

EPA 2022v1 Emissions Inventory

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Introduction & Relevance

- EPA is developing 2022v1 emissions inventory modeling framework that will be used for modeling analysis for the purposes of developing rules.
- Version 1 of this inventory (2022v1) has already been developed. Next version (2022v2) will be developed next year.
- Inventories for years 2022, 2032, and 2038 have been developed. We proposed to EPA that they allow us to use these three milestone years for our 2015 ozone NAAQS Redesignation Request & Maintenance Plan.
- Onroad and nonroad inventories were developed using MOVES4. Next version will be developed using MOVES5, a draft version of which has been published on October 24, 2024.

VOC Emission by Sector and Jurisdiction (tpy)

	2022	2032	2038
Nonpoint	129,195.63	133,728.29	136,469.84
District Of Columbia	6,316.33	6,591.43	6,733.97
Maryland	71,744.59	73,281.94	74,106.80
Virginia	51,134.71	53,854.91	55,629.07
Nonroad	11,150.42	11,061.84	11,214.56
District Of Columbia	450.37	445.22	462.98
Maryland	5,227.81	5,321.60	5,487.32
Virginia	5,472.24	5,295.02	5,264.25
Onroad	10,647.47	7,955.29	6,451.48
District Of Columbia	870.26	716.71	589.28
Maryland	5,461.70	3,921.46	3,203.56
Virginia	4,315.52	3,317.12	2,658.63
Point	1,513.42	1,575.75	1,643.56
District Of Columbia	103.86	102.31	103.44
Maryland	668.68	662.42	691.99
Virginia	740.89	811.02	848.13
Total	152,506.95	154,321.17	155,779.44

NOx Emission by Sector and Jurisdiction (tpy)

	2022	2032	2038
Nonpoint	15,011.61	14,423.31	14,276.09
District Of Columbia	1,280.42	1,214.02	1,197.49
Maryland	6,643.35	6,265.31	6,155.69
Virginia	7,087.84	6,943.98	6,922.91
Nonroad	6,652.87	5,023.98	5,107.52
District Of Columbia	413.86	328.06	347.55
Maryland	2,716.37	2,258.37	2,342.05
Virginia	3,522.64	2,437.55	2,417.92
Onroad	15,754.27	6,219.26	4,078.39
District Of Columbia	1,199.36	530.66	356.83
Maryland	9,225.45	3,458.07	2,217.98
Virginia	5,329.45	2,230.54	1,503.59
Point	4,680.70	5,117.39	5,199.69
District Of Columbia	475.86	473.87	476.43
Maryland	1,579.20	1,282.73	1,165.67
Virginia	2,625.64	3,360.78	3,557.58
Total	42,099.44	30,783.95	28,661.69

Points to Consider

- Increasing VOC trend - Overall NOx emission shows a decreasing trend in the future in 2022v1, but VOC emission shows an increasing trend largely due to increases in the nonpoint sector and to a relatively smaller extent in the point sector. This could be different though from the Washington region's actual emissions where nonroad and onroad emissions will be developed by TPB and MWAQC staff respectively using different input data and model. Would this be a concern for EPA if in case our VOC emission also shows an increasing trend?

Points to Consider

- **MOVES4 vs MOVES5** - EPA's onroad and nonroad inventories were developed using MOVES4. 2022v2 will be developed using MOVES5, a draft version of which has been published on October 24, 2024. Official MOVES5.0.0 is expected to be released by the end of this year and needs to be used in future SIP (no grace period) and conformity analysis (usually after a two-year grace period). MOVES5.0.0 incorporates several important updates, including:
 - EPA's Light- and Medium-Duty Multi-Pollutant Rule with higher projected electric vehicle (EV) fractions and more stringent standards for carbon dioxide (CO₂), particulate matter (PM), non-methane organic gases (NMOG), and oxides of nitrogen (NO_x).
 - EPA's Heavy-Duty Greenhouse Gas Emissions-Phase 3 Rule with higher projected EV fractions and updated energy consumption estimates for heavy-duty EVs.
 - New data on light-duty (LD) and heavy-duty (HD) brake wear emissions.
 - Detailed calculations for a given analysis year to vehicles up to 40 years old, instead of 30.
 - Updated onroad and nonroad fuel properties for calendar year 2021 and later.
 - Updated historical and forecast default vehicle miles travelled (VMT), vehicle populations, age distributions, and fuel type distributions.
- We asked EPA to let us use MOVES4 for RR/MP and are waiting for their response. There is a chance they could ask us to use MOVES5.0.0 instead. In that case, the schedule for RR/MP could be delayed as both MWAQC and TPB staff would need to familiarize with the new model and any new data or data format requirements.