimated attainment year design value at the level of the standard. This step uses a locally derived factor which assumes a linear relationship between ozone and the precursors. Although this technique for estimating ambient improvement does not incorporate complete modeling of the additional emissions reductions, the regulations do not mandate or nor does EPA guidance suggest that States must model all control measures being implemented. Moreover, a component of this technique—the estimation of future design value, should be considered a model predicted estimate. Therefore, results from this technique are an extension of “photochemical grid” modeling and are consistent with Section 182(c)(2)(A). Reliance on reducing maximum predictions in every grid cell to less than or equal to 124 parts per billion(ppb) on every modeled day may overestimate needed controls (e.g., the form of the standard allows up to 3 exceedances in 3 years in every grid cell; and if the model over predicts observed concentrations, predicted controls may also be overestimated, etc.). In recognition of this EPA has considered other evidence to make these determinations, as described above through the weight of evidence determination.

When reviewing a SIP, the EPA must make a reasonable determination that the control measures adopted more likely than not will lead to attainment. Under the WOE determination, EPA has made these determinations based on all of the information presented by the States and available to EPA. The information considered includes model results for the majority of the control measures. Though all measures were not modeled, EPA reviewed the model’s response to changes in emissions as well as observed air quality changes to evaluate the impact of a few additional measures, not modeled. EPA’s decision was further strengthened by each State’s commitment to check progress towards attainment in 2003 and to adopt additional measures, if the anticipated progress is not being made.

Contrary to concerns expressed by the commenter, EPA is not erring by modifying the modeling requirements without changing Appendix W . Section 3.0 of appendix W states, “It should not be construed that the preferred models identified here are the only models available for relating emissions to air quality.” Section 3.2.2 of Appendix W further provides that the “determination of acceptability of a model is a Regional Office responsibility. Where the Regional Administrator finds that an alternative model is more appropriate than a preferred model, that model may be used subject to the recommendations in appendix W. This finding will normally result from a determination that (1) a preferred air quality model is not appropriate for the particular application; or (2) a more appropriate model or analytical procedure is available and is applicable.”

Therefore, EPA does have the discretion to identify a more appropriate analytical procedure without undergoing rulemaking on updates to Appendix W. Also, as discussed above, by reference to the modeling guidance, Appendix W was designed to allow changes in the predictive tools and data bases without undergoing additional rulemaking. Finally, EPA may also allow states to supplement their photochemical modeling results, with additional evidence designed to account for uncertainties in the photochemical modeling, to demonstrate attainment. This approach is consistent with the requirement of section 182(c)(2)(A) that the attainment

demonstration “be based on photochemical grid modeling,” because the modeling results constitute the principal component of EPA’s analysis, with supplemental information designed to account for uncertainties in the model. This interpretation and application of the photochemical modeling requirement of section 182(c)(2)(A) finds further justification in the broad deference Congress granted EPA to develop appropriate methods for determining attainment, as indicated in the last phrase of section 182(c)(2)(A).

**b. EPA disagrees that this revision of the MVEBs to incorporate the benefits from the Tier 2/Sulfur rule requires a new analysis based upon photochemical grid modeling.**

EPA identified that the WOE for the Baltimore attainment demonstration would be strengthened if additional reductions occur in the nonattainment area. This need for additional emission reductions was generally based upon evidence that the current level of adopted or planned emission controls was not quite sufficient for attainment. EPA determined that the Baltimore WOE demonstration would be strengthened if further reductions of 14 tons per day (TPD) in volatile organic compound (VOC) emissions and 3 TPD of nitrogen oxide (NOx) emissions were achieved<sup>6</sup>. The VOC and NOx emission reduction estimates of 14 TPD and 3 TPD, respectively, are prior to the application of Tier 2 Sulfur rule benefits. EPA estimated that the Tier 2 Sulfur rule reductions would be 1 TPD of VOC and 7 TPD of NOx<sup>7</sup>. After application of EPA’s estimate of the benefits of the Tier 2/Sulfur rule benefits the reduction needs were reduced to 13 TPD VOC and zero (0) TPD NOx. This finding was part of the proposed action on the attainment plan. See 64 FR 70397, December 16, 1999. EPA required that “[s]tates that need to rely in whole or in part on the Tier 2 benefits to help demonstrate attainment will need to adjust the demonstration for their SIP submission, emission inventories and motor vehicle emissions budgets to include the Tier 2/Sulfur program reductions in order for EPA to approve the SIP submittal”. 64 FR 70397 at 70403. Finally, EPA proposed approval only if Maryland revised the MVEBs to include the Tier 2/Sulfur program reductions. See 64 FR 70397 at 70411.

Maryland submitted the December 28, 2000, revision of the MVEBs to incorporate the Tier 2 benefits in the MVEBs to fulfill one of the prerequisites for approval of the Baltimore attainment demonstration identified in the December 16, 1999 notice of proposed rulemaking. Maryland’s calculation of the Tier 2/Sulfur benefits yields 3 TPD VOC and 7 TPD NOx. These benefits are greater than those estimated by EPA. Even though Maryland’s estimates of the Tier 2/Sulfur rule benefits are equal to or greater than EPA’s own estimates, Maryland has retained the commitment to an additional reduction of 13 TPD of VOC to strengthen the WOE as EPA proposed. Maryland has used all the benefits available from Tier 2 for air quality purposes as

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<sup>6</sup> See Attachment 5. Improving Weight of Evidence Through Identification of Additional Emission Reductions Not Modeled to United States Environmental Protection Agency Region III Memorandum Technical Support Document for the Maryland One-Hour Ozone Attainment Demonstration for the Baltimore Ozone Nonattainment Area (MD 074-3046) from Cristina Fernandez, Environmental Engineer, Ozone & Mobile Sources Branch (3AP21) to file dated November 30, 1999.

<sup>7</sup> Ibid.

expressed in the MVEBs in the December 28, 2000 submittal and thus can rely on EPA's estimate of the additional emission reductions needed and need not submit a revised WOE analysis. See 64 FR 70397 at 70410, December 16, 1999.

The EPA did not request that the State perform new photochemical grid modeling to assess the full air quality impact of the additional measures that would be adopted. Rather, one of the factors that EPA can consider as part of the WOE analysis of the attainment demonstration is whether there will be additional emission reductions anticipated that were not modeled. Therefore, EPA will consider the reductions from additional measures not modeled as part of the WOE analysis if the State adopts the measures, submits an enforceable commitment to adopt the measures or in the case of the Tier 2/Sulfur rule benefits, amends the MVEBs to incorporate the Tier 2/Sulfur rule benefits. Because this revision to the MVEBs was driven by the need to incorporate the benefits of the Tier 2/Sulfur rule in order to strengthen the WOE, EPA disagrees that this revision of the MVEBs requires an analysis based upon new photochemical grid modeling.

EPA performed its analyses for the Baltimore area using the 1999 guidance and determined that the Baltimore area will need to adopt additional measures to further reduce emissions to support the attainment test. EPA concluded that Maryland would not require any additional NO<sub>x</sub> reductions once the Tier 2/sulfur rule was incorporated into the plan. EPA required that Maryland incorporate the Tier 2/sulfur benefits into MVEBs that were derived using locally developed activity levels such as vehicle miles traveled (VMT), number of cold starts, number of vehicles, etc.. EPA did not require revised photochemical grid modeling for these measures and the MVEBs incorporating the Tier 2/Sulfur benefits for the reasons set forth in our December 16, 1999 proposed action because these reductions are needed to support the WOE analysis: One of the factors that EPA can consider as part of the WOE analysis of the attainment demonstration is whether there will be additional emission reductions anticipated that were not modeled. Therefore, EPA can consider the reductions from these additional measures as part of the WOE analysis if the State adopts the measures or submits an enforceable commitment to adopt the measures. EPA considers that the photochemical grid modeling and the supporting WOE analysis submitted with the Baltimore attainment demonstration to be sufficient as long as Maryland commits to/ (1) adopt new measures to cover the additional reductions not modeled that EPA identified; (2) incorporate the Tier 2/Sulfur benefits in the MVEBs; (3) conduct and submit a mid-course review by December 31, 2003; (4) adopt and submit a rule(s) for the regional NO<sub>x</sub> reductions consistent with the modeling demonstration for the Baltimore area; and (5) revise the MVEBs within 1 year of the issuance of MOBILE6. See 64 FR 70397, December 16, 1999. The MVEBs submitted on December 28, 2000 are the first to incorporate the Tier 2/Sulfur benefits. Maryland has submitted the required commitments and the NO<sub>x</sub> rule has been approved. EPA will approve these commitments into the SIP as enforceable control measures. With these additional measures and commitments, EPA concludes that the modeling supporting the Baltimore attainment demonstration does demonstrate attainment.

**2. Comment:** The commenter states that the photochemical grid modeling shows the area will experience exceedances of the ozone NAAQS by 23 ppb in 2005 and thus the photochemical grid

modeling in Maryland's attainment demonstration does not support attainment and thus the attainment MVEBs are inadequate.

**EPA's Response:**

As discussed in the technical support document that EPA prepared in support of its proposed action on Maryland's April 24, 1998 SIP revision (see 64 FR 70397, December 16, 1999), EPA disagrees that the 23 ppb cited by the commenter is proof the photochemical grid modeling shows the area will not attain<sup>8</sup>. Maryland's ozone attainment demonstration is primarily based on photochemical grid modeling of a July 1991 episode. Because of the severity of the July 1991 episode, photochemical grid modeling for the Baltimore area predicts values above the standard. However, the July 1991 episode is a very severe ozone episode with a meteorological ozone forming potential ranking of 10 (Cox and Chu 1996). The Cox and Chu analysis ranked all summer days over the past 50 years according to the severity of each day's meteorological ozone forming potential. In 1996, EPA issued additional guidance<sup>9</sup> to update the 1991 guidance referenced in 40 CFR 50 Appendix W by making the modeled attainment test more closely reflect the form of the NAAQS and in doing so allowing some modeled exceedances on very severe episode days in addition to allowing the consideration of other evidence to address uncertainties in the modeling databases and application. Due to the severity of the July 1991 episode, a peak modeled concentration of 140 ppb is, according to EPA's 1996 modeling guidance, consistent with attainment. While the peak modeled concentration for the July 1991 episode in the Baltimore area was 147 ppb, this was close enough to 140 ppb for Maryland to consider other information to determine the likelihood of attainment. When the modeling does not conclusively demonstrate attainment, EPA has concluded that additional analyses may be presented to help determine whether the area will attain the standard. As with other predictive tools, there are inherent uncertainties associated with air quality modeling and its results. The inherent imprecision of the model means that it may be inappropriate to view the specific numerical result of the model as the only determinant of whether the SIP controls are likely to lead to attainment. The EPA's guidance recognizes these limitations, and provides a means for considering other evidence to help assess whether attainment of the NAAQS is likely to be achieved. The process by which this is done is the WOE determination.

Maryland used WOE to show that the Baltimore area is likely to attain. Maryland's primary WOE analysis is based on EPA's 1999 guidance<sup>10</sup> in which an attainment year design value is

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<sup>8</sup> Technical Support Document for the Maryland One-Hour Ozone Attainment Demonstration for the Baltimore Ozone Nonattainment Area (MD 074-3046). November 30, 1999.

<sup>9</sup> Guidance on the Use Of Modeled Results to Demonstrate Attainment of the Ozone NAAQS. EPA- 454/B-95-007, June 1996.

<sup>10</sup> "Guidance for Improving Weight of Evidence Through Identification of Additional Emission Reductions, Not Modeled." U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emissions, Monitoring, and Analysis Division, Air Quality

predicted using relative changes in peak ozone concentration from the base year to the attainment year using local scale modeling results. An area is considered to monitor attainment if each monitor site has air quality observed ozone design values (4th highest daily maximum ozone using the three most recent consecutive years of data) at or below the level of the standard. In the case where the calculated attainment year design value is above the standard, the 1999 guidance provides a methodology for identifying additional emission reductions not modeled, that are or will be approved into the SIP, which at a minimum provide an estimated attainment year design value at the level of the standard. This step uses a locally derived factor which assumes a linear relationship between monitored ozone and precursors. The resulting attainment year design value meets the NAAQS. Even though an exceedance of the NAAQS was modeled, Maryland's WOE demonstration shows that the Baltimore area is projected to experience enough air quality improvement to demonstrate attainment in 2005, i.e., provides for a 2005 year projected design value below the standard. Because the modeling and WOE demonstration show attainment, EPA can make a determination that the MVEBs are adequate.

**3. Comment:** The commenter points out a number of changes in the December 28, 2000 submittal. The commenter asserts these changes would be significant changes to the data and input to the photochemical grid model. The commenter asserts that the December 28, 2000 submittal is an entirely new SIP and concludes that the 1998 photochemical grid modeling is irrelevant and must be redone to prove the plan still provides for attainment. The commenter states the following have changed:

- a. There are internal inconsistencies between tables 1.1 and 6.1.
- b. The 2002 and 2005 uncontrolled emission projections have changed. The commenter "suggests" EPA require further clarification from Maryland before approving this revision to the SIP or prior to approving the rate-of-progress (ROP) plan through the attainment year and the attainment demonstration.
- c. The emission reductions attributed to the various measures have been reduced.
- d. Maryland's commitment in the December 21, 1999 submittal to an additional 0.5 TPD VOC and 6.4 TPD NO<sub>x</sub> reductions can not be a substitute for photochemical grid modeling.<sup>11</sup>
- e. There are significant increases in the mobile source emissions projected for 2005.

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Modeling Group, Research Triangle Park, NC 27711. November 1999. Web site: <http://www.epa.gov/ttn/scram>.

<sup>11</sup> On December 3, 1999, Maryland submitted revised MVEBs for the attainment demonstration for parallel processing and submitted the final, adopted revision to the MVEBs on December 21, 1999.

## **EPA's Response:**

EPA agrees that the December 28, 2000 submittal incorporates a number of changes in 2005 year projected emissions. However, the net effect of these changes is in the lowering of projected emissions in the Baltimore nonattainment area in 2005. As discussed in the response to comment number 1, EPA required Maryland to strengthen the attainment demonstration's WOE that the Baltimore area will attain the ozone NAAQS by committing to additional measures. Therefore, the lower projected emissions in the December 28, 2000 submittal only further strengthens the WOE that the Baltimore area will attain the ozone NAAQS. EPA concludes that the changes between the April 28, 2000 and December 28, 2000 submittals in projected emissions when considering only the adopted measures (excluding the commitment to an additional 13 TPD of VOC reductions) strengthen the WOE that Maryland's SIP provides for attainment. Therefore, the December 28, 2000 submittal falls within the framework of EPA's proposed rule and does not require new modeling under section 182(c) of the CAA.

The April 24, 1998 plan projected the following 2005 emission levels in the Baltimore area: 224.0 VOC and 322.9 NO<sub>x</sub> using the explicit budgets in the plan. The December 21, 1999 submittal would also achieve these levels because Maryland committed to make up the 0.5 TPD VOC and 6.4 TPD NO<sub>x</sub> increases in the MVEBs.

Maryland's December 28, 2000 submittal projects emissions levels of 223.6 TPD VOC and 304.8 TPD NO<sub>x</sub>. These projections are prior to application of the Tier 2/sulfur rule – i.e., using the December 21, 1999 MVEBs and not the attainment MVEBs, and these projections do not reflect the additional 13 TPD VOC emission reductions to which Maryland has provided an enforceable commitment as required by EPA's December 16, 1999 proposed rule. These December 28, 2000 projections are based upon on-road mobile source emission projections of 48.7 TPD VOC and 104.3 TPD NO<sub>x</sub> prior to application of Tier 2/sulfur rule but these on-road mobile source projections cannot be MVEBs because they are not explicitly identified as such. With inclusion of the December 28, 2000 MVEBs that incorporate the Tier 2/Sulfur rule, the December 28, 2000 submittal projects emissions levels of 220.4 TPD VOC and 297.4 TPD NO<sub>x</sub> prior to consideration of the enforceable commitment to an additional 13 TPD VOC reductions as required by EPA's December 16, 1999 proposed rule.

The following paragraphs address in more detail each of the commenter's specific objections.

**a. Maryland corrected the inconsistencies between Tables 1.1 and 6.1 in the December 28, 2000 SIP revision.**

**b. The change in uncontrolled emissions stems mainly from how mobile source growth was determined for the uncontrolled case for 2005<sup>12</sup>.**

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<sup>12</sup> The changes in the 2002 values in the ROP plan are not germane to the adequacy of the 2005 attainment budgets and hence not discussed further.

That there are several acceptable methods for projecting mobile source growth is a consequence of specific requirements for rate-of-progress contained in the Clean Air Act.

The provisions of sections 182(b)(1) and 182(c)(2)(B) restrict the ability of the State to use reductions from certain control programs as credit towards ROP. These restrictions prohibit crediting reductions from the following programs towards the basic 15% and 3% per cent ROP requirements: (1) Any motor vehicle exhaust or evaporative control measure promulgated by the EPA by January 1, 1990; and (2) Reid Vapor pressure (RVP) regulations promulgated by EPA by November 15, 1990 or required to be promulgated under section 211(h). These regulations were promulgated on June 11, 1990 (See 55 FR 23666). See 42 U.S.C. §7411a(b)(1)(B), (C) and (D), and §7411a(c)(2)(B) citing §7411a(b)(1)(B), (C) and (D).

The motor vehicle exhaust and evaporative control regulations promulgated as of January 1, 1990 is commonly referred to as the "Tier 0" federal motor vehicle control program (FMVCP) because the CAA mandated a first round of further control – the "Tier 1" standards – and authorized the "Tier 2" standards if statutory requirements were met. The RVP regulations promulgated on June 11, 1990 are called the Phase II RVP controls because EPA had promulgated an earlier round of RVP regulations prior to 1990.

EPA addressed these restrictions when it promulgated its guidance on ROP plans including (but not limited to) the following five documents:

- (1) "State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990", 57 Fed. Reg. 13498, April 16, 1992
- (2) "Guidance on the Adjusted Base Year Emissions Inventory and the 1996 Target for 15 Percent Rate of Progress Plans (RPP)" (EPA-452/R-92-005) October 1992
- (3) A D. Kent Berry memorandum dated October 29, 1993 entitled "Rate-of-Progress Plan Guidance on the 15 Percent Calculation"
- (4) "Guidance on the Post-1996 Rate-of-Progress Plan and the Attainment Demonstration" (EPA-452/R-93-015), January 1994 and Corrected Version as of February 18, 1994.
- (5) USER'S GUIDE to MOBILE5 (MOBILE SOURCE EMISSION FACTOR MODEL), EPA-AA-TEB-94-01, May 1994.

EPA has always guided states into demonstrating ROP through the use of a target level calculation starting with the 15% requirement. See the above documents (including 57 FR at 13506). The target level is always calculated from base line levels which for mobile sources means that 1990 fleet data and VMT is always used. Use of later year fleet data would not be appropriate because the CAA requires ROP plans to achieve reductions relative to base line levels, i.e., reflecting base year conditions, adjusted pursuant to the requirements of section 182(b)(1) discussed above. The target level does not consider growth or other changes except those specified in section 182(b)(1). The 15% and 3% per cent per year (averaged over three

years) reduction requirements are reductions from “base line emissions” which as defined in section 182(b)(1)(C) are all anthropogenic emissions in the 1990 base year less those that would be eliminated by the measures specified in section 182(b)(1)(D) which include the Phase II RVP and Tier 0 FMVCP. (The other two specified measures – corrections to I/M programs and VOC reasonably available control technology (RACT) were not required or did not generate any quantifiable reductions in Maryland, respectively, and so need not be considered further.)

EPA addressed the requirements of section 182(b)(1)(B) through (D) through the concept of the 1990 adjusted base year inventory in the guidance documents cited above. The CAA specifies the emissions "baseline" from which each emission reduction milestone is calculated. Section 182(c)(2)(B) states that the reductions must be achieved "from the baseline emissions described in subsection (b)(1)(B)." This baseline value is termed the 1990 adjusted base year inventory. Section 182(b)(1)(B) defines baseline emissions (for purposes of calculating each milestone VOC/NOx emission reduction) as "the total amount of actual VOC or NOx emissions from all anthropogenic sources in the area during the calendar year of enactment." Section 182(b)(1)(B) also excludes from the baseline the emissions that would be eliminated by the Tier 0 FMVCP regulations and Phase II RVP limits.

The 1990 ROP inventory<sup>13</sup> for mobile sources is based upon multiplying a 1990 emission factor (EF) - generated from the MOBILE5 emission factor model - by the 1990 VMT.<sup>14</sup> The MOBILE5 inputs in this case must include 1990 fleet data and specify that the emission factor is for a 1990 calendar year. For any milestone year, the 1990 adjusted base year inventory is the same 1990 VMT times an emission factor for that milestone year that reflects replacement of pre-Tier 0 technology vehicles with cleaner Tier 0 technology vehicles. The MOBILE5 inputs for an adjusted base year inventory for a milestone year must include 1990 fleet data and specify that the emission factor is for the milestone calendar year. Thus the adjusted base year inventory for 2005 is the 1990 VMT times a 2005 emission factor that reflects 15 years of such fleet turnover.

During 1993 EPA and the states identified the issue of how to incorporate the effects of the Tier 0 FMVCP/Phase II RVP in future year projections and in the calculation of the reduction needs. During 1993 EPA issued the guidance in the October 29, 1993 D. Kent Berry memorandum cited above. In this memorandum, EPA restated its policy that the primary test of whether an ROP plan meets the ROP requirement is whether the milestone year projected control strategy inventory is less than the target level. This memo was written in the context of the 15% plan and stated that the EPA intends to compare the 1996 projected inventory to the target as the primary test of whether a State's 15% plan demonstrates the required reduction. But the guidance is applicable to all ROP plans. This memo mainly dealt with the reconciliation of the effects of

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<sup>13</sup> The 1990 ROP inventory is the 1990 base year inventory less all biogenic emissions and less emissions from any large point sources that are outside of the nonattainment boundaries and that were included in accordance with EPA's inventory guidance. The mobile source component of both inventories is the same.

<sup>14</sup> Actually, the entire inventory is the summation of a number of these emission factors - VMT products for the various links and highway facilities.

Tier 0 FMVCP/Phase 2 RVP when projecting growth in emissions and emission reduction needs. This memorandum discussed three alternatives of which only the first two are pertinent to the Baltimore area.

The first alternative is for the state to project future year emissions as if the Tier 0 FMVCP/Phase 2 RVP effects on “base line” emissions do not occur. The future year uncontrolled mobile source emissions would be determined by multiplying 1990 emission factors (i.e., emission factors determined using 1990 base year conditions for the 1990 calendar year) by the future year VMT. For 2005, such an uncontrolled inventory would be derived by multiplying a 1990 EF times a 2005 VMT. This method projects the mobile source emission from the 1990 ROP (and hence 1990 base year) levels. For Baltimore, the 2005 uncontrolled emissions are higher than the 1990 base year levels mainly because the 2005 VMT is higher than the 1990 levels<sup>15</sup>.

Under the October 29, 1993 memorandum referenced above, the State can demonstrate ROP by subtracting the sum of the following reductions from the 2005 uncontrolled projected inventory<sup>16</sup>: (1) Tier 0 FMVCP; (2) Phase II RVP; (3) Reformulated gasoline; (4) Enhanced I/M; (5) New RACT; (6) Tier 1 & other post-1990 changes to the FMVCP; and (7) Reductions from other creditable stationary source, area source and mobile source measures.

The second alternative is to project future year as if the effects of the Tier 0 FMVCP and Phase II RVP are in force in the future year. MOBILE5 emission factors for the future year are generated by turning off post-1990 control programs in MOBILE5 (with NEWFLG = 5 and with the appropriate Phase II RVP limits)<sup>17</sup>. This method uses a 2005 EF times a 2005 VMT to derive the 2005 uncontrolled inventory. Because the same post-1990 control programs are turned off in MOBILE5 when generating the 1990 adjusted base year inventory for 2005, this method effectively projects future year uncontrolled emissions from the 1990 adjusted base year for 2005 levels. In this case, the future year uncontrolled on-road mobile source emissions are greater than

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<sup>15</sup> Other factors such as the increase in the number of vehicles and changes in link-based speed results from the traffic demand model also affect future year projections. MOBILE5 emission factors are speed sensitive. Thus the 2005 emissions are also affected by speed changes caused by increased congestion or due to changes in the highway network reflected in the build scenario of the approved TIP in force at the time of the projection.

<sup>16</sup> This list is correct for severe and worse areas, such as the Baltimore area, that are mandated to have enhanced I/M and reformulated gasoline; other lower classified areas could use reformulated gasoline only if an opt-in was approved and what ever I/M program in place. I/M and RACT corrections are also discussed in the October 29, 1993, memorandum but not considered here because these do not apply in the case of Baltimore.

<sup>17</sup> See section 2.1.8 regarding the input flag “NEWFLG” in the USER'S GUIDE to MOBILE5. The programs turned off include: Tier 1 FMVCP, on-board refueling vapor recovery (ORVR), gasoline detergent additives (GDA) in MOBILE5b and just the Tier 1 FMVCP in MOBILE5a (for which ORVR must be programmed in as a separate user-input and for which GDA cannot be modeled).

the 1990 adjusted base year levels (which used the smaller 1990 VMT) but not necessarily greater than the 1990 base year levels. In the case of Baltimore's plan, the 2005 VOC emissions projections for on-road mobile sources are less than the 1990 base year whereas the 2005 NO<sub>x</sub> emissions projections for on-road mobile sources are greater than the 1990 base year level.

Under the October 29, 1993 memorandum referenced above, the State can demonstrate ROP by subtracting the sum of the following reductions from the 2005 uncontrolled projected inventory: (1) Reformulated gasoline; (2) Enhanced I/M; (3) New RACT; (4) Tier 1 & other post-1990 changes to the FMVCP; and (5) Reductions from other creditable stationary source, area source and mobile source measures.

The difference in the sums of reductions used to demonstrate ROP between the first alternative and the second: Tier 0 FMVCP and Phase II RVP. During the demonstration of ROP, these are not subtracted when using the second alternative because the effects of these were already incorporated in the uncontrolled inventory projection.

In the April 24, 1998 SIP submittal (and in all subsequent amendments prior to the December 28, 2000 submittal) Maryland projected on-road mobile emissions for the uncontrolled case using 2005 activity levels and emission factors representing 1990 conditions – the first alternative described in the October 9, 1993 memorandum cited previously. Such projections use 1990 emission factors (EFs) generated by the MOBILE5 model times 2005 activity levels (the 1990 base year uses 1990 EFs times 1990 activity levels)<sup>18</sup>. This method ignores the effect of the "Tier 0" FMVCP<sup>19</sup> has due to turnover of older vehicles between 1990 and 2005 under and the "Phase II" Reid Vapor pressure regulations.

This is explained in the submittal on the pages entitled "Baltimore Area Highway Vehicle Phase II ROP Emission Inventories Milestone Year : 2005". The notes explain the basis for each scenario. Scenario 1 is just the 1990 base year. Scenario 2 is the "1990 adjusted baseline inventory in 2005 showing the effects in 2005 of the Tier 0 and Phase II RVP programs on emissions using 1990 base year inventory activity levels. Scenario 3 is the 2005 uncontrolled which was compiled using 1990 emission factors and 2005 activity levels. Scenario 4 is the 2005 projected inventory using 2005 emission factors that do not reflect Tier 1 FMVCP requirements but do reflect Phase II RVP. The amount that emissions change from scenario 3 to scenario 4 is the "FMVCP/RVP" reductions discussed for first alternative in the October 29, 1993 memorandum and tabulated in the row designated "FMVCP/RVP" in Table 3.D.1 of the April 24, 1998 submittal. These "FMVCP/RVP" reductions were 59.4 TPD VOC and 48.1 TPD NO<sub>x</sub> in the April 24, 1998 SIP. When these "FMVCP/RVP" reductions are subtracted from the 2005 uncontrolled emissions of 162.7 TPD VOC and 202.4 TPD NO<sub>x</sub> from the April 24, 1998

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<sup>18</sup> For on-road mobile sources the major components of activity level includes such activities as VMT, number of cold and of hot starts, trip ends and number of vehicles.

<sup>19</sup> Tier 0 is the name given to the FMVCP promulgated by January 1, 1990; The term "Tier 0" is used because the CAA mandated a first round of new standards under the FMVCP after 1990 the "Tier 1" and authorized a second round – "Tier 2" – if necessary.

SIP results in 2005 on-road mobile emissions of 103.6 TPD VOC and 154.3 TPD NO<sub>x</sub>. Table 1 below summarizes the relationship between the uncontrolled 2005 on-road mobile source emissions and 2005 “FMVCP/RVP” reductions in the April 24, 1998 and December 28, 2000 submittals.

Table 1: Comparison Uncontrolled 2005 On-road Mobile Source Emissions and “FMVCP/RVP” Reductions for 2005 in tons per day (TPD)				
		April 24, 1998 submittal	December 28, 2000 submittal	4/24/98 value minus the 12/28/00 value
	VOC Emissions			
1	Uncontrolled VOC Emissions	162.7	106.1	56.6
2	“FMVCP/RVP” Reductions	59.4	N/A	
3	Uncontrolled minus “FMVCP/RVP” Reductions	103.6	106.1	- 2.5
	NO <sub>x</sub> Emissions			
4	Uncontrolled VOC Emissions	202.4	173.8	28.6
5	“FMVCP/RVP” Reductions	48.1	N/A	
6	Uncontrolled minus “FMVCP/RVP” Reductions	154.3	173.8	- 19.5
	N/A - not applicable because the 2005 uncontrolled projection incorporates the Tier 0 FMVCP and Phase II RVP programs.			

In the December 28, 2000 SIP, Maryland projected 2005 uncontrolled mobile source emissions using emission factors for 2005 that reflected only the Tier 0 FMVCP and the Phase II RVP limits and 2005 activity levels – i.e., used the second alternative described in the October 29, 1993 memorandum cited above. This is explained on the page entitled “2005 Baltimore Area Highway Vehicle Emission Analysis - Control By Control Emissions in Tons per Day” in the December 28, 2000 SIP submittal. The 1990 base line and 1990 adjusted base line in 2005 emission projections correspond to scenarios 1 and 2, respectively, of the prior submittals but are not designated with a scenario number. Scenario 1 uses the same controls as the 1990 adjusted base line emissions in 2005 case (2005 EFs reflecting only Tier 0 FMVCP effects and Phase II RVP) but uses 2005 activity levels. Scenario 1 in the December 28, 2000 submittal corresponds to the same control (Tier 0 FMVCP in 2005 + Phase II RVP) and activity level (2005) assumptions as Scenario 4 in the prior submittals. The scenario 1 from the December 28, 2000 submittal is higher than the scenario 4 from prior submittals because newer fleet and traffic demand model inputs are more recent.

Because the effects of Tier 0 FMVCP in 2005 and Phase II RVP are already incorporated into the 2005 uncontrolled case of the December 28, 2000 submittal there is no need to tabulate these effects as reductions as discussed for second alternative in the October 29, 1993 memorandum cited above. Maryland has left the row designated “FMVCP/RVP” in Tables 1.1 and 6.1 blank of the December 28, 2000 submittal.

The treatment of the Tier 0 FMVCP in 2005 and Phase II RVP effects in 2005 at 2005 activity levels explains changes in 2005 uncontrolled emissions as shown in Table 1 above. As discussed previously, the on-road mobile sources “uncontrolled” projection in the December 28, 2000 submittal includes the benefits of Tier 0 FMVCP and Phase II RVP, and the prior submittals do not. To put the April 24, 1998 submittal’s uncontrolled emissions for on-road mobile sources on the same basis as far as considering the same control strategies as that in the December 28, 2000 one would take the April 24, 1998 values and subtract the Tier 0 FMVCP and Phase II RVP as shown in Table 1 above. The results are 103.3 TPD VOC and 154.3 TPD NO<sub>x</sub>. Even when considering projections that consider the same control strategies (lines 3 and 6 in Table 1 for VOC and NO<sub>x</sub>, respectively) the results in the December 28, 2000 submittal are 2.8 TPD VOC and 19.5 TPD NO<sub>x</sub> higher than those in the April 24, 1998 submittal. But the two submittals did not use the same fleet data. The same changes in fleet data between the April 24, 1998 submittal and the December 21, 1999 submittal that caused the 2005 MVEBs to increase will also cause the 2005 uncontrolled emissions to increase. If the December 28, 2000 submittal used the fleet data inputs as the April 24, 1998 then the results tabulated in lines 3 and 6 of Table 1 would have been the same.

Maryland made two other changes in the 2005 uncontrolled inventories. These changes affected VOC and NO<sub>x</sub> emissions projections for the non-road mobile sectors. The non-road change is that the December 28, 2000 SIP projects 2005 VOC emissions in the lawn-and-garden category to be higher than the projection in the prior submittals. This corrects an apparent error in the prior submittal which had the emissions in this category increasing through 2002 and then dropping in 2005. The NO<sub>x</sub> increase in the nonroad category is solely due to rounding and is a insignificant change (91.8 versus 91.84).

The changes in 2005 projected uncontrolled emissions between the December 28, 2000 submittal and earlier submittals is summarized in the Table 2, below. The totals on line 5 are the projected uncontrolled emissions as stated in the plan and those on line 7 adjust the on-road mobile portion for the Tier 0 FMVCP/Phase II RVP reductions (line 6) to bring the two uncontrolled inventories on the same control strategy basis as discussed above.

Table 2: Comparison of Projected Uncontrolled Emissions for 2005 in tons per day (TPD)							
	Sector	December 28, 2000 submittal (TPD)		April 24, 1998 submittal (TPD)		4/24/98 value minus the 12/28/00 value in TPD	
		VOC	NO <sub>x</sub>	VOC	NO <sub>x</sub>	VOC	NO <sub>x</sub>
1	Point	54.2	251.9	54.2	251.9	0	0
2	On-road mobile	106.1	173.8	162.7	202.4	56.6	28.6
3	Non-road mobile	55.76	91.84	54.4	91.8	-1.36	-0.04
4	Area	132.2	15.4	132.2	15.4	0	0
5	Total	348.26	532.94	403.5	561.5	55.24	28.56
6	“FMVCP/RVP Reductions”	N/A	N/A	59.4	48.1		
7	Total less line 6	348.26	532.94	344.1	513.4	-4.16	-19.54

**c. EPA disagrees that the changes in emission reduction estimates or over all emissions projections necessarily invalidates the existing photochemical grid modeling.**

The photochemical grid modeling results do not depend upon the amount of emission reductions occurring between a 2005 uncontrolled projection inventory and a 2005 control strategy projection inventory but upon reductions in emissions between base line emissions and the 2005 emissions considering all control strategies. The emissions input for the photochemical grid modeling for the 2005 attainment year is the level of emissions after consideration of all control strategies. Therefore, the relevant issue is whether the final 2005 emission projections with all controls in place have changed significantly from those modeled.

The changes in emission reduction totals stems from how mobile source growth was determined in the uncontrolled case for 2005. The treatment of the Tier 0 FMVCP in 2005 and Phase II RVP effects in 2005 at 2005 activity levels explains a large difference in the reduction estimates. The change in reduction estimates from the two submittals is summarized in Table 3, below.

Table 3: Comparison of Total and “FMVCP/RVP” Reductions for 2005 in tons per day (TPD)				
	April 24, 1998 submittal (TPD)		December 28, 2000 submittal (TPD)	
	VOC	NO <sub>x</sub>	VOC	NO <sub>x</sub>
Total Reductions	179.5	238.8	124.66	228.1
“FMVCP/RVP” Reductions	59.4	48.1	0	0
Difference	120.1	190.7	124.66	228.1

Other than rounding differences that occurred when Maryland rounded the December 28, 2000 submittal to the nearest hundredth of a ton versus nearest tenth as was done previously, Maryland changed reduction estimates in several nonroad categories (gasoline engine and marine engines), beyond RACT controls at NO<sub>x</sub> sources (identified as Phase II/III NO<sub>x</sub> in the SIP), bakeries, screen printing, graphic arts (rotogravure/flexography and lithography) and stage II controls as well as mobile sources.

The changes in beyond RACT control on NO<sub>x</sub> sources is due to applying Maryland’s NO<sub>x</sub> SIP call rule versus the previously assumed Phase III under the Ozone Transport Commission’s Memorandum of Understanding regarding NO<sub>x</sub> controls.

The same changes in data between the April 24, 1998 submittal (and in all subsequent amendments prior to the December 28, 2000 submittal) and the December 21, 1999 submittal that caused the 2005 MVEBs to increase will also affect the reduction estimates for on-road mobile sources and Stage II controls<sup>20</sup>.

Maryland reevaluated the benefits from several of their VOC control regulations and added the benefits of several measures previously for which no reduction credits had been computed.

For lithographic printing Maryland had determined benefits for only those printers of which it was aware in the April 24, 1998 plan. Maryland’s rule applies to area as well as point sources. Maryland revised their benefits to include the effects on area sources in the December 28, 2000 submittal.

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<sup>20</sup> The MOBILE5 emission factor model produces factors for refueling emissions that consider the gas pump based equipment as well as the on-board refueling vapor recovery equipment on the vehicles. Because the 1998 and 2000 year submittals use different fleet data the benefits will differ.

In the December 28, 2000 SIP, Maryland added the benefits due to post-1990 changes in Maryland's rotogravure and flexographic regulation. In 1993, Maryland revised their pre-1990 VOC control regulation applicable to rotogravure and flexographic printing operations to lower the applicability threshold from 550 pounds per day to 100 pounds per day. In the April 24, 1998 plan Maryland did not compute the benefits from the revised regulation.

In the December 28, 2000 SIP, Maryland re-evaluated the benefits of Maryland's screen printing regulation. In the 2000 submittal, Maryland revised downward its estimate of the percentage of area sources in the graphic arts category that would be subject to this regulation. The downward revision was from 20% in the April 24, 1998 submittal to 4% in the 2000 submittal. If the estimate of the percentage of emissions subject to a regulation declines then the reduction estimates also decline.

Maryland updated the reductions expected from the bakery RACT regulation. The December 28, 2000 submittal reflects data on the final controls at specific bakeries under from Maryland's bakery regulation. The April 24, 1998 submittal only estimated reduction potential based upon a conservative estimate using data from EPA's Alternative Control Technology document for this source category.

Maryland reevaluated the benefits of EPA's rules for various categories of nonroad mobile sources. Maryland has used estimates based upon EPA's final rules versus prior guidance provided by EPA<sup>21</sup>. The benefits from EPA's nonroad diesel engine rule in this prior guidance were based upon EPA's final rule. Therefore, Maryland's estimated of the benefits have not changed other than due to the aforementioned rounding change. The prior guidance was based upon proposed rules for other categories. Maryland has updated the 2005 projections to reflect the benefits based upon the final rules.

Maryland has of course updated the fleet input data that is used to derive the mobile source emissions projections for 2005. Maryland has also revised the parameters for its I/M program to reflect the current I/M program versus that in place in 1998. These have affected the reduction estimates for the various mobile source programs and Stage II. The changes in reduction estimates between the April 24, 1998 and December 28, 2000 submittals for mobile sources has little relevance to the approvability of the SIP, because future year mobile source emissions reflecting all controls (except Tier 2) can be determined directly without generating an uncontrolled inventory projection.

With the exception of the Tier 2/sulfur rule benefits, the final motor vehicle emissions projected for 2005 with all controls in place can be determined without regard to "reductions" between the 2005 emissions with no new controls (i.e., the "2005 uncontrolled emissions") and the 2005

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<sup>21</sup> Memorandum dated Nov. 28, 1994 "Future NonRoad Emission Reduction Credits for Court-Ordered NonRoad Standards" From Phillip A. Lorang, Director, Emissions Planning and Strategies Division.

emissions with all control strategies<sup>22</sup>. The reason is that the projected 2005 on-road mobile source emissions with all controls in place is determined by determining 2005 activity levels and generating emission factors using the MOBILE5 model. The MOBILE5 model generates emission factors for 2005 considering all controls that the user specifies. Thus in the case of Baltimore, MOBILE5 generates emission factors for 2005 that reflect reformulated gasoline (RFG), Maryland's enhanced I/M program, the national low emission vehicle program EPA's 1997 rule regulating heavy duty diesel engines, the Tier 0 and Tier 1 FMVCP, the gasoline detergent additive rule, and on-board refueling vapor recovery<sup>23</sup>. These are the measures that Maryland is using to demonstrate attainment in 2005. The Tier 2/sulfur rule benefits have to be determined separately because these are not programmed into the MOBILE5 model. The 2005 attainment MVEBs are the motor vehicle emissions projections for 2005 from the December 21, 1999 submittal less the Tier 2/sulfur rule benefits in 2005. EPA believes Maryland has correctly determined the 2005 budgets prior to and after the application of the Tier 2/sulfur benefits.

As explained above, the on-road mobile source uncontrolled inventory for 2005 in the December 28, 2000 submittal reflects application of the same control strategies as the on-road mobile source uncontrolled inventory for 2005 in the April 24, 1998 submittal less the 2005 Tier 0/Phase 2 RVP reductions. As explained above, only the final 2005 on-road mobile source emissions NOx and VOC emissions inventories that reflects all control strategies, that is, the MVEBs, have any bearing upon whether the plan demonstrates attainment. Because the on-road mobile source emission NOx and VOC inventories for 2005 can be directly determined using MOBILE5-generated emission factors for 2005 reflective of all on-road mobile source control strategies (except Tier 2/Sulfur rule benefits) and because such final NOx and VOC emissions inventories are the on-road mobile source portion of the emissions-input into the photochemical grid model, the attainment plan could be developed without quantifying reductions in 2005 attributable to any measure or group of measures. EPA has examined the other changes in growth and reduction estimates and concludes these are acceptable as these changes correct and error or reflect more current information about the effects of controls on the category.

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<sup>22</sup> The Tier 2 program is the exception because its effects have not incorporated into the MOBILE5-series of emission factor models. The benefits for Tier 2 currently have to be applied as a deduction to the projection that includes all other programs (such as the federal motor vehicle control program through Tier 2, national LEV, inspection/maintenance, reformulated gasoline). The definitive determination of the effects of Tier 2 on budgets will be the MOBILE6 emission factor model. For this reason EPA is requiring Maryland to submit (and Maryland has submitted) an enforceable commitment to revise the MVEBs within a specified time period. See 64 FR at 70411, December 16, 1999 and see 65 FR 46383, July 28, 2000.

<sup>23</sup> The RFG program requires more VOC benefits than the Phase II RVP and thus supplants the effects of the Phase II RVP.

The following tables compare the various 2005 emissions projections for 2005 in the Baltimore area.

Table 4.1 Summary of Emissions in the April 24, 1998 SIP - With On-Road Mobile Modeling Inventories		
Inventory Sector	VOC Inventory (TPD)	NOx Inventory (TPD)
Point	44.4	138.4
Area	94.3	14.6
Non-road Mobile	37.2	72.0
On-road Mobile	48.9	110.3
Total	224.8	335.3

Table 4.2 Summary of Emissions in the April 24, 1998 SIP - With April 24, 1998 Explicit MVEBs		
Inventory Sector	VOC Inventory (TPD)	NOx Inventory (TPD)
Point	44.4	138.4
Area	94.3	14.6
Non-road Mobile	37.2	72.0
On-road Mobile	48.1	97.9
Total	224.8	322.9

Table 4.3 Summary of Emissions in the April 24, 1998 SIP with the December 21, 1999 Revised MVEBs		
Inventory Sector	VOC Inventory (TPD)	NOx Inventory (TPD)
Point	44.4	138.4
Area	94.3	14.6
Non-road Mobile	37.2	72.0
On-road Mobile	48.6	104.1
Total	224.5	329.1

Table 4.4 Summary of Emissions in the December 28, 2000 SIP - with the December 21, 1999 MVEBs (i.e., No Tier 2/Sulfur benefits)		
Inventory Sector	VOC Inventory (TPD)	NOx Inventory (TPD)
Point	43.80	113.87
Area	94.65	14.64
Non-road Mobile	36.46	72.03
On-road Mobile*	48.60	104.10
Total*	223.51	304.64

\* As discussed above, Maryland's projections are 0.1 TPD VOC and 0.2 TPD NOx higher.

Table 4.5 Summary of Emissions in The April 24, 1998 SIP with the December 28, 2000 MVEBs that Include th4 Tier 2/sulfur Rule Benefits		
Inventory Sector	VOC Inventory (TPD)	NOx Inventory (TPD)
Point	43.80	113.87
Area	94.65	14.64
Non-road Mobile	36.46	72.03
On-road Mobile	45.50	96.90
Total	220.41	297.44

As discussed above, the December 28, 2000 submittal projects an overall decrease in 2005 emissions in the Baltimore area beyond the amounts considered in the photochemical grid modeling and thus only strengthens the WOE that the area will attain.

**d. Maryland's December 21, 1999 commitments to 0.5 TPD VOC and 6.4 TPD NOx are now moot.**

As summarized in Table 4.4 above, the projected emissions in the December 28, 2000 submittal before the application of the Tier 2/Sulfur rule, i.e., effectively with the December 21, 1999 MVEBs, are less than the April 24, 1998 submittal. Therefore, any increases between the April 24, 1998 and December 21, 1999 due to changes in the MVEBs have been remedied. The overall effect of the December 28, 2000 submittal is a lowering of projected 2005 emissions even prior to the application of the Tier 2/Sulfur benefits which only strengthens the WOE as discussed above.

**e. The commenter and EPA agree that the MVEBs in the December 28, 2000 submittal are less than the MVEBs in the April 24, 1998 submittal.** However, the commenter is probably referring to the increase in the December 21, 1999 submittal's MVEBs over the April 24, 1998 submittal. The overall effect of the December 28, 2000 submittal is a lowering of projected 2005 emissions even prior to the application of the Tier 2/Sulfur benefits which only strengthens the WOE as discussed above.

**4. Comment:** The commenter asserts that Maryland has not even demonstrated that the Baltimore area will meet rate-of-progress in 2005 and that the reductions needed to meet the minimum ROP requirements are not sufficient for attainment.

**EPA's Response:**

EPA disagrees that whether or not Maryland demonstrates ROP for 2005 has any bearing on whether the attainment MVEBs are adequate. EPA believes the rate-of-progress requirements under CAA §§172(c)(2) and 182(c)(2)(B) are independent requirements from the attainment demonstration requirements under §§172(c)(1) and 182(c)(2)(A). The attainment demonstration has to achieve a level of emissions consistent with attaining the ozone NAAQS. The ROP requirements are for achieving specified levels of emissions below base year levels on a specific schedule of milestone years to ensure minimum levels of emission reduction and thus progress towards attainment. The ROP requirement is a demonstration that the SIP has sufficient control measures to reductions in emissions by specific annual amounts (the initial fifteen percent reduction by 1996 and the three percent per year averaged over three year periods). The attainment demonstration is solely about a demonstration that the SIP has sufficient control measures to attain the standard. If the attainment plan SIP projects that the control measures contained in the plan will result in emissions levels low enough to attain as demonstrated through an analysis based on photochemical grid modeling then the attainment plan may be approved. Whether or not these attainment emissions levels are less or greater than those needed to meet ROP is irrelevant to whether the attainment plan is sufficient and the MVEBs in the plan are adequate.

**5. Comment:** The commenter asserts that Maryland must revise the SIP to include transportation control measures for the Baltimore area including but not limited to those listed in 42 U.S.C. §7408(f) (CAA section 108(f)) or Maryland can submit a new attainment demonstration accounting for the increased vehicle emissions projections. The commenter notes that the Baltimore area is subject to 42 U.S.C. §7511a(c)(5) which requires periodic submission of a demonstration that current aggregate vehicle mileage and other relevant parameters are consistent with those in the attainment demonstration. The commenter claims that when Maryland submitted revised MVEBs reflecting 1999 fleet data to EPA on December 21, 1999, Maryland submitted a *de facto* demonstration that motor vehicle emissions due to aggregate motor vehicle mileage and other relevant parameters shows are no longer consistent with the demonstration of attainment.

The commenter then concludes that Maryland must do one of the following before EPA may approve or determine the MVEBs adequate:

(a) Submit a SIP pursuant to 42 U.S.C. 17411a(c)(5) providing offsets of 3.7 TPD VOC and 13.8 TPD NO<sub>x</sub> from within the motor vehicle source sector, OR

(b) Maryland must submit a new attainment demonstration on how it will obtain the necessary reductions from other sources.

**EPA's Response:**

EPA does not agree that Maryland is presented with the choices posited by the commenter. The section 182(c)(5) requirement is only valid when there is an approved attainment demonstration or a promulgated federal implementation plan.

While Maryland has revised its attainment demonstration along the lines of the second option, EPA does not believe this necessarily requires revised photochemical grid modeling to address the changes in emissions represented by the December 28, 2000 submittal for the reasons discussed above.

**6. Comment:** The commenter requests EPA to explain why Maryland must offset only the 0.5 TPD VOC and 6.4 TPD NO<sub>x</sub> increases in MVEBs from the April 24, 1998 and December 21, 1999 and not the greater amounts of 3.2 TPD VOC and 13.8 TPD NO<sub>x</sub> determined by the commenter's analysis.

The commenter provides an analysis to prove an assertion that Maryland's calculations understate the amount of the increases in motor vehicle emissions due to the use of 1999 vehicle data. The commenter compares the MVEBs from the attainment demonstration SIP submitted April 24, 1998 to those contained in the revision submitted December 21, 1999. The increase from the April 24, 1998 MVEBs and the December 21, 1999 MVEBs is 0.5 TPD VOC and 6.4 TPD NO<sub>x</sub>.

The commenter points out that the December 21, 1999 submission states the emission reduction benefits from the national low emission vehicle (NLEV) program and on-road heavy-duty diesel engine (HDDE) program for 2005 are 3.2 TPD and 7.4 TPD. The commenter states that EPA determined Maryland would need to revise the 2005 attainment MVEBs to incorporate Tier 2, NLEV and HDDE programs and did not anticipate that benefits from these programs would be used to offset increases in motor vehicle emissions due to the use of more recent fleet data than that used for the April 24, 1998 SIP. The commenter then concludes that the total increases in motor vehicle emissions due to the use of the 1999 fleet data are for VOC and NO<sub>x</sub>, respectively: 3.7 TPD VOC (the 0.5 TPD VOC change between the April 24, 1998 and December 21, 1999 submittals and the 3.2 TPD VOC total NLEV and HDDE reductions from the 1999 SIP), and 13.8 TPD NO<sub>x</sub> (the 6.4 TPD NO<sub>x</sub> change between the 1998 and 1999 submittals and the 7.4 TPD NO<sub>x</sub> total NLEV and HDDE reductions from the 1999 SIP).

**EPA's Response:**

The commenter's analysis makes a number of assumptions that EPA believes are not sound. First, the commenter focuses upon emission reduction estimates as a way to determine what the effect of the NLEV and HDDE program should have had on the April 24, 1998 budgets. As

explained in response to comment number 3 above on-road mobile source emission projections are determined using mobile source emission factors generated by the MOBILE5 emission factor model times activity data (VMT, etc.). Thus a “reduction” is just one projection without the measure in question reflected in the MOBILE5-generated emission factors less the projection that uses MOBILE5-generated emission factors that reflect the program in question. The reduction estimates presented in the comments reflect fleet and other data from the December 21, 1999 and December 28, 2000 submittals. Any increase in VMT used for the December 28, 2000 over the April 24, 1998 submittal will inflate the “reduction” estimate if all other factors are held constant. If the fleet data used in both submittals remained the same then the MOBILE5 emission factors with and without NLEV and HDDE would be the same. Thus the reduction would be:

$$\text{Reduction} = (\text{EF}_{\text{without NLEV,HDDE}} \times 2005 \text{ VMT}) - (\text{EF}_{\text{with NLEV,HDDE}} \times 2005 \text{ VMT})$$

because the 2005 VMT is the same:

$$\text{Reduction} = (\text{EF}_{\text{without NLEV,HDDE}} - \text{EF}_{\text{with NLEV,HDDE}}) \times 2005 \text{ VMT}$$

Using the notation 1998 for the April 24, 1998 submittal and 2000 for the December 28, 2000 submittal and assuming the December 28, 2000 submittal has a VMT that differs by an amount of “N” (where “N” is the percent change in decimal form, i.e., divided by 100) then the two reductions are:

$$\text{Reduction}_{1998} = (\text{EF}_{\text{without NLEV,HDDE}} - \text{EF}_{\text{with NLEV,HDDE}}) \times 2005 \text{ VMT}_{1998}$$

$$\text{Reduction}_{2000} = (\text{EF}_{\text{without NLEV,HDDE}} - \text{EF}_{\text{with NLEV,HDDE}}) \times 2005 \text{ VMT}_{2000}$$

$$\text{Where } 2005 \text{ VMT}_{2000} = (1 + N) \times 2005 \text{ VMT}_{1998}$$

The ratio of the two reduction estimates: becomes:

$$\text{Ratio} = \frac{\text{Reduction}_{2000}}{\text{Reduction}_{1998}} = \frac{(\text{EF}_{\text{without NLEV,HDDE}} - \text{EF}_{\text{with NLEV,HDDE}}) \times 2005 \text{ VMT}_{2000}}{(\text{EF}_{\text{without NLEV,HDDE}} - \text{EF}_{\text{with NLEV,HDDE}}) \times 2005 \text{ VMT}_{1998}}$$

$$= \frac{2005 \text{ VMT}_{2000}}{2005 \text{ VMT}_{1998}} = \frac{(1 + N) \times 2005 \text{ VMT}_{1998}}{2005 \text{ VMT}_{1998}} = (1 + N)$$

If “N” = 3% then the reduction estimate in the 2000 submittal would be 1.03 times the 1998 submittal. The analysis in the comments does not address such possible inflation of reduction amounts.

But there are other changes between the submittals which affect the emission factors: the fleet data, the I/M program inputs and possibly others such as the speeds generated for by the traffic demand model. The comments assume that the MOBILE5 model is insensitive to fleet mix or speeds when deriving emission factors and thus changes in emission factors occurring due to the application of a measure or suite of measures. The MOBILE5 model does generate emission factors that do consider changes due to speeds. The changes in fleet data can have effects that depend on many factors. If the fleet age distribution changes so that the average age of the fleet contains newer cars then emissions can be expected to go down because more of the fleet is made up of the newer, more durable cars meeting lower emission standards and less is made of the older, higher emitting vehicles. If the fleet age distribution remains the same but the fleet contains more vehicles in the “light duty gasoline truck” (i.e., “sport utility/mini-van”) categories then emissions would be expected to go up because the emission standards for light duty gasoline trucks are generally higher than for light duty gasoline vehicles of the same vintage. If the fleet reflects a shift from cars but also to newer vehicles on average, i.e., contains more newer vans and sport utility vehicles in lieu of older light duty passenger cars, then the change could be up or down.

Comparison of the “like” mobile source inventories between the April 24, 1998 and December 28, 2000 submittals shows that the differences caused by the fleet data and other changes between April 24, 1998 and December 28, 2000 submittals does not yield a uniform change (or even a trend).

Table 5.1: Comparison of 2005 Emissions Estimates for On-road Mobile Sources - VOC in tons per day (TPD)			
Inventory controls assumed	December 28, 2000	April 24, 1998	Difference (12/28/2000 value - 4/24/1998 value)
2005 “uncontrolled”	106.1	104.3	1.8
2005 Tier 1 & 1990 CAA programs	91.7	86.2	14.4
As above plus RFG	78.4	70.7	7.7
As above plus Enhanced I/M	51.9	48.1	3.8

Table 5.2: Comparison of 2005 Emissions Estimates for On-road Mobile Sources - NO <sub>x</sub> in tons per day (TPD)			
Inventory controls assumed	December 28, 2000	April 24, 1998	Difference (12/28/2000 value - 4/24/1998 value)
2005 "uncontrolled"	173.8	154.3	19.5
2005 Tier 1 & 1990 CAA programs	142.7	121.7	21.0
As above plus RFG	137.8	117.3	20.5
As above plus Enhanced I/M	111.7	97.7	14.0

This only proves that the analysis presented in the comments is based upon questionable assumptions.

EPA has re-reviewed the attainment demonstration in light of the comments. When EPA made the determination of inadequacy on the April 24, 1998 MVEBs it did so on the only 2005 emissions projections for on-road mobile sources that were explicitly identified as the MVEBs. The plan does contain other estimates of 2005 on-road emissions that did not meet this basic adequacy criterion found at 40 CFR §93.118(e)(4)(iii). The plan identifies that the modeling inventories for on-road mobile sources were higher than those contained in the April 24, 1998 submittal and even those contained in the December 21, 1999 submittal. The inventories used in the photochemical grid modeling were 48.9 TPD VOC and 110.3 TPD NO<sub>x</sub>. Therefore, the MVEBs in the December 21, 1999 submittal were actually less than those provided for in the photochemical grid modeling. The photochemical grid model only responds to amounts of emissions that are entered. Thus the changes between the April 24, 1998 modeling inventories of 48.9 TPD VOC and 110.3 TPD NO<sub>x</sub> and the MVEBs of 48.6 TPD VOC and 104.1 TPD NO<sub>x</sub> submitted December 21, 1999 (i.e., the December 28, 2000 MVEBs prior to the consideration of Tier 2) and the mobile source emissions used in the photochemical grid modeling are a decrease of 0.3 VOC and 6.2 TPD NO<sub>x</sub>. As discussed earlier (see response to comment number 3), the budgets with the benefits of the Tier 2/Sulfur rule are even lower and strengthen the WOE analysis.

**7. Comment:** The commenter notes that under EPA's guidance concerning 42 U.S.C. §7511a(c)(5) an area may submit a new attainment demonstration accounting for an increase in vehicle emissions projections in lieu of the specified transportation control measures program<sup>24</sup>. The commenter claims that such a demonstration of attainment must include new photochemical grid modeling.

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<sup>24</sup> 57 FR at 13520, April 16, 1992

**EPA's Response:**

As discussed in response to other comments (specifically numbers 1 and 3 above), Maryland is now projecting emissions levels lower than those modeled. As discussed previous, the December 28, 2000 therefore only strengthens the WOE that the Baltimore area will attain. Also as discussed in response to comment number 5 above, EPA does not believe the 42 U.S.C. §7411a(c)(5) requirement is in force.

**8. Comment:** The commenter claims the latest periodic inventory was due three years after a “June 30, 1997 submission and is therefore late. The commenter asserts EPA can not approve Maryland’s MVEBs because there is no demonstration that Maryland is meeting ROP requirements.

**EPA's Response:**

As explained in response to comment number 4 above, EPA concludes that the ROP and attainment demonstration requirements of the CAA are independent requirements. The MVEBs at issue in this adequacy determination are for attainment of the ozone NAAQS.

**9. Comment:** Commenter asserts that Maryland has not demonstrated that the proposed budget, when considered with all other sources, will provide for attainment. They argue that until it is demonstrated through photochemical grid modeling that adopted and committed control measures contained in the SIP submittal will provide for attainment, EPA cannot determine the MVEBs to be adequate for conformity purposes under CAA Section 176(c). They further argue that declaring the MVEBs in the December 28, 2000 SIP submittal to be adequate and using those MVEBs in Conformity determinations amounts to a declaration that the SIP submittal satisfies all the requirements for an attainment demonstration.

**EPA's Response:**

This comment is similar to a comment we received in a letter from 1000 Friends, sent to the EPA in regard to the adequacy of the MVEBs contained in the SIP submitted in December of 1999.<sup>25 26</sup> In a letter From EPA to Maryland dated February 15, 2000, we found the MVEBs in the December 1999 SIP submittal to be adequate for Conformity purposes. At that time, we stated that we would base our finding of adequacy of the MVEBs contained in the SIP submitted in December of 1999 on the fact that we may determine a budget adequate even when the SIP includes commitments to additional measures. In a November 3, 1999, Memorandum, “Guidance on Motor Vehicle Emissions Budgets in One-Hour Ozone Attainment Demonstrations”, from Merrylin Zaw-Mon, Office of Mobile Sources, to Air Division Directors, Regions I-VI, EPA issued guidance regarding such commitments in attainment plans for ozone nonattainment areas. This guidance required that States identify a list of potential control

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<sup>25</sup>See Letter from J. Herrema to EPA (January 20, 2000)

<sup>26</sup>See the Technical Support Document, “Technical Support Document for Adequacy Findings for the Motor Vehicle Emissions Budgets in Maryland’s Revised Phase II Ozone Attainment Plan for the Philadelphia-Wilmington-Trenton Ozone Nonattainment Area (Cecil County)”, page 12.

measures from which they would implement a selected number of measures from this list. These measures, when implemented, must provide sufficient additional emission reductions to meet the level of reductions that EPA requires for attainment. These measures must not contain any additional limits on highway construction beyond those which the submitted MVEBs impose. We stated that allowing new transportation investments consistent with the submitted MVEBs will not prevent the area from achieving the additional reductions that it needs for attainment, and therefore, we could find the submitted MVEBs adequate. In a February 2, 2000 letter to EPA, Maryland committed to adopt additional measures necessary to achieve the reductions needed for the attainment test as called for in our December 16, 1999 Notice of Proposed Rulemaking (64 FR 70412).

Maryland also recognized that in fulfilling its commitment to adopt and submit additional measures necessary to support the attainment test, it would also have to submit, as part of the SIP revision, revised MVEBs if the additional measures affect the motor vehicle emissions inventory. One of these measures that Maryland committed to was the adoption of the Tier 2/Sulfur Standards. Maryland's December 28, 2000 submission contains these revised MVEBs, reflecting the adoption of the Tier 2/Sulfur standards.

The revised MVEBs contained in this SIP Submittal are lower and therefore more stringent than the old MVEBs from the December 1999 Submittal, which these new MVEBs supercede. We fail to see how more stringent MVEBs could somehow impede the attainment process. On the contrary, we feel that these reduced MVEBs will enhance the ability of the region to attain the NAAQS. Therefore, new photochemical grid modeling is unnecessary to demonstrate attainment using these new more stringent MVEBs.

**10. Comment:** The commenter states that the MDE failed to respond or to provide adequate responses to a number of the comments it made during the state's public comment period on the revised plan submitted to EPA as a SIP revision on December 28, 2000.

**EPA's Response:**

After review of the December 28, 2000 SIP submittal, including Maryland's "Response to Comments" document for the December 8, 2000 public hearing, contained in that December 28, 2000 SIP submittal, EPA disagrees. This is the third time that the State of Maryland has amended the one-hour ozone attainment demonstration plan for the Baltimore area and, therefore, the third time it has held a public comment period on the plan. The amendments made to the plan and submitted to EPA as a SIP revision on December 28, 2000 are specific in nature and have been made by the State for specific purposes. In its December 28, 2000 submittal, the MDE explains these most recent amendments and its rationale for making them to the plan. The MDE's December 28, 2000 submittal addresses comments submitted on those revisions to the plan. In certain instances, the commenter raises issues on the plan and the MVEBs which have previously been addressed pursuant to comments made during previous state and federal comment periods on the plan and MVEBs. In those instances, Maryland cites to previous SIP revision submittals of the plan to EPA and to previous "responses to comments" documents prepared by both MDE and EPA all of which have been and remain a matter of public record.

### **III. The Motor Vehicle Emissions Budgets (MVEBS)**

In a November 16, 1999 Federal Register notice, (64 FR 62196), EPA announced that we found that the MVEBs budgets associated with the attainment demonstration SIP revision submitted on April 29, 1998 were not adequate for conformity purposes.

However, on December 16, 1999 (See 64 FR 70397), EPA published a notice of proposed rulemaking in the Federal Register proposing approval of the Baltimore 1-hour Ozone Nonattainment Area Attainment Demonstration, providing that the State completed specified actions listed in Table 3, page 70406 of the notice, within specified times. Among the expected actions, were the following shown below.

- (a) submit motor vehicle emissions budgets that we could find adequate for Conformity purposes;
- (b) submit commitments or reaffirmation of previous commitments to submit a list of measures that provide additional emissions reductions required for the attainment demonstrations;
- (c) submit commitments to revise the SIP using MOBILE6 within one year after it is issued; and
- (d) submit commitments to revise the motor vehicle emissions budgets to include Tier 2 benefits before December 31, 2000.

A revised SIP was submitted on December 3, 1999 and December 21, 1999 to meet the requirements of item (a), above. On February 15, 2000, we found those revised budgets contained in the revised SIP to be adequate for conformity purposes. We announced those findings in a Federal Register notice published on February 15, 2000 (65 FR 8701).

Item (d), above, required Maryland to submit a revised attainment demonstration plan for the purpose of revising its MVEBs to reflect the benefits the Tier 2/Sulfur-in -fuel rule. As stated above, a revised attainment demonstration plan was submitted on December 28, 2000 to satisfy this requirement. These revised MVEBs, submitted on December 28, 2000, are the subject of this adequacy finding.

Shown below in Table 6 are the 3 sets of budgets from each of the 3 separate SIP submittals. The table also shows the reason for each of the revisions.

**Table 6 - The Budgets of the Baltimore Attainment Demonstration Plan**

Attainment Demonstration Submittals	Milestone Year	Mobile Vehicle Emissions Budget for NOx- Tons Per Day	Mobile Vehicle Emissions Budget for VOC- Tons Per Day	Reason for Revision
Original Submittal: Dated: 4/24/98	2005	97.9	48.1	Required.
Revised Submittal: Dated: 12/3/99 and 12/21/99*	2005	104.1	48.6	Required to revise MVEBs to reflect benefits from Heavy Duty Diesel (HDD)Rule and the National Low Emissions Vehicle (NLEV)Rule.
Revised Submittal: Dated: 12/28/00	2005	96.9	45.5	Required to revise MVEBs to reflect benefits from Tier 2/Sulfur-in fuel Rule

\* For this submittal Maryland used 1999 vehicle registration data. The use of updated vehicle registration data accounts for the increase in the MVEBs (when compared to the April 24, 1998 submittal) despite the fact that those MVEBs also reflect the emission reduction benefits of the Heavy Duty Diesel (HDD)Rule and the National Low Emissions Vehicle (NLEV)Rule. The MVEBs of the revised attainment demonstration submitted on December 28, 2000 (for which Maryland also used the updated vehicle registration data), are lower than the MVEBs of the original April 24, 1998 submittal.

**IV. Evaluation of the Adequacy of the Revised MVEBs Budgets in the One Hour Ozone Attainment Demonstration Plan for Baltimore Area Submitted By the MDE on December 28, 2000**

In this TSD, we are evaluating the MVEBs associated with the attainment demonstration revisions contained in the 12/28/2000 SIP submittal, for conformity purposes. We are using the evaluation criteria detailed in the Transportation Conformity Rule, 40 CFR Part 93, § 93.118(e)4 through § 93.118(e)5. The evaluation is presented in Table 7, below.

**Table 7  
Adequacy of the MVEBs in 12/28/00 Revised Attainment Plan for the Baltimore Area**

Transportation Conformity Rule 40 CFR Part 93, § 93.118	Review Criteria	Was the Criterion Satisfied? If “Yes” How was this Criteria Satisfied?
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 submitted revised attainment demonstration was endorsed and submitted as a SIP revision the Governor’s designee, the Secretary of the MDE, and a public hearing was held.
Sec. 93.118(e)(4)(ii)	Before the attainment demonstration 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.
Sec. 93.118(e)(4)(iii)	Was the motor vehicle emissions budget(s) clearly identified and precisely quantified?	Yes, the budgets are clearly identified on page (8) of the December 28, 2000 attainment demonstration SIP revision submittal.
Sec. 93.118(e)(4)(iv)	Is the motor vehicle emissions budget(s), when considered together with all other emission reductions, consistent with applicable requirements for attainment demonstrations?	EPA believes the budgets can be declared adequate because they are consistent with the attainment demonstration.

Sec. 93.118(e)(4)(v)	Is the motor vehicle emissions budget(s) consistent with and clearly related to the emissions inventory and the control measures in the Plan?	EPA believes that the budgets are clearly related to the emissions inventory and the control measures in the SIP submittal because they have been revised to reflect the emission reduction benefits of the Tier2/Sulfur -in -Fuel Rule which were considered in the attainment demonstration.
Sec. 93.118(e)(4)(vi)	Revisions to previously submitted attainment demonstrations: 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).	Yes. The SIP submittal explains that the revised budgets reflect the effect of additional emission reduction benefits from the Tier 2/Sulfur -in-Fuel Rule.
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?	Yes

**V. Findings** - Based upon our review and evaluation of the revised MVEBs contained in MDE's December 28, 2000 submittal of the one-hour attainment demonstration plan for the Baltimore area, we find the said MVEBs adequate for conformity purposes.