

**DRAFT Revised Proposal to EPA for Updating MVEBs in 2008 Ozone NAAQS Maintenance Plan**

Dear Mr. Becoat:

Please find below a revised proposal for updating motor vehicle emissions budgets (MVEBs) in the Washington region’s 2008 Ozone NAAQS Maintenance Plan. This is in response to your email message dated 12/20/2022 suggesting the region to assess growth assumptions for non-motor vehicle (point and nonpoint) source emissions. Hopefully, this revised proposal addresses your suggestions.

In summary, we are proposing to update the above plan and MVEBs therein by just updating emissions of onroad and nonroad source components for milestone years 2025 and 2030 of that plan. Detailed justifications for not updating point, nonpoint, and marine, airport, and railroad (MAR) source emissions are provided below.

**Analysis of Point Source Emission Growth Assumptions**

District of Columbia

In the December 20, 2017, Metropolitan Washington DC maintenance plan addressing the 2008 ozone NAAQS, DOEE provided point source emissions for the District of Columbia. This plan identified 2014 emission levels for the attainment year in the maintenance demonstration. For the District of Columbia point source sector, the 2014 maintenance year emissions inventory is based on the 2014 NEI. The emissions inventory is provided in units of ozone season tons per day (OStd) for CO, VOC, and NO<sub>x</sub>, though CO is not included in this analysis.

The 2014 District of Columbia point source inventory was used as the basis for the projection year inventories of 2025 (the interim year inventory) and 2030 (the outyear inventory) and was assumed not to grow.

The following table summarizes the 2014, 2025, and 2030 emission estimates from that made up the District’s portion of the region’s point sources, as well as the reported VOC and NO<sub>x</sub> in units of OStd from the 2020 and 2021 emissions inventory for the District’s Title V Sources that were submitted as point sources in 2014 and thus included in the 2014 analysis.

<b>Data Description</b>	<b>NO<sub>x</sub>, OStd</b>	<b>VOC, OStd</b>
2014 attainment year emissions	1.22	0.45
2025 projected interim year emissions	1.22	0.45
2030 projected outyear emissions	1.22	0.45
2020 actual reported emissions	1.02	0.24
2021 actual reported emissions	1.03	0.24

The data in the above table shows that the 2020 and 2021 emission estimates are well beneath the 2014 attainment year emission estimates used in the maintenance plan. Additionally, emission projections for 2025 and 2030 are above the actual estimates for 2020 and 2021 and are therefore very likely conservative. Based on this data, the point source inventories for the District of Columbia used in the 2008 ozone NAAQS maintenance plan were conservative in nature, and updates are not necessary to ensure continued maintenance of the 2008 ozone NAAQS for the District of Columbia portion of the plan.

Virginia

In the December 20, 2017, Metropolitan Washington DC maintenance plan addressing the 2008 ozone NAAQS, DEQ provided point source emissions for the Virginia jurisdictions in the Northern Virginia portion of Metropolitan Washington DC. The Northern Virginia area comprises the southern portion of the Metropolitan Washington DC 2008 ozone NAAQS maintenance area. This plan identified 2014 emission levels for the attainment year in the maintenance demonstration. For the Northern Virginia point source sector, the 2014 maintenance year emissions inventory is partially based on the 2014 NEI and partially based on 2014 CEDS data. The emissions inventory is provided in units of ozone season tons per day (OStd) for CO, VOC, and NO<sub>x</sub>. The figure below shows the inventory, taken from the 2008 ozone NAAQS maintenance plan.

**Table 5-6: Washington DC-MD-VA Maintenance Plan NO<sub>x</sub> and VOC Emissions, 2014 to 2030, Including MVEBs with Transportation Buffer**

Source Category	NO <sub>x</sub> (tpd)			VOC (tpd)		
	2014	2025	2030	2014	2025	2030
Point	64.9	66.0	68.5	7.7	8.8	9.4
Non-Point (Area)	9.6	9.9	10.0	139.3	153.7	160.3
M-A-R	19.2	21.4	22.4	2.4	2.6	2.6
Nonroad Model	52.0	29.6	27.8	47.5	44.9	47.2
On-road/MVEBs <sup>1</sup>	136.8	48.8	32.9	61.3	39.8	28.9
Quasi-Point	14.4	14.4	14.4	1.2	1.2	1.2
<b>TOTAL</b>	<b>296.9</b>	<b>190.1</b>	<b>176.0</b>	<b>259.4</b>	<b>251.0</b>	<b>249.6</b>
Δ (2025-2014)	106.8			8.4		
Δ (2030-2014)	120.9			9.8		
Note: <sup>1</sup> The MVEBs with transportation buffers will be used only as needed in situations where the conformity analysis must be based on different data, models, or planning assumptions, including but not limited to updates to demographic, land use, or project-related assumptions, than were used to create the first set of MVEBs in the maintenance plan.						

The 2014 Northern Virginia point source inventory was used as the basis for the projection year inventories of 2025 (the interim year inventory) and 2030 (the outyear inventory) included in the totals for the Metropolitan Washington DC area in the figure above.

Virginia provided two spreadsheets identifying Northern Virginia point source emission estimates in units of OStd and by jurisdiction and by SCC. The first spreadsheet, VA\_Point\_EGU\_BY2014\_2025\_2030\_Average-OS-Tons-Per-Day\_08-31-2017\_updated.xlsx, provided data for the EGU units at the only EGU facility in the Northern Virginia area that operated in 2014,

Possum Point Power Station. The EGU Tool CONUS2.6 reference case outputs were used to estimate this facility's projected emissions in 2025 and 2030.

The spreadsheet entitled VA\_NonEGU Growth Files.xlsx (Revised)(No Airports)\_08-31-2017\_updates.xlsx includes data for all non-EGU point sources in the Northern Virginia area. For all non-EGU point sources except data centers, Virginia used a "no growth" scenario in the 2008 ozone NAAQS maintenance plan, assuming that future year point source emissions would be equivalent to the 2014 emissions estimates. Emissions from data centers in Northern Virginia were grown based on the estimated employment growth rate derived from the COG cooperative forecast for the county in which the data center is located.

The following table summarizes the 2014, 2025, and 2030 emission estimates from Northern Virginia point sources found in the two spreadsheets. This table also provides the reported VOC and NO<sub>x</sub> in units of OStd from the 2019, 2020, and 2021 emissions inventory for sources required to provide emission statements in the Northern Virginia portion of the 2008 ozone NAAQS Metropolitan Washington DC maintenance area. The 2021 point source inventory is the latest CEDS data currently available. Ozone season tons per day values for NO<sub>x</sub> and VOC must be reported under the emissions statement program at 9 VAC5-20-160(B) for sources with a potential to emit of at least 25 tpy of either NO<sub>x</sub> or VOC in the Northern Virginia area, and these data are included in CEDS.

<b>Data Description</b>	<b>NO<sub>x</sub>, OStd</b>	<b>VOC, OStd</b>
2014 attainment year emissions	15.83	1.99
2025 projected interim year emissions	11.78	1.90
2030 projected outyear emissions	12.11	1.94
2019 actual reported emissions	13.00	1.60
2020 actual reported emissions	11.21	1.37
2021 actual reported emissions	7.93	1.29

The data in the above table shows that the 2021 emission estimates are well beneath the 2014 attainment year emission estimates used in the maintenance plan. Additionally, emission projections for 2025 and 2030 are above the actual estimates for 2021 and are therefore very likely conservative. Lastly, the data in the table above show that generally a downward trend exists in actual emission estimates from 2014, 2019, 2020, and 2021. Based on this data, the point source inventories for Northern Virginia used in the 2008 ozone NAAQS maintenance plan were conservative in nature, and updates are not necessary to ensure continued maintenance of the 2008 ozone NAAQS for the Northern Virginia portion of the plan.

### Maryland

In the December 20, 2017, Metropolitan Washington DC maintenance plan addressing the 2008 ozone NAAQS, MDE provided point source emissions for the Maryland jurisdictions located in the Metropolitan Washington DC ozone nonattainment area. The Maryland area comprises Calvert, Charles, Frederick, Montgomery, and Prince George's Counties. This plan identified 2014 emission levels for the attainment year in the maintenance demonstration.

For the Maryland point source sector, the 2014 maintenance year emissions inventory is based on the 2014 NEI and partially based on 2014 CAMD data. The emissions inventory is provided in units of ozone season tons per day for VOC and NO<sub>x</sub>. The figure below shows the inventory, taken from the 2008 ozone NAAQS maintenance plan. The 2014 MDE-supplied point source inventory was used as the basis for the projection year inventories of 2025 (the interim year inventory) and 2030 (the outyear inventory) included in the totals for the Metropolitan Washington DC area in the figure below.

**Table 5-6: Washington DC-MD-VA Maintenance Plan NO<sub>x</sub> and VOC Emissions, 2014 to 2030, Including MVEBs with Transportation Buffer**

Source Category	NO <sub>x</sub> (tpd)			VOC (tpd)		
	2014	2025	2030	2014	2025	2030
Point	64.9	66.0	68.5	7.7	8.8	9.4
Non-Point (Area)	9.6	9.9	10.0	139.3	153.7	160.3
M-A-R	19.2	21.4	22.4	2.4	2.6	2.6
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On-road/MVEBs <sup>1</sup>	136.8	48.8	32.9	61.3	39.8	28.9
Quasi-Point	14.4	14.4	14.4	1.2	1.2	1.2
<b>TOTAL</b>	<b>296.9</b>	<b>190.1</b>	<b>176.0</b>	<b>259.4</b>	<b>251.0</b>	<b>249.6</b>
Δ (2025-2014)	106.8			8.4		
Δ (2030-2014)	120.9			9.8		
Note: <sup>1</sup> The MVEBs with transportation buffers will be used only as needed in situations where the conformity analysis must be based on different data, models, or planning assumptions, including but not limited to updates to demographic, land use, or project-related assumptions, than were used to create the first set of MVEBs in the maintenance plan.						

Note that only the total emissions from all source sectors are used to demonstrate how the area will remain in compliance with the 2008 8-hour ozone standard.

The following table summarizes the 2014 attainment year point source emissions and corresponding 2025 and 2030 future year emission estimates from the Maintenance Plan.

For all point sources, Maryland used a "no negative growth" scenario in the 2008 ozone NAAQS maintenance plan, assuming that future year point source emissions would be equivalent to the 2014 emissions estimates, at worst. Emissions from EGU point sources were grown based via AEO Electricity Projections. Emissions from non-EGU point sources were grown based on Maryland Department of Labor (MD DLLR) Industry Projections.

Source Category	NO <sub>x</sub> (tpd)			VOC (tpd)		
	2014	2025	2030	2014	2025	2030
<b>MD Point Source Emissions</b>	47.81	53.04	55.18	5.27	6.48	7.02
<b>2017 Actual Emissions</b>	49.72			2.52		
<b>2020 Actual Emissions</b>	48.18			2.71		

The above table provides the total actual reported VOC and NO<sub>x</sub> in units of tons per day (ozone season) from the 2017 and 2020 emissions inventory for point sources in the Maryland portion of the Washington DC nonattainment area.

The key element of a maintenance plan is a demonstration of how the area will remain in compliance with the 8-hour ozone standard for the 10 year period following the effective date of designation. The typical method that areas have used in the past to demonstrate that an area will maintain the standard is to identify the level of ozone precursor emissions in the area which is sufficient to attain the NAAQS (2014 attainment year inventory) and to show that future emissions of ozone precursors will not exceed the attainment levels. The comparison of emissions inventories includes ozone precursors from all source categories, not only point sources.

The data in the above table shows that the 2017 and 2020 actual emission estimates are well beneath the 2025 and 2030 projected future year emission estimates used in the maintenance plan. Therefore, when comparing the actual point source emissions to the grown future year point source emissions that demonstrate maintenance of the standard, the actual point source emissions provide a buffer for other source categories such as onroad mobile, nonroad mobile and nonpoint emissions sources. Based on this data, the point source inventories for Maryland used in the 2008 ozone NAAQS maintenance plan were conservative in nature, and updates are not necessary to ensure continued maintenance of the 2008 ozone NAAQS.

#### Conclusion

Based on above analyses of point sources located in the District of Columbia, Virginia, and Maryland, it is clear that growth and control strategy assumptions for those sources described in the 2008 ozone NAAQS maintenance plan are still valid. Therefore, there is no need to update projected 2025 and 2030 emissions from those sources in the plan.

#### **Analysis of Nonpoint & Marine, Airport, and Railroad (MAR) Source Emission Growth Assumptions**

The table below shows relatively minor changes to growth factors used for projecting nonpoint and MAR source emissions from 2014 to 2025 and 2030. The new set of growth factors are based on latest estimates from COG's Cooperative Forecasts Round 9.2 and the Constrained Element of the Long-Range Transportation Plan (CE LRTP).

<b>Growth Factor</b>	<b>2008 Ozone NAAQS Maintenance Plan</b>	<b>COG Cooperative Forecasts 9.2 (Final)</b>
Employment (2025/2014)	1.14	1.14
Employment (2030/2014)	1.21	1.21
Population (2025/2014)	1.12	1.13
Population (2030/2014)	1.17	1.18
Household (2025/2014)	1.14	1.13
Household (2030/2014)	1.19	1.20
	<b>2008 Ozone NAAQS Maintenance Plan</b>	<b>2020 &amp; 2022 Amendments to Visualize 2045 (CLRP)</b>
VMT (2025/2014)	1.12	1.12
VMT (2030/2014)	1.17	1.16
Lane-Miles (2025/2014)	1.06	1.04
Lane-Miles (2030/2014)	1.06	1.06

As seen in the above table, only population growth factors for 2025 and 2030, and household growth factor for 2030, increased, and only by about 1% based on the latest estimates. The remaining growth factors, such as those for employment, households (for 2025), and VMT or lane-miles, either remain at the same level or decrease between 1% to 2%. Though sources using population growth factors contribute about 60% and 26% of total VOC and NOx emissions respectively in the 2008 ozone NAAQS maintenance plan, a 1% increase in population growth factors, together with some amount of decrease in other growth factors, should ensure that the overall change in nonpoint and MAR source emissions in 2025 and 2030 would be relatively insignificant. Therefore, the growth and control strategy assumptions for those sources described in the 2008 ozone NAAQS maintenance plan are generally still valid, and any slight change in emissions in future years will not change the overall conclusion of the 2008 ozone NAAQS maintenance plan.

#### Conclusion

The above analysis demonstrates that the emission estimates and projections from nonpoint and MAR sources in the original maintenance plan continue to be valid and continue to demonstrate that the area's air quality will remain compliant with the 2008 ozone NAAQS.

#### **Onroad and Nonroad Emissions Projections**

As stated in my email dated 10/21/2022 to you, the Washington region is proposing to update its 2025 and 2030 onroad and nonroad model emissions in the plan using the MOVES3.0.4 model and retain its base year 2014 onroad and nonroad emissions developed using MOVES2014a. This is consistent with EPA's mandate of the use of this model version for current SIP submittals.

We hope you will concur with the Washington region's revised proposal and allow it to update the above plan and MVEBs therein by focusing resources on the update to the emissions of onroad and nonroad source components for milestone years 2025 and 2030 of that plan.

Let me know if you have any questions.

Thanks, Sunil Kumar