

Appendix B1

Technical Support Document for the Development of Nonroad Mobile (Except Marine, Airport, and Railroad) Emissions inventories for 2025

(Washington, DC-MD-VA PM2.5 Nonattainment Area)

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1.0 INTRODUCTION

This technical support document (TSD) describes in detail the input data and their sources and the method used to develop projected emissions for nonroad mobile sources (except for marine vessels, airport, and railroad) for 2025 for PM2.5-Pri, NOx, and SO2 for the Washington, DC-MD-VA PM2.5 nonattainment area counties and cities. Emissions for 2007, 2017, and 2025 (Virginia only) were estimated by MARAMA and the details of the development of these emissions are described in the MARAMA TSDs listed in Appendix A1.

Nonroad Mobile Sources include equipments such as forklifts, lawn and garden equipments, portable generators, marine vessels, airplanes, locomotives, etc. Except for marine vessels, airplanes, and railroad locomotives (MAR), the inventory for all other nonroad mobile sources was developed using the most current version of USEPA's NONROAD model as embedded in the National Mobile Inventory Model (NMIM). The NONROAD model does not include emissions from MAR sources. Emissions from these sources for 2025 were estimated by MARAMA and the details of the development of these emissions are described in the MARAMA TSD titled "Technical Support Document for the Development of the 2025 Emission Inventory for PM Nonattainment Counties in the MANE-VU Region Version 3.3 Rev.2. January 23, 2012" listed in Appendix A1.

1.1 GEOGRAPHIC RESOLUTION

The inventory was developed at the county/city level and emissions summaries by jurisdiction for all counties and cities in the Washington, DC-MD-VA PM2.5 nonattainment area (1997 annual PM2.5 NAAQS) are provided.

List of Washington, DC-MD-VA PM2.5 Nonattainment Areas Counties & Cities

State	FIPS Code	County/City
DC	11001	Washington
MD	24017	Charles
MD	24021	Frederick
MD	24031	Montgomery
MD	24033	Prince George
VA	51013	Arlington
VA	51059	Fairfax
VA	51107	Loudoun
VA	51153	Prince William
VA	51510	Alexandria
VA	51600	Fairfax City
VA	51610	Falls Church City
VA	51683	Manassas City
VA	51685	Manassas Park City

1.2 POLLUTANTS

The inventory includes emissions for directly emitted PM_{2.5} (PM_{2.5}-Pri), oxides of nitrogen (NO_x), and sulfur dioxide (SO₂).

1.3 DESCRIPTION OF NMIM MODEL VERSION USED FOR 2025 INVENTORY DEVELOPMENT

MWCOG used the same NMIM version as the one used by MARAMA for developing the 2017 and 2025 inventories. A description of the NMIM version is provided in the MARAMA TSD titled “Technical Support Document for the Development of the 2017 / 2020 Emission Inventories for Regional Air Quality Modeling in the Northeast / Mid-Atlantic Region Version 3.3, January 23, 2012”. MWCOG used the NMIM2008 software (version NMIM20090504), the revised NMIM County Database (NCD20090910MARAMA), and NONROAD2008a (July 2009 version). A detailed description of the NMIM model is available at the EPA web-site (<http://www.epa.gov/otaq/nmim.htm>).

1.4 DEDESCRIPTION OF NMIM MODEL INPUTS USED FOR 2025 INVENTORY DEVELOPMENT

MARAMA developed the version 3.3 (most current version till completion of this PM_{2.5} maintenance plan) of the 2025 NMIM emission inventory for Virginia for PM_{2.5} maintenance plan purposes, but it did not do so for the District of Columbia and Maryland. However, MARAMA developed the version 3.3 of the NMIM inventory for the two jurisdictions for 2017 for the regional photochemical modeling purposes (See Appendix A for MARAMA TSD for the development of the 2017 NMIM analysis). Therefore, MWCOG developed the 2025 NMIM analysis for the District of Columbia and Maryland using the inputs used by MARAMA for developing the above mentioned version 3.3 of the 2017 modeling inventory for the two jurisdictions. Meteorology and allocation files used by MARAMA for the 2017 analysis for the above two jurisdictions were applied to the 2025 analysis as well. Fuel characteristics used by MARAMA for the 2017 analysis for the two jurisdictions were NMIM defaults for 2017 and are the same as the NMIM defaults for 2025. Therefore, the same fuel characteristics were also used for the 2025 analysis.

MWCOG replicated the 2025 NMIM emissions for Virginia using MARAMA’s inputs. These inputs are described in detail in the MARAMA TSD for the development of 2025 emission inventories listed in Appendix A1.

1.5 EMISSIONS SUMMARY

2025 Nonroad Emissions (Excluding MAR Sources) Summary by Jurisdiction

County/City	NOx	SO2	PM2.5-Pri
Washington, DC	992.3	3.0	72.3
Charles	365.7	1.1	28.3
Frederick	502.4	1.8	72.0
Montgomery	1400.6	5.2	241.9
Prince George	1130.6	3.9	150.5
Arlington	413.6	1.2	35.1
Fairfax	1469.9	6.5	249.7
Loudoun	928.8	3.6	139.5
Prince William	623.5	2.3	84.4
Alexandria	80.3	0.4	14.6
Fairfax City	33.8	0.2	7.6
Falls Church City	18.3	0.1	4.8
Manassas City	30.9	0.2	3.6
Manassas Park City	17.9	0.1	4.6
State Total			
Washington, DC	992.3	3.0	72.3
Maryland	3399.3	12.0	492.8
Virginia	3617.0	14.6	543.8
Region Total	8008.6	29.7	1108.9