

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

**DATE:** July 18, 2018

**SUBJECT:** Technical Support Document (TSD) - Adequacy Finding for the Washington, DC-MD-VA 2008 Ozone National Ambient Air Quality Standards (NAAQS) Nonattainment Area 2014, 2025, and 2030 Motor Vehicle Emission Budgets (MVEBs) for Nitrogen Oxides (NO<sub>x</sub>) and Volatile Organic Compounds (VOCs).

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**TO:** Administrative Record for the Adequacy Finding for the Washington, DC-MD-VA 2008 Ozone National Ambient Air Quality Standards (NAAQS) Nonattainment Area 2014, 2025, and 2030 Motor Vehicle Emission Budgets (MVEBs) for Nitrogen Oxides (NO<sub>x</sub>) and Volatile Organic Compounds (VOCs).

**THRU:** Susan Spielberger, Associate Director  
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## **I. Background**

On March 12, 2018, January 29, 2018, and January 3, 2018, the District of Columbia (the District), State of Maryland (Maryland), and Commonwealth of Virginia (Virginia), respectively, formally submitted, as revisions to their SIPs, a joint maintenance plan for the Washington, DC-MD-VA 2008 ozone national ambient air quality standards (NAAQS) nonattainment area (referred to as “the Washington Area”) that was prepared by the Metropolitan Washington Council of Governments (COG).

## **II. Transportation Conformity Requirements**

Transportation conformity is required under section 176(c) of the Clean Air Act (CAA) to ensure that federally supported highway, transit projects, and other activities are consistent with (conform to) the purpose of the SIP. The CAA requires federal actions in nonattainment and maintenance areas to “conform to” the goals of SIP. This means that such actions will not cause or contribute to violations of a NAAQS; worsen the severity of an existing violation; or delay timely attainment of any NAAQS or any interim milestone. Actions involving Federal Highway Administration (FHWA) or Federal Transit Administration (FTA) funding or approval are subject to the Transportation Conformity Rule (40 CFR part 93, subpart A). Under this rule, metropolitan planning organizations (MPOs) in nonattainment and maintenance areas coordinate

with state air quality and transportation agencies, EPA, FHWA, and FTA to demonstrate that their metropolitan transportation plans and transportation improvement plans (TIPs) conform to applicable SIPs. This is typically determined by showing that estimated emissions from existing and planned highway and transit systems are less than or equal to the MVEBs approved into a SIP.

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

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

To evaluate the submitted motor vehicle emissions inventory, it was necessary to review the supporting modeling completed using EPA's Motor Vehicle Emission Simulator (MOVES2014a). The District's, Maryland's, and Virginia's submitted files include run specifications (RunSpecs) describing the scenario parameters, input databases containing local fleet data, and output databases containing the modeling results. The submitted RunSpecs, input databases, and output database(s) were reviewed against the EPA MOVES Technical Guidance document: *MOVES2014 and 2014a Technical Guidance: Using MOVES to Prepare Emissions Inventories for State Implementation Plans and Transportation Conformity*. This document provides guidance on the use of the MOVES model to develop inventories for SIPs as well as analysis of emissions for transportation conformity determinations.

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

The RunSpecs, input databases, and output database were reviewed and found to have followed the applicable EPA guidance provided in the *MOVES2014 and 2014a Technical Guidance: Using MOVES to Prepare Emissions Inventories for State Implementation Plans and Transportation Conformity*. Additionally, sufficient documentation was provided by the District, Maryland, and Virginia to support the data, decisions, and assumptions made for each parameter.

**Table 1. Review of RunSpecs for the Washington Area 2014, 2025, and 2030 MVEBs for NO<sub>x</sub> and VOCs**

Domain/Scale	County scale was selected – allowing for appropriate detail necessary for regulatory analysis.
Time Spans Panel	Hourly time aggregation was selected. All appropriate months, days, and hours were selected. The appropriate year was selected for the scenario being modeled.
Geographic Bounds	Washington DC, Montgomery County, Prince George’s County, Frederick County, Charles County, Calvert County, the City of Alexandria, Arlington County, Fairfax County, Loudoun County, and Prince William County were selected.
Vehicles/Equipment	Gasoline, ethanol, diesel, and compressed natural gas (CNG) fuels were selected. All source types were selected.
Road Type	All road types were selected.
Pollutants and Processes	NO <sub>x</sub> and VOCs were selected. All processes were included in the analysis.

**Table 2. Review of MOVES input databases for the Washington Area 2014, 2025, and 2030 MVEBs for NO<sub>x</sub> and VOCs**

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

Vehicle Type VMT (includes inputs for annual VMT, daily VMT fraction, hourly VMT fraction, and monthly VMT fraction)	<ul style="list-style-type: none"> <li>• Annual VMT was provided for the five MOVES highway performance management system (HPMS) vehicle categories.</li> <li>• Monthly VMT fractions were provided for all source types and month.</li> <li>• Daily VMT fractions were provided for all days and source types.</li> <li>• Hourly VMT fractions were provided for each day type and source type.</li> </ul>
Inspection/Maintenance (I/M) Programs	The existing I/M program was accurately described.

**Table 3. Review of the output database and post-processing steps for the Washington Area 2014, 2025, and 2030 MVEBs for NO<sub>x</sub> and VOCs**

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

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

This TSD is only addressing the 2014, 2025, and 2030 MVEBs contained in the joint maintenance plan for the Washington Area, which was formally submitted as a revision to the District's, Maryland's, and Virginia's SIPs by the District, Maryland, and Virginia on March 12, 2018, January 29, 2018, and January 3, 2018, respectively. EPA followed the process for determining the adequacy of the MVEBs identified in the maintenance plan for the Washington Area in accordance with the procedures listed in the January 1997 Conformity Regulations contained in 40 CFR part 93, 118(f) "Adequacy review process for implementation plan submissions."

On May 21, 2018, a notice was posted on EPA's website entitled, "Washington, DC-MD-VA 2008 8-hour ozone maintenance plan (NO<sub>x</sub> and VOC budgets for 2014, 2025, and 2030)," located at <https://www.epa.gov/state-and-local-transportation/state-implementation-plans-sip-submissions-currently-under-epa#washington-dc-md-va>, for the purpose of opening EPA's 30-day public comment period on the proposed 2014, 2025, and 2030 NO<sub>x</sub> and VOC MVEBs in the maintenance plan for the Washington Area.

EPA's public comment period closed on June 20, 2018. EPA received no comments on the proposed MVEBs. This TSD will be an enclosure to the letters from EPA to the District, Maryland, and Virginia informing them of EPA's findings on the 2014, 2025, and 2030 NO<sub>x</sub> and VOC MVEBs included in the maintenance plan for the Washington Area. EPA will publish a Federal Register notice announcing our adequacy findings.

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

Shown in Table 4 are the 2014, 2025, and 2030 NO<sub>x</sub> and VOC MVEBs from the joint maintenance plan for the Washington Area, which was submitted by the District, Maryland, and Virginia as a SIP revision. The MVEBs in Table 4 for NO<sub>x</sub> and VOCs will be applied to all future transportation conformity determinations and analyses for the ozone NAAQS. The MVEBs shown in Table 5 add a twenty percent (20%) transportation buffer to the mobile emissions inventory projections for NO<sub>x</sub> and VOC in 2025 and 2030. The MVEBs shown in Table 5 that include a transportation buffer will become effective only if it is determined that technical uncertainties due to model changes and to vehicle fleet turnover, which may affect future motor vehicle emissions inventories, led to motor vehicle emissions estimates above the MVEBs shown in Table 4. The determination will be made through the interagency consultation process and fully documented within the first conformity analysis that uses the MVEBs in Table 5 that include a transportation buffer.

Year	MVEBs for NO <sub>x</sub> On-Road Emissions (tons per day)	MVEBs for VOC On-Road Emissions (tons per day)
2014 (Attainment Year)	136.8	61.3
2025	40.7	33.2
2030	27.4	24.1

Year	MVEBs for NO <sub>x</sub> On-Road Emissions (tons per day)	MVEBs for VOC On-Road Emissions (tons per day)
2014 (Attainment Year)	136.8	61.3
2025	48.8	39.8
2030	32.9	28.9

**V. Evaluation of the Adequacy of the 2014, 2025, and 2030 NO<sub>x</sub> and VOC MVEBs in the Maintenance Plan for the Washington Area Submitted by the District, Maryland, and Virginia**

In this TSD, EPA is evaluating the 2014, 2025, and 2030 NO<sub>x</sub> and VOC MVEBs associated with the maintenance plan for the Washington Area, which was submitted by the District, Maryland, and Virginia as a revision to their SIPs, for conformity purposes (including the MVEBs with the 20% buffer). EPA is using the evaluation criteria detailed in the Transportation Conformity Rule, 40 CFR part 93.118(e)(4)(i) through 93.118(e)(4)(vi) and 93.118(e)5. The evaluation is presented in Table 6, below.

<b>Table 6. Adequacy of the 2014, 2025, and 2030 NO<sub>x</sub> and VOC MVEBs contained in the Washington Area Maintenance Plan</b>		
Transportation Conformity Rule 40 CFR Part 93	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 District's maintenance plan SIP was endorsed and submitted by the Governor's designee, Tommy Wells, the Director of the District Department of Energy and Environment. Maryland's maintenance plan SIP was endorsed and submitted by the Governor's designee, the Honorable Ben Grumbles, Secretary of Maryland Department of the Environment. Virginia's maintenance plan SIP was endorsed and submitted by the Governor's designee, David K. Paylor, Director of Virginia Department of Environmental Quality. A public hearing on the District, Maryland, and Virginia's SIP proposal was held on November 1, 2017, November 8, 2017, and November 6, 2017, respectively.
Sec. 93.118(e)(4)(ii)	Before the implementation plan was submitted to EPA, did consultation between federal, State and local agencies occur; was full implementation plan documentation provided to EPA, and was EPA's stated concerns, if any, addressed?	Yes. Consultation has occurred among all required Federal, State, and local agencies. This included the following: the District Department of Energy and Environment (DOEE), Maryland Department of the Environment (MDE), Virginia Department of Environmental Quality (DEQ), EPA, FHWA,

		FTA, and the Metropolitan Washington Council of Governments' (COG) National Transportation Planning Board (TPB).
Sec. 93.118(e)(4)(iii)	Were the MVEBs clearly identified and precisely quantified?	Yes, the budgets are clearly identified on pages 25-26 of the Maintenance Plan for the Washington DC-MD-VA 2008 Ozone NAAQS Nonattainment Area SIP revision prepared by the Metropolitan Washington Council of Governments (COG) for the District DOEE, MDE, and Virginia DEQ.
Sec. 93.118(e)(4)(iv)	Are the motor vehicle emissions, when considered together with all other emission reductions, consistent with applicable requirements for maintenance strategies?	EPA believes the budgets can be declared adequate because, in conjunction with the other emission reductions, the mobile emissions budgets for 2014, 2025, and 2030 for NO <sub>x</sub> and VOCs reflect a continuation of a downward trend in mobile emissions over time.
Sec. 93.118(e)(4)(v)	Are the motor vehicle emissions consistent with and clearly related to the emissions inventory and the control measures in the Plan?	EPA believes that the motor vehicle emissions are clearly related to the emissions inventory and control measures in the SIP submittal and support emissions levels showing attainment and maintenance of the NAAQS.
Sec. 93.118(e)(4)(vi)	Revisions to previously submitted maintenance plan: explain and document any changes to previously submitted budgets and control measures; impacts on point and area source emissions; any changes to established safety margins (see Sec. 93.101 for definition); and reasons for the changes (including the	Not applicable as the SIP submittal is a new maintenance plan for the Washington Area.

	basis for any changes related to emission factors or estimates of vehicle miles traveled).	
Sec. 93.118(e)(5)	Did they provide and we review public comments and the State's responses to those comments with the submitted control strategy SIP?	There were no comments on the proposed motor emission budgets in the SIP development process in the respective states.

## VI. Findings

Based upon EPA's review and evaluation of the 2014, 2025, and 2030 NO<sub>x</sub> and VOC MVEBs contained in the maintenance plan for the Washington Area SIP revision, EPA finds the MVEBs adequate for transportation conformity purposes as the MVEBs are consistent with the Washington Area's inventory showing present attainment of the 2008 ozone NAAQS and are therefore consistent with the Washington Area's attainment and maintenance of the 2008 ozone NAAQS. The applicable MVEBs for purposes of determining conformity are 40.7 tons per day of NO<sub>x</sub> and 33.2 tons per day of VOCs for 2025 and 27.4 tons per day of NO<sub>x</sub> and 24.1 tons per day of VOCs for 2030, which are shown in Table 4. In the event that it is determined that technical uncertainties led to motor vehicle emissions estimates above the MVEBs in Table 4, then the MVEBs shown in Table 5 that add a 20% transportation buffer to the mobile emissions inventory projections for NO<sub>x</sub> and VOC in 2025 and 2030 will become effective. These MVEBs, which include a 20% transportation buffer, are 48.8 tons per day of NO<sub>x</sub> and 39.8 tons per day of VOCs for 2025 and 32.9 tons per day of NO<sub>x</sub> and 28.9 tons per day of VOC for 2030.