

Appendix A1

Technical support document for the development of point source (EGU & Non-EGU) emissions inventories for 2022, 2032, and 2038

Virginia

Metro DC-NoVA Point Source Data 2022, 2032, and 2038 Annual and Ozone Season Emissions

1. Introduction

This document explains the data sources and approaches used to develop the criteria pollutant point source inventories for the attainment year (2022), interim year (2032), and out year (2038) for the Metro DC-NoVA area to support the Metropolitan Washington DC 2015 ozone NAAQS moderate nonattainment area redesignation request and maintenance plan.

The data relies on information in the 2022 EMP. At the time of inventory development, the final version 1 of the 2022 inventory was available from the 2022 EMP. However, for the 2032 and 2038 future years, called analytic years in the 2022 EMP, only draft version 1 information for point sources was available. This point source information was available in summary format at the facility level. Estimates in units of OStd were not available at the facility, unit, and process level by SCC for any year in the 2022 EMP.

This data set also relies on the 2022 Comprehensive Environmental Data System (CEDs) information for most 2022 attainment year annual estimates and for unit characteristics such as reported hours per day, days per week, hours per year, and seasonal operating percentages in that year.

For units grown using the ERTAC tool, ERTAC outputs from runs C3.0CONUSv22.0_2026, C3.0CONUSv22.0_2032, and C3.0CONUSv22.0_2038 were used to develop emissions estimates as explained below. For the NoVA portion of Metro DC, these units include Units 6A and 6B at Dominion Possum Point Energy Center (Registration Number 70225 and EIS Facility Number 7520511) and Units CC1 and CC2 at Potomac Energy Center (Registration Number 73826 and EIS Facility Number 17856211).

The spreadsheet presenting this data is “Metro DC-NoVA Point Source Data 2022 from CEDs 2025-10-07.xlsx.”

2. 2022 Annual Emissions Totals

DEQ mainly used 2022 data from CEDs for annual emissions and other characteristics such as reported hours per day, days per week, hours per year, and seasonal operating percentages. This 2022 attainment year point source inventory contains all facilities in the nine jurisdictions in the Metro DC 2015 ozone NAAQS nonattainment area that were included in EPA’s 2022 version 1 except those units described in Sections 2.1, 2.2, and 2.3. The tab called “2022 EMP Fac Data Metro DC-NoVA” in the spreadsheet entitled

“Metro DC-NoVA Point Source Data 2022 from CEDS 2025-10-07.xlsx” contains the 2022 EMP data for each facility in the NoVA area included in the 2022 EMP.

Annual emissions of NO_x in 2022 for Units 6A and 6B at Dominion Possum Point Energy Center (Registration Number 70225 and EIS Facility Number 7520511) and Units CC1 and CC2 at Potomac Energy Center (Registration Number 73826 and EIS Facility Number 17856211) were derived from ERTAC outputs rather than CEDS data. The ERTAC outputs rely on reported NO_x emissions under 40 CFR Part 75 and are similar in magnitude to the facility data that was provided to DEQ for these units and that was entered into CEDS.

2.1 Dynamic Detail (EIS Facility Number 7109811)

Dynamic Detail is located in Loudoun County. This facility was in the 2022 EMP version 1 but was not included in this spreadsheet since EPA’s data showed only NH₃ emissions from this facility. Criteria pollutant emissions from this facility were listed in the 2022 EMP as zero.

2.2 Loudoun County Landfill (EIS Facility Number 7109411)

Loudoun County Landfill, EIS Facility Number 7109411, is in the EPA version 1 2022 EMP but is not registered in CEDS. The EPA data showed less than 1 tpy of CO emissions and less than 2 tpy of VOC emissions in 2022, 2032, and 2038. The 2022 EMP does not provide activity characteristics, and the facility has low estimated emissions. Therefore, the facility was left out of the NoVA point source inventory.

2.3 Airports

The EPA 2022 EMP lists seven airports for the NoVA area, as shown in Table 1.

Table 1: Airports in the Metro DC/NoVA Area

EIS Facility ID	Airport Name
9046811	Ronald Reagan Washington
9063711	Leesburg Executive
9063811	Washington Dulles International
9072411	Manassas Regional/Harry
11736011	GLASCOCK
14469011	LORTON
38040000	Possum Point

Ronald Reagan and Washington Dulles were moved to the quasi-point source sector. The data in the 2022 EMP for Ronald Regan and Washington Dulles are included in tab “Quasi-Pt Airports-2022EMP” in the spreadsheet entitled, “Metro DC-NoVA Point Source Data 2022 from CEDS 2025-10-07.xlsx.” Ronald Reagan and Washington Dulles have significant emissions of criteria pollutants from emission sources that are not under the purview of states to regulate (for example, aircraft exhaust). Therefore, they are best discussed as a separate category from the point source sector.

Emissions from the other airports were moved to the nonroad sector. The data in the 2022 EMP for these other five airports are included in tab “Other Airports-2022EMP” in the spreadsheet entitled, “Metro DC-NoVA Point Source Data 2022 from CEDS 2025-10-07.xlsx.” As with other types of engines captured in the nonroad sector, states have no authority under the Clean Air Act to regulate emissions from airports since emissions at these facilities originate from aircraft engines. Therefore, these small airports are more like source classification codes in the nonroad inventory than those in the point source inventory.

3. 2022 ozone season tons per day estimates

For most units, OStd values were calculated using federal guidance. This approach relies on unit characteristics such as operating schedules that are reported in the annual updates submitted by each facility. The equation below describes this approach:

$$Yo = (\text{hours/year}) / (\text{hours/day} * \text{days/week}) * (\text{Thruput\% Jun-Aug} / 100)$$

If Yo=0, then OStd=0

If Yo>13, OStd=(tpy)[(Throughput% Jun-Aug/100)/(13*days/week)]*

If Yo<=13, OStd=(tpy)[(Throughput% Jun-Aug/100)/(Yo*days/week)]*

3.1 Units with limited reported operations

Certain units reported production schedules that showed very limited operations. These situations resulted in most of the estimated 2022 annual emissions being assigned to a single day in the ozone season or, in some instances, resulted in OStd values higher than annual tpy values. Neither result is a reasonable estimate of ozone season daily emissions. In these situations, a different formula was applied to the 2022 annual data to develop OStd values:

$$OStd = \text{annual emissions} * \text{Throughput\% Jun-Aug} / [100 * 13.14 * (\text{days/week})]$$

This simplified methodology, which results in reasonable OStd estimates, was applied to line items at the facilities listed in Table 2.

Table 2: Facilities with Alternative OStd Methodologies

EIS Facility ID	Registration Number	Facility Name
6744011	72296	Coresite Real Estate 12100 Sunrise Valley Drive
21518711	74155	Iskander (LC-1A) Jamshid (LC-1B) Kaveh (LC2) Lohrasp Ventures (LC3)
15410111	73370	Digital Realty – Ashburn Campus

3.2 ERTAC units reporting under 40 CFR Part 75

For units reporting under 40 CFR Part 75, reported NO_x data in 2022 were used in conjunction with the ERTAC tool to develop estimates for OStd. For Virginia, these items are Units 6A and 6B at Dominion Possum Point Energy Center (Registration

Number 70225 and EIS Facility Number 7520511) and Units CC1 and CC2 at Potomac Energy Center (Registration Number 73826 and EIS Facility Number 17856211).

Daily NO_x data for 2022 from C3.0CONUSv22.0_26 outputs, which are based on data reported under 40 CFR Part 75 for year 2022, were summed from May 1 through Sept 30 for weekdays only and divided by the number of weekdays during that period with NO_x emissions greater than zero to develop the OStd value. The ratio of the NO_x OStd value to the annual NO_x emissions reported under 40 CFR Part 75 in 2022 was applied to the other criteria pollutants reported for these units in CEDS to develop 2022 OStd values. See tab “C3.0CONUSv22.0 Results” in the spreadsheet entitled “Metro DC-NoVA Point Source Data 2022 from CEDS 2025-10-07.xlsx” for these data and ratios.

For units at these facilities that do not report under 40 CFR Part 75 and therefore are not included in the ERTAC tool, the approach discussed in Section 3 was used.

4. 2032 and 2038 Annual Emissions Estimates

Growth estimates for 2032 and 2038 are based on the facility-specific and pollutant-specific emissions estimates derived from the facility level data in the draft version 1 2022 EMP. This facility level data is shown in tab “2022 EMP Fac Data Metro DC-NoVA” in the spreadsheet entitled “Metro DC-NoVA Point Source Data 2022 from CEDS 2025-10-07.xlsx.” For each facility and pollutant combination in 2032, the ratio of the 2032 emissions to the 2022 emissions from the 2022 EMP was applied to the CEDS 2022 annual value at the process level to estimate 2032 annual emissions. This same approach was used to develop emissions estimates for 2038. Since the 2022 EMP did not contain PM₁₀ emission estimates, PM_{2.5} ratios were used for PM₁₀ estimates. In a few instances as described in the following paragraphs, other approaches were applied.

4.1 Municipal Solid Waste Incinerators

The inventory for NoVA/Metro DC contains two facilities whose primary function is the incineration of municipal solid waste (MSW) and whose secondary function is the production of electricity for the grid from the combustion of MSW. The 2032 and 2038 growth estimates in the 2022 EMP for these facilities were larger than could reasonably be expected based on federally enforceable permit limitations. The following sections explain each facility’s circumstances and limitations.

4.1.1 Reworld Fairfax (Registration Number 71920, EIS Facility Number 6743611)

EPA estimates for some pollutants showed growth for this facility well beyond permitted values, considering the 2022 throughputs. Table 3 shows the estimates for the various pollutants and the resulting growth ratios for each pollutant from the 2022 EMP data.

Table 3: Reworld Fairfax Growth Estimates from 2022 EMP

Pollutant	2022, tpy	2026, tpy	2032, tpy	2038, tpy	2026/2022 ratio	2032/2022 ratio	2038/2022 ratio
CO	73.3	73.3	56.0	56.0	1.000	0.764	0.764
NH ₃	25.1	25.1	19.2	19.2	1.000	0.764	0.764

Pollutant	2022, tpy	2026, tpy	2032, tpy	2038, tpy	2026/2022 ratio	2032/2022 ratio	2038/2022 ratio
NO _x	1,030.2	1,030.2	1,533.2	1,533.2	1.000	1.488	1.488
PM _{2.5}	148.0	148.0	113.1	113.1	1.000	0.764	0.764
SO ₂	304.0	304.0	357.3	357.3	1.000	1.175	1.175
VOC	5.8	5.8	4.4	4.4	1.000	0.764	0.764

The 2032 and 2038 growth rates are unlikely. The NO_x and SO₂ increases are much higher than the facility could possibly achieve without large increases in permitted throughput levels. The reductions in the other pollutants are equally unlikely as the facility is not expected to reduce operations or install additional control equipment.

The facility is limited by permit to no more than 1,292,100 tons per year of MSW on a wet basis as shown in Condition 7 of the [June 10, 2016, Title V permit](#).¹ The full compliance inspection for the facility dated June 26, 2024, provides the facility's 365 day rolling average for annual MSW incineration in attachment three to the inspection report. For the period 7/1/2022 through 12/31/2022, the lowest reported annual sum by day was 1,217,581 tons (reported for 11/13/2022). See pages 239-241 of the inspection report. The facility typically runs near their permitted throughput limitations as shown in this report. Therefore, the maximum increase in activity at the facility in 2032 and 2038 could be no more than the ratio of the permitted throughput to the actual throughput:

$$1,292,100/1,217,581 = 1.0612$$

The 2032 and 2038 emission estimates for the facility are based on this ratio (1.0612).

4.1.2 Reworld Alexandria/Arlington (Registration Number 71985, EIS Facility Number 4195111)

EPA estimates showed growth for this facility well beyond permitted values, considering the 2022 throughputs. Table 4 shows the estimates for the various pollutants and the resulting growth ratios for each pollutant from the 2022 EMP data.

Table 4: Reworld Alexandria/Arlington Growth Estimates from 2022 EMP

Pollutant	2022, tpy	2026, tpy	2032, tpy	2038, tpy	2026/2022 ratio	2032/2022 ratio	2038/2022 ratio
CO	51.4	51.4	59.9	59.9	1.000	1.165	1.165
NH ₃	12.6	12.6	14.7	14.7	1.000	1.165	1.165
NO _x	275.5	275.5	430.3	430.3	1.000	1.561	1.561
PM _{2.5}	6.7	6.7	7.8	7.8	1.000	1.165	1.165
SO ₂	4.5	4.5	5.6	5.6	1.000	1.234	1.234
VOC	0.2	0.2	1.9	1.9	1.000	10.015	10.015

The 2032 and 2038 growth rates are highly unlikely. The estimated increases are much higher than the facility could achieve without significant increases in permitted throughput levels. The facility is limited by permit to no more than 1,170,400 tons of

¹ URL: <https://www.deq.virginia.gov/home/showpublisheddocument/6140/637508128888330000>

annual steam production, based on an average of 3.34 pounds of steam per pound of MSW processed. Therefore, the facility may burn no more than 350,419.6 tons of MSW. See conditions 10 and 11 in the [July 14, 2025, Title V permit](#).² The full compliance inspection for the facility dated September 16, 2023, notes that the facility reported 350,141.4 tons of MW processed in the 12 month period ending August 2023. The facility typically runs very near their permitted throughput limitations as shown in this inspection. Therefore, the maximum increase in activity at the facility in 2032 and 2038 could be no more than the ratio of the permitted throughput to the actual throughput:

$$350,419.6/350,141.4 = 1.00008$$

The 2032 and 2038 emission estimates for the facility are based on this ratio (1.00008).

4.2 LES Project Holdings (formerly Michigan Cogen Systems, Registration Number 71961, EIS Facility Number 6743811)

The EPA projections for 2032 and 2038 show no activity or emissions for this facility. DEQ has no knowledge of retirements at this facility. Reported data for 2024 shows operations and emissions. Therefore, a growth rate ratio of 1.000 has been assigned to this facility so that 2032 and 2038 emissions are equivalent to 2022 emissions.

4.3 I-95 Landfill (Registration Number 72339, EIS Facility Number 9081811)

The EPA emissions inventory data in the 2022 EMP showed only CO and VOC emissions. Since EPA's inventory did not contain NO_x, PM₁₀, or PM_{2.5} emissions, the 2022 CEDS data was grown using the CO ratio from the EPA data.

4.4 Prince William County Landfill (Registration Number 72340, EIS Facility Number 7520911)

The EPA emissions inventory data in the 2022 EMP did not account for the retirement and subsequent removal of five engines. These engines are identified by the unit identification numbers PCD-1, PCD-02, PCD-05, PCD-06, and PCD-07. These emissions units were removed from the facility as of March 2024 as documented on page 4 of 60 in the full compliance evaluation report dated December 12, 2024. Therefore, 2032 and 2038 emissions for these units were set to zero to reflect these changes.

4.5 ERTAC Units

For units that report under 40 CFR Part 75 and are grown using the ERTAC tool, NO_x estimates in 2032 and 2038 are taken from the C3.0CONUSv22.0_2032 and C3.0CONUSv22.0_2038 ERTAC outputs, respectively. These ERTAC outputs used AEO 2023 high oil and gas resource technology scenario as the basis for future year growth rates. These units include Units 6A and 6B at Dominion Possum Point Energy

² URL: <https://www.deq.virginia.gov/home/showpublisheddocument/6138/638882572444870000>

Center (Registration Number 70225 and EIS Facility Number 7520511) and Units CC1 and CC2 at Potomac Energy Center (Registration Number 73826 and EIS Facility Number 17856211). This information is provided in the tab called "C3.0CONUSv22.0 Results" in the spreadsheet entitled "Metro DC-NoVA Point Source Data 2022 CEDS 2025-10-07.xlsx."

For these ERTAC units, emissions of pollutants other than NO_x for 2032 and 2038 were calculated using 2022 CEDS annual emissions multiplied by the ratio of the future year NO_x estimate from the ERTAC tool divided by the 2022 reported NO_x under 40 CFR Part 75.

5 2032 and 2038 OStd Emissions Estimates

For units not included in the ERTAC tool, the calculated OStd 2032 and 2038 emissions were estimated by multiplying the ratio of the 2022 OStd emissions to the CEDS 2022 annual emissions for that line item by the 2032 and 2038 annual emissions estimates, respectively.

The units grown with the ERTAC tool that are located in NoVA are Units 6A and 6B at Dominion Possum Point Energy Center (Registration Number 70225 and EIS Facility Number 7520511) and Units CC1 and CC2 at Potomac Energy Center (Registration Number 73826 and EIS Facility Number 17856211). For these units, the outputs for 2032 and 2038 from C3.0CONUSv22.0_2032 and C3.0CONUSv22.0_2038 were used to develop NO_x OStd values. Daily projected NO_x data for 2032 and 2038 were summed from May 1 through Sept 30 for weekdays only and divided by the number of weekdays during that period with NO_x emissions greater than zero to develop the OStd value. The ratio of the NO_x OStd value to the annual NO_x emissions for each projection year was applied to the other criteria pollutant and NH₃ annual projected emissions to develop OStd values. See tab "C3.0CONUSv22.0 Results" in the spreadsheet entitled "Metro DC-NoVA Point Source Data 2022 from CEDS 2025-10-07.xlsx" for the annual and ozone season ERTAC NO_x values.

Maryland

POINT SOURCES

POINT DESCRIPTION

The Maryland Department of the Environment Air and Radiation Administration (ARA) is the lead agency responsible for compiling the point source emissions inventory, including identification of sources, documenting the method used to calculate emissions from each source, and presenting the findings. Emissions and emissions data are collected and calculated annually for facilities and businesses that fit the criteria to be a point source.

The Maryland stationary point source inventory is the result of efforts to characterize air emissions sources since the early 1970's. This section describes data collection, verification and emission estimation methods used to estimate point source emissions from stationary sources.

For any Periodic Emissions Inventory (PEI) or State Implementation Plan (SIP), a point source located within a designated ozone nonattainment area is defined as a stationary commercial or industrial facility that operations and emits more than 10 tons per year of volatile organic compounds (VOC); or a 100 tons per year of carbon monoxide (CO), sulfur oxides (SO_x), particulate matter with an aerodynamic diameter less than 10 micrometers (PM₁₀), diameter less than 2.5 micrometers (PM_{2.5}), and total suspended particulates (TSP); or 25 tons per year of oxides of nitrogen (NO_x). These emissions criteria are more commonly refer to as “emissions thresholds” or simply, “thresholds.” Areas of the state classified as unclassifiable/attainment for ozone have the same thresholds except for oxides of nitrogen (NO_x), where the threshold is 100 tons per year NO_x.

COMPILING THE POINT SOURCE LIST

Maryland has a substantial database of both small and large air emission sources compiled over the last eighteen years. Since the thirteen central counties of Maryland and Baltimore City have been nonattainment for ozone since before 1982 and 80% of the state's population and major industrial sources lie within these counties, the database of over 10,700 sources (both above and below the point source thresholds) is reasonably complete. The list of point sources in this inventory was developed by applying the appropriate thresholds to the emission levels in the database to differentiate between point and area stationary sources. Sources with emission levels greater than the threshold or sources previously included in PEI submittals are by definition point sources while sources with emissions levels less than the thresholds are by definition area sources.

Several methods of source identification are used by ARA to ensure the point source inventory is as complete as possible. The primary data source is the Permitting Program, which oversees the registration requirements found in Title 26, Subtitle 11, Chapter 02, Code of Maryland Regulations (COMAR). The Compliance Program identifies other point sources through annual facility inspections and through investigations conducted in response to citizen complaints.

The primary means of new source identification is the steady influx of permit applications and equipment registrations. Many sources are required by COMAR 26.11.02, Permits, Approvals and Registration, to register with ARMA. From 700 to 1,000 new sources are registered with the Department each year.

Most of these sources are not considered to be point sources as defined for inventory purposes, even though they require permits. As an example, emissions from some sources can be less than one ton per year. However, all sources that are registered with the Department are tracked until the Department receives notification that the equipment or emission source has ceased operations. An emissions source or its equipment is not permanently deleted from the registration database until the installation is demolished.

A secondary means of new source identification are the emission sources identified by Compliance Program staff during annual field inspections of major point sources. During these inspections, unregistered equipment is sometimes discovered. Statewide response to the Air Pollution Report and the Air Quality Complaint Hotline, has also led to the discovery of previously unidentified emissions sources. Sources discovered in this manner may be the result of the citizen complaints, or the result of further investigation of visual evidence such as buildings, storage yards, visible emissions, etc., sighted elsewhere during the response.

Maryland includes in its 2017 SIP submittal point sources that meet or are greater than threshold levels, and sources with emissions levels less than the thresholds are considered to be Area/Non-point sources.

ARA monitors and collects emissions thru its Compliance and Permitting Programs, which oversees the registration requirements found in Title 26, Subtitle 11, Chapter 02, Code of Maryland Regulations (COMAR), and its Compliance Program which identifies other point sources through annual facility inspections and through investigations conducted in response to citizen complaints.

Facility and business permit applications and equipment registrations are constantly tracked, updated, and monitored.

EMISSION REPORTING REQUIREMENTS FOR MAJOR SOURCES

Facilities are required by Maryland air quality regulations COMAR 26.11.01.05-1 and 26.11.02.19D to certify the air emissions for the past calendar year. The certified emissions are used for inventory and planning purposes as well as to form a basis for billing of Permit-to-Operate fees.

The air pollutants to be certified fall into the categories of criteria air pollutant, toxic air pollutant or greenhouse gas air pollutant. Criteria pollutants are particulate matter (reported as PM10, PM2.5, and total particulate), sulfur oxides (SOx), nitrogen oxides (NOx), carbon monoxide (CO), lead (Pb), and volatile organic compounds (VOC). All forms of particulate matter must be broken down and reported as follows:

- (1) Primary PM, PM10 and PM2.5: Particles that enter the atmosphere as a direct emission from a stack or an open source. It is comprised of two components: Filterable PM and Condensable PM. (these two PM components are the components measured by a stack sampling train such as that specified by EPA Method 5 and have no upper particle size limit.)
- (2) Filterable PM, PM10 and PM2.5: Particles that are directly emitted by a source as a solid or liquid at stack or release conditions and captured on the filter of a stack test train.
- (3) Condensable PM, PM10 and PM2.5: Material that is in a vapor phase at stack conditions, but which condenses and/or reacts upon cooling and dilution in the ambient air to form solid or liquid PM immediately after discharge from the stack.

There are 192 toxic air pollutants. A copy of the air toxics list is available on the MDE website. Greenhouse gas air pollutants include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Fuel burning sources emit CO₂, CH₄, and N₂O. Only certain industrial sources emit HFCs, PFCs, and SF₆.

The emissions certification must be submitted in hard copy to the Air and Radiation Administration (ARA) offices annually by April 1st. Copies of the forms needed to complete the certification are located on the Maryland Department of the Environment website at <https://mde.maryland.gov/programs/Air/AirQualityCompliance/Pages/index.aspx>.

MDE's Compliance Program staff performs field inspections of major point sources. During these inspections, unregistered equipment is listed and registered equipment is checked to see if they are working properly and operating according to state guidelines.

EMISSION CALCULATIONS AND VERIFICATION

Major source facilities certify that the emission estimates that are submitted to the Department are accurate to the best of their knowledge. Typically technical staff use one of the following methodologies to calculate criteria pollutant emissions:

- EPA-supplied emission factors
- Material balances
- Emissions based on source test data
- Continuous emissions monitoring data
- Agency or company-generated emission factors

After receiving the emission certification reports for major sources the staff review the reports for completeness and correctness. MDE ARA staff review the reports to verify emission estimation calculations. Of particular importance are the estimation of emissions and the documentation of calculations. Accuracy and consistency will be checked. Any errors in calculation will be corrected before data is entered into the state data system.

After verifying the accuracy of the emission estimates and methodology, the results are then entered into MDE's Environmental Tracking System (ETS). The primary vehicle to integrate data

collection is Tools for Environmental Management and Protection Organizations (TEMPO) developed by AMS, now called CGI. TEMPO is an Oracle-based relational database management system that uses Sybase Powerbuilder multi-tier client/server-based modules. Along with TEMPO, the Department is incorporating Information Builder's WebFOCUS, fully integrated enterprise business intelligence and reporting platform.

When all discrepancies are resolved to the satisfaction of MDE, the final emissions estimates are then submitted as an update to MDE's ETS-TEMPO state database system. All sources are checked to ensure data has been correctly reported. Plant level emissions in the emission certification reports will be compared to the reported level in the state system. Discrepancies will be corrected. The total facility estimate is used to determine whether the facility satisfies the criteria for classification of as a point source.

EPA CLEAN AIR MARKET (CAMD) REPORTING REQUIREMENTS

The Clean Air Markets Division (CAMD) was developed by EPA to fulfill obligations under Part 75 of Volume 40 of the Code of Federal Regulations. The purpose was to establish continuous emission monitoring (CEM) and reporting requirements for electric generating units (EGUs) that burn fossil fuels and that serve a generator greater than 25 megawatts. Facilities that meet this requirement must submit hourly emissions data via the Emissions Collection and Monitoring Plan System (ECMPS).

ECMPS is a desktop tool that sources must use to submit monitoring plans, QA data, and emission data to EPA to comply with the Acid Rain Program, Cross-State Air Pollution Rule (CSAPR), and the Mercury and Air Toxics Standards (MATS).

For this select group of sources in Maryland, MDE ARA chose to collect emissions data from the CAMD Air Markets Program Data. MDE ARA selected this dataset over the MDE certified annual or daily reported emissions because the temporal profile of the data generated an ozone season daily emission estimate that was more precise.

MDE ARA POINT SOURCE SUBMITTAL

MDE ARA ETS-TEMPO

Maryland's ETS-TEMPO emissions database system records annual and peak ozone season daily emissions (when supplied).

In cases where the facilities did not provide peak ozone season emission estimates, the peak ozone season emissions were calculated by the following method and are included in the emissions summary tables, by county, at the end of this section:

Annual emissions in tons per year were converted into tons per day emissions by dividing annual emissions by operating days.

EPA CAMD

For CAMD reporting sources MDE averaged the daily ozone season pollutant emissions (in tons).

GROWTH PROJECTION METHODOLOGY

The following sections describe the methods followed to determine the 2032 and 2038 projected inventory.

Growth Projection Methodology for Point Sources

The growth in point source emissions is projected using data from the Maryland Department of Labor, Licensing and Regulation (DLLR), Maryland Long Term Industry Projections (<http://www.dlrl.state.md.us/lmi/iandoproj/industry.shtml>). The industry projection data from the DLLR was correlated to standard NAICS (North American Industry Classification System) industry employment codes. The calculated county level growth per NAICS industry employment code is used as the growth surrogate for each major source. Maryland does not allow for negative NAICS growth surrogates (less than one) for a SIP inventory. Therefore, all growth surrogates calculated to be less than one are defaulted to a growth surrogate of one indicating no growth for the facility.

Table 4-1: 2022/32/38 DLLR NAICS-Based Employment Growth Factors³- Example Prince George’s County

NAICS	Industry Title	2022 Base Employment	2032 Projection Employment	Numeric Change	Percent Change					
		2022	2032			2022	2032	2038	GF-2032	GF-2038
	Total Wage and Salary Employment	335181	360423	25242	7.29%	335181	360423	375568.2	1.0753086	1.120494
6010	Self Employed Workers, All Jobs	20654	21654	1000	4.74%	20654	21654	22254	1.0484168	1.077467
	Total, All Industries	314527	338769	24242	7.45%	314527	338769	353314.2	1.0770745	1.123319
						0	0			
	Agriculture, forestry, fishing, and hunting	66	72	6	8.74%	66	72	75.6	1.0909091	1.145455
						0	0			
220000	Utilities	919	1009	90	9.39%	919	1009	1063	1.0979325	1.156692
221000	Utilities	919	1009	90	9.39%	919	1009	1063	1.0979325	1.156692
						0	0			
230000	Construction	27006	29178	2172	7.77%	27006	29178	30481.2	1.0804266	1.128683
236000	Construction of Buildings	4247	4662	415	9.37%	4247	4662	4911	1.097716	1.156346

³ Maryland Department of Labor, Licensing and Regulation (DLLR), Maryland Industry Projections (<http://www.dlrl.state.md.us/lmi/iandoproj/industry.shtml>)

NAICS	Industry Title	2022 Base Employment	2032 Projection Employment	Numeric Change	Percent Change					
		2022	2032			2022	2032	2038	GF-2032	GF-2038
237000	Heavy and Civil Engineering Construction	2892	3163	271	9.00%	2892	3163	3325.6	1.0937068	1.149931
238000	Specialty Trade Contractors	19867	21353	1486	7.24%	19867	21353	22244.6	1.0747974	1.119676
238100	Foundation, Structure, and Building Exterior Contractors	4013	4406	393	9.39%	4013	4406	4641.8	1.0979317	1.156691
238200	Building Equipment Contractors	11794	12711	917	7.52%	11794	12711	13261.2	1.0777514	1.124402
238300	Building Finishing Contractors	2483	2505	22	0.88%	2483	2505	2518.2	1.0088602	1.014176
238900	Other Specialty Trade Contractors	1577	1731	154	9.36%	1577	1731	1823.4	1.0976538	1.156246
						0	0			
310000	Manufacturing	6414	6271	-143	-2.25%	6414	6271	6185.2	0.977705	0.964328
311000	Food Manufacturing	807	846	39	4.73%	807	846	869.4	1.0483271	1.077323
312000	Beverage and Tobacco Product Manufacturing	408	419	11	2.66%	408	419	425.6	1.0269608	1.043137
314000	Textile Product Mills	102	91	-11	-11.35%	102	91	84.4	0.8921569	0.827451
321000	Wood Product Manufacturing	393	431	38	9.27%	393	431	453.8	1.0966921	1.154707
323000	Printing and Related Support Activities	1823	1518	-305	-18.14%	1823	1518	1335	0.8326934	0.732309
324000	Petroleum and Coal Products Manufacturing	131	109	-22	-18.22%	131	109	95.8	0.8320611	0.731298
327000	Nonmetallic Mineral Product Manufacturing	424	459	35	7.96%	424	459	480	1.0825472	1.132075
332000	Fabricated Metal Product Manufacturing	938	933	-5	-0.53%	938	933	930	0.9946695	0.991471
333000	Machinery Manufacturing	67	67	0	0.00%	67	67	67	1	1
334000	Computer and Electronic Product Manufacturing	307	374	67	19.94%	307	374	414.2	1.218241	1.349186
336000	Transportation Equipment Manufacturing	66	63	-3	-4.64%	66	63	61.2	0.9545455	0.927273
337000	Furniture and Related Product Manufacturing	421	388	-33	-8.13%	421	388	368.2	0.9216152	0.874584
339000	Miscellaneous Manufacturing	370	394	24	6.30%	370	394	408.4	1.0648649	1.103784
						0	0			

NAICS	Industry Title	2022 Base Employment	2032 Projection Employment	Numeric Change	Percent Change					
		2022	2032			2022	2032	2038	GF-2032	GF-2038
420000	Wholesale trade	9086	9961	875	9.24%	9086	9961	10486	1.096302	1.154083
423000	Merchant Wholesalers, Durable Goods	5651	5930	279	4.83%	5651	5930	6097.4	1.0493718	1.078995
424000	Merchant Wholesalers, Nondurable Goods	2855	3411	556	17.95%	2855	3411	3744.6	1.1947461	1.311594
425000	Wholesale Electronic Markets and Agents and Brokers	580	620	40	6.69%	580	620	644	1.0689655	1.110345
						0	0			
440000	Retail Trade	36489	37660	1171	3.16%	36489	37660	38362.6	1.0320919	1.051347
441000	Motor Vehicle and Parts Dealers	4454	4488	34	0.76%	4454	4488	4508.4	1.0076336	1.012214
444000	Building Material and Garden Equipment and Supplies Dealers	3977	3937	-40	-1.01%	3977	3937	3913	0.9899422	0.983907
445000	Food and Beverage Retailers	9601	10693	1092	10.83%	9601	10693	11348.2	1.1137382	1.181981
449000	Furniture, Home Furnishings, Electronics, and Appliance Retailers	2899	3085	186	6.24%	2899	3085	3196.6	1.0641601	1.102656
455000	General Merchandise Retailers	6383	6183	-200	-3.18%	6383	6183	6063	0.9686668	0.949867
456000	Health and Personal Care Retailers	2624	2672	48	1.81%	2624	2672	2700.8	1.0182927	1.029268
457000	Gasoline Stations and Fuel Dealers	1357	1409	52	3.77%	1357	1409	1440.2	1.0383198	1.061312
458000	Clothing, Clothing Accessories, Shoe, and Jewelry Retailers	2834	2910	76	2.65%	2834	2910	2955.6	1.0268172	1.042908
459000	Sporting Goods, Hobby, Musical Instrument, Book, and Miscellaneous Retailers	2360	2283	-77	-3.31%	2360	2283	2236.8	0.9673729	0.947797
						0	0			
480000	Transportation and warehousing	14385	15215	830	5.63%	14385	15215	15713	1.057699	1.092318
484000	Truck Transportation	2095	2290	195	8.94%	2095	2290	2407	1.0930788	1.148926
485000	Transit and Ground Passenger Transportation	1230	1350	120	9.35%	1230	1350	1422	1.097561	1.156098
487000	Scenic and Sightseeing Transportation	60	66	6	9.58%	60	66	69.6	1.1	1.16
488000	Support Activities for Transportation	967	1062	95	9.42%	967	1062	1119	1.098242	1.157187

NAICS	Industry Title	2022 Base Employment	2032 Projection Employment	Numeric Change	Percent Change					
		2022	2032			2022	2032	2038	GF-2032	GF-2038
491100	Postal Service	2674	2699	25	0.93%	2674	2699	2714	1.0093493	1.014959
492000	Couriers and Messengers	5118	5472	354	6.71%	5118	5472	5684.4	1.0691676	1.110668
493000	Warehousing and Storage	2238	2273	35	1.55%	2238	2273	2294	1.015639	1.025022
						0	0		#DIV/0!	
510000	Information	2504	2924	420	15.63%	2504	2924	3176	1.1677316	1.268371
512000	Motion Picture and Sound Recording Industries	357	378	21	5.73%	357	378	390.6	1.0588235	1.094118
513000	Publishing Industries	582	1052	470	60.99%	582	1052	1334	1.8075601	2.292096
516000	Broadcasting and Content Providers	63	63	0	0.00%	63	63	63	1	1
517000	Telecommunications	894	648	-246	-31.67%	894	648	500.4	0.7248322	0.559732
518000	Computing Infrastructure Providers, Data Processing, Web Hosting, and Related Services	550	717	167	26.87%	550	717	817.2	1.3036364	1.485818
519000	Web Search Portals, Libraries, Archives, and Other Information Services	58	66	8	13.01%	58	66	70.8	1.137931	1.22069
						0	0			
520000	Finance and insurance	4812	4055	-757	-16.97%	4812	4055	3600.8	0.842685	0.748296
522000	Credit Intermediation and Related Activities	3381	2546	-835	-27.97%	3381	2546	2045	0.7530316	0.604851
523000	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	135	143	8	5.77%	135	143	147.8	1.0592593	1.094815
524000	Insurance Carriers and Related Activities	1249	1315	66	5.16%	1249	1315	1354.6	1.0528423	1.084548
						0	0			
530000	Real estate and rental and leasing	5988	6349	361	5.87%	5988	6349	6565.6	1.0602872	1.09646
531000	Real Estate	3964	4200	236	5.80%	3964	4200	4341.6	1.0595358	1.095257
532000	Rental and Leasing Services	2010	2134	124	6.00%	2010	2134	2208.4	1.0616915	1.098706
						0	0			
540000	Professional, Scientific, and Technical Services	25453	29333	3880	14.29%	25453	29333	31661	1.1524378	1.243901

NAICS	Industry Title	2022 Base Employment	2032 Projection Employment	Numeric Change	Percent Change					
		2022	2032			2022	2032	2038	GF-2032	GF-2038
541000	Professional, Scientific, and Technical Services	25453	29333	3880	14.29%	25453	29333	31661	1.1524378	1.243901
541100	Legal Services	1643	1968	325	18.21%	1643	1968	2163	1.1978089	1.316494
541200	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	2871	3138	267	8.93%	2871	3138	3298.2	1.092999	1.148798
541300	Architectural, Engineering, and Related Services	4270	4752	482	10.75%	4270	4752	5041.2	1.1128806	1.180609
541400	Specialized Design Services	299	335	36	11.43%	299	335	356.6	1.1204013	1.192642
541500	Computer Systems Design and Related Services	9092	10908	1816	18.38%	9092	10908	11997.6	1.199736	1.319578
541600	Management, Scientific, and Technical Consulting Services	3937	4551	614	14.60%	3937	4551	4919.4	1.1559563	1.24953
541700	Scientific Research and Development Services	1720	2017	297	16.06%	1720	2017	2195.2	1.1726744	1.276279
541800	Advertising, Public Relations, and Related Services	468	515	47	9.62%	468	515	543.2	1.1004274	1.160684
541900	Other Professional, Scientific, and Technical Services	1154	1148	-6	-0.52%	1154	1148	1144.4	0.9948007	0.991681
						0	0			
550000	Management of companies and enterprises	1953	2400	447	20.82%	1953	2400	2668.2	1.2288786	1.366206
551000	Management of Companies and Enterprises	1953	2400	447	20.82%	1953	2400	2668.2	1.2288786	1.366206
						0	0			
560000	Administrative and waste services	15748	17289	1541	9.38%	15748	17289	18213.6	1.0978537	1.156566
561000	Administrative and Support Services	13849	15204	1355	9.38%	13849	15204	16017	1.097841	1.156546
562000	Waste Management and Remediation Services	1899	2085	186	9.39%	1899	2085	2196.6	1.0979463	1.156714
						0	0			
610000	Education	45360	49797	4437	9.38%	45360	49797	52459.2	1.0978175	1.156508
611000	Educational Services	45360	49797	4437	9.38%	45360	49797	52459.2	1.0978175	1.156508
611002	State Education Employment	19541	22658	3117	14.91%	19541	22658	24528.2	1.1595108	1.255217

NAICS	Industry Title	2022 Base Employment	2032 Projection Employment	Numeric Change	Percent Change					
		2022	2032			2022	2032	2038	GF-2032	GF-2038
611003	Local Education Employment	20148	20611	463	2.27%	20148	20611	20888.8	1.0229799	1.036768
611005	Private Education Employment	5671	6521	850	14.06%	5671	6521	7031	1.1498854	1.239817
						0	0			
620000	Healthcare and social assistance	27537	29594	2057	7.23%	27537	29594	30828.2	1.0746995	1.119519
621000	Ambulatory Health Care Services	14383	16018	1635	10.82%	14383	16018	16999	1.1136759	1.181881
621100	Offices of Physicians	4713	5286	573	11.54%	4713	5286	5629.8	1.1215786	1.194526
621200	Offices of Dentists	1613	1694	81	4.91%	1613	1694	1742.6	1.050217	1.080347
621300	Offices of Other Health Practitioners	1399	1569	170	11.53%	1399	1569	1671	1.1215154	1.194425
621400	Outpatient Care Centers	3298	3576	278	8.13%	3298	3576	3742.8	1.0842935	1.13487
621500	Medical and Diagnostic Laboratories	728	837	109	14.05%	728	837	902.4	1.1497253	1.23956
621600	Home Health Care Services	2555	2981	426	15.54%	2555	2981	3236.6	1.1667319	1.266771
621900	Other Ambulatory Health Care Services	77	77	0	0.00%	77	77	77	1	1
622000	Hospitals	4434	4300	-134	-3.06%	4434	4300	4219.6	0.969779	0.951646
622005	Private Hospital Employment	4434	4300	-134	-3.06%	4434	4300	4219.6	0.969779	0.951646
623000	Nursing and Residential Care Facilities	4053	3900	-153	-3.84%	4053	3900	3808.2	0.9622502	0.9396
624000	Social Assistance	4667	5376	709	14.24%	4667	5376	5801.4	1.1519177	1.243068
624100	Individual and Family Services	2337	3056	719	27.19%	2337	3056	3487.4	1.3076594	1.492255
624300	Vocational Rehabilitation Services	1044	974	-70	-6.92%	1044	974	932	0.9329502	0.89272
624400	Child Day Care Services	1254	1317	63	4.91%	1254	1317	1354.8	1.0502392	1.080383
						0	0			
710000	Arts, entertainment, and recreation	3438	3735	297	8.32%	3438	3735	3913.2	1.0863874	1.13822
711000	Performing Arts, Spectator Sports, and Related Industries	741	776	35	4.63%	741	776	797	1.0472335	1.075574
713000	Amusement, Gambling, and Recreation Industries	2655	2915	260	9.39%	2655	2915	3071	1.0979284	1.156685
						0	0			
720000	Accommodation and food service	28824	31051	2227	7.47%	28824	31051	32387.2	1.077262	1.123619

NAICS	Industry Title	2022 Base Employment	2032 Projection Employment	Numeric Change	Percent Change					
		2022	2032			2022	2032	2038	GF-2032	GF-2038
721000	Accommodation, including Hotels and Motels	5823	6550	727	11.83%	5823	6550	6986.2	1.1248497	1.19976
722000	Food Services and Drinking Places	23001	24501	1500	6.34%	23001	24501	25401	1.0652146	1.104343
						0	0			
810000	Other Services	11577	12274	697	5.86%	11577	12274	12692.2	1.0602056	1.096329
811000	Repair and Maintenance	2517	2565	48	1.89%	2517	2565	2593.8	1.0190703	1.030513
812000	Personal and Laundry Services	3582	4037	455	12.03%	3582	4037	4310	1.127024	1.203238
813000	Religious, Grantmaking, Civic, Professional, and Similar Organizations	5226	5437	211	3.97%	5226	5437	5563.6	1.040375	1.0646
814000	Private Households	252	235	-17	-6.96%	252	235	224.8	0.9325397	0.892063
						0	0			
990000	Government	46922	50556	3634	7.49%	46922	50556	52736.4	1.0774477	1.123916
999100	Federal Government, Excluding Post Office	27036	30000	2964	10.46%	27036	30000	31778.4	1.1096316	1.175411
999200	State Government, Excluding Education and Hospitals	1240	1228	-12	-0.97%	1240	1228	1220.8	0.9903226	0.984516
999300	Local Government, Excluding Education and Hospitals	18646	19328	682	3.60%	18646	19328	19737.2	1.0365762	1.058522

TABLE 2: 2032/38 DLLR NAICS-Based Employment Growth Factors per Facility

PREMISE_ID	MASTER_AI_NAME	NAICS Primary	County_NAICS GF LookUP	NAICS-4 Digit	GF-2032	GF-2038
009-0012	Calvert Cliffs Nuclear Power Plant, LLC	221112	24009-221000	221	1	1
009-0021	Dominion Cove Point LNG, LP	48621	24009-457000	486	1.02247191	1.035955056
017-0014	NRG Morgantown Generating Station	221112	24017-221000	221	1	1
017-0040	Naval Support Facility Indian Head	92811	24017-999100	999	1.126738674	1.202781879
017-0072	RR Donnelley	323117	24017-323000	323	1	1
017-0119	Charles County Asphalt	324121	24017-300000	339	1.196078431	1.31372549
017-0137	Charles County Municipal Landfill	562219	24017-562000	562	1.023809524	1.038095238
017-0150	Aggregate Industries - Waldorf	324121	24017-300000	339	1.196078431	1.31372549
017-0202	Aggregate Industries - La Plata Sand & Gravel	212321	24017-213000	237	1	1
017-0219	Sinew, Inc. - Morgantown Bottom Ash Plant	212111	24017-213000	221	1	1
017-0235	CPV St. Charles Energy Center	22111	24017-221000	221	1	1
017-0279	Morgantown Power, LLC	22111	24017-221000	221	1	1
021-0003	Laurel Sand & Gravel, Inc. - Laurel Hill Quarry	212321	24021-213000	237	1	1
021-0027	Redland Brick, Inc. - Rocky Ridge	327121	24021-327000	327	1.136476427	1.218362283
021-0037	Richard F. Kline, Inc	324121	24021-300000	324	1	1
021-0131	Fort Detrick - Area B & Main Post	92811	24021-999100	999	1.001117006	1.00178721
021-0172	Tamko Building Products Inc.	324122	24021-300000	324	1	1
021-0234	Bimbo Bakeries USA, Inc	311812	24021-311000	311	1.016	1.0256
021-0254	Canam Steel Corporation	332312	24021-332000	332	1.070909091	1.113454545
021-0366	Pacemaker Press Inc	323111	24021-323000	323	1	1
021-0408	Frederick Asphalt Co., L.C. At Essroc	324121	24021-300000	324	1	1
021-0409	Miller Asphalt - Legore	324121	24021-300000	324	1	1
021-0413	Maryland Stone - Essroc Site	327310	24021-327000	327	1.136476427	1.218362283
021-0419	Reich's Ford Road Landfill	562219	24021-562000	562	1.136363636	1.218181818
021-0444	Frederick National Laboratory for Cancer Research	541712	24021-541700	541	1.15258512	1.244136192
021-0459	MedImmune, LLC	325414	24021-325000	325	1.162825279	1.260520446
021-0599	Fannie Mae UTC Data Center	51421	24021-999100	522	1.005063291	1.008101266
021-0623	NIBC Fort Detrick	221111	24021-221000	221	1.150753769	1.24120603
021-0707	Dominion Transmission, Inc	48621	24021-457000	484	1.015625	1.025
031-0019	NRG Dickerson Generating Station	221112	24031-221000	221	1	1
031-0142	Washington Adventist Hospital	62211	24031-622000	6220	1.132026247	1.158431497
031-0323	National Institute of Standards and Technology	92615	24031-999100	9991	1.051335299	1.061602359
031-0324	National Institutes of Health	92312	24031-999100	9991	1.051335299	1.061602359
031-0325	NIH Animal Center	92312	24031-999100	9991	1.051335299	1.061602359
031-0983	U.S. Army - Forest Glen Annex	62211	24031-622000	6220	1.132026247	1.158431497
031-1124	Naval Support Activity Bethesda	92811	24031-999100	9991	1.051335299	1.061602359
031-1128	Naval Support Warfare Center (NSWC), Carderock Division	92811	24031-999100	9991	1.051335299	1.061602359
031-1129	GSA Federal Research Center at White Oak	92811	24031-999100	9991	1.051335299	1.061602359

PREMISE_ID	MASTER_AI_NAME	NAICS Primary	County_NAICS GF LookUP	NAICS-4 Digit	GF-2032	GF-2038
031-1361	F. O. Day Bituminous Company	324121	24031-300000	324	1.138461538	1.166153846
031-1385	M Luis Products, LLC	212319	24031-213000	238	1.064269374	1.077123248
031-1718	Montgomery County Resource Recovery Facility (MCRRF)	562219	24031-562000	562	1.067579909	1.08109589
031-1723	Oaks Landfill (Gas to Energy)	562219	24031-562000	562	1.067579909	1.08109589
031-1875	IBM Corporation	334113	24031-334000	334	1.257614213	1.309137056
031-1951	Washington Gas - Rockville Station	22121	24031-221000	221	1	1
031-2164	MedImmune, Inc. - Gaithersburg	325414	24031-325000	325	1.159172154	1.191006585
031-2253	Gude Landfill	562219	24031-562000	562	1.067579909	1.08109589
031-2308	BYTEGRID Silver Spring, LLC	52222	24031-522000	522	1.004857316	1.00582878
031-2679	Adventist Health Care White Oak Medical Center	62211	24031-622000	6220	1.132026247	1.158431497
031-2716	Dickerson Power, LLC	22111	24031-221000	221	1	1
033-0002	Aggregate Industries - Kirby Road Asphalt Plant	32412	24033-300000	324	1	1
033-0010	University Of Maryland	61131	24033-611000	611	1.09781746	1.156507937
033-0011	Laurel Sand and Gravel, Inc	212321	24033-213000	238	1.074797403	1.119675844
033-0014	NRG Chalk Point Generating Station	221112	24033-221000	221	1.097932535	1.156692057
033-0096	Sherwin-Williams Company - Beltsville	32551	24033-325000	323	1	1
033-0655	Andrews Air Force Base	92811	24033-999100	9991	1.109631602	1.175410564
033-0667	USDA Beltsville Agriculture Research Center	54171	24033-541700	9991	1.109631602	1.175410564
033-0675	NASA Goddard Space Flight Center	92711	24033-999100	9991	1.109631602	1.175410564
033-0872	Western Branch WWTP	562219	24033-562000	562	1.097946288	1.15671406
033-0883	U.S. Army - Adelphi Laboratory Center	54172	24033-541700	9991	1.109631602	1.175410564
033-0956	Joseph Smith & Sons, Inc	42393017	24033-423000	423	1.049371793	1.078994868
033-0996	MedStar Southern Maryland Hospital Center	62211	24033-622000	6220	1	1
033-1068	Forestville Asphalt Company	324121	24033-300000	324	1	1
033-1405	Industrial Towel Supply, Inc. - A Subsidiary of G & K Services, Co.	812321	24033-812000	812	1.127024009	1.203238414
033-1511	Peake Delancey Printers	32311	24033-323000	323	1	1
033-1522	Prince George's County Correctional Facility	92214	24033-999200	9992	1	1
033-1711	Laney Materials, LLC dba Laney Recycling and Aggregates	42393	24033-423000	423	1.049371793	1.078994868
033-1832	Westland Printers	32311	24033-323000	323	1	1
033-1862	Sandy Hill Landfill	562219	24033-562000	562	1.097946288	1.15671406
033-2084	Brown Station Road Sanitary Landfill	562219	24033-562000	562	1.097946288	1.15671406
033-2190	Aggregate Industries - Bladensburg Aggregate	324199	24033-300000	324	1	1
033-2200	KMC Thermo-Brandywine Power Facility	221112	24033-221000	221	1.097932535	1.156692057
033-2331	Ritchie Land Reclamation, LLC	562219	24033-562000	562	1.097946288	1.15671406
033-2568	Gaylord Entertainment Company	721110	24033-721000	721	1.124849734	1.199759574
033-2612	Barnabas Road Associates, LLC	212319	24033-213000	324	1	1
033-2618	Clean Earth of Greater Washington, LLC	56221908	24033-562000	562	1.097946288	1.15671406
033-2658	Aggregate Industries - Bladensburg Asphalt Division	32412	24033-300000	324	1	1

PREMISE_ID	MASTER_AI_NAME	NAICS Primary	County_NAICS GF LookUP	NAICS-4 Digit	GF-2032	GF-2038
033-2737	Parkway Generation Keys Energy Center LLC - Keys Energy Center	22111	24033-221000	221	1.097932535	1.156692057
033-2805	MGM National Harbor Destination Resort Casino	7211	24033-721000	721	1.124849734	1.199759574
033-2863	University of Maryland Capital Region Medical Center	62211	24033-622000	6220	1	1
033-2920	Chalk Point Power, LLC	22111	24033-221000	221	1.097932535	1.156692057

For source category listings and descriptions, projection methods and data sources, and surrogate growth indicators, please refer to Appendix A-1.

Point source emission projection data is contained in Appendix A-2.

Growth Projection Methodology for Quasi-Point Sources

Quasi-point sources will include all emissions at the facility regardless of whether they are

District of Columbia

Regional Analysis: District of Columbia's Ozone Season Emissions

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1. Introduction

In coordination with the supporting documentation provided by the Virginia Department of Environmental Quality (VDEQ), the District Department of Energy and Environment (DOEE) developed ozone season tons per day (OSTd) estimates for boilers subject to the 2022 NO_x Reasonable Available Control Technology (RACT) rule (20 DCMR § 805.5). These estimates represent emissions during the summer ozone season (June-August) for applicable units.

There are a few boilers included in this analysis that fall under the Alternative NO_x RACT rule in 20 DCMR § 805.2, which allows facilities to demonstrate that presumptive RACT limits are unreasonable and propose alternative feasible limits. In addition to RACT-applicable units, DOEE provided OSTd estimates for all other point source units at Title V facilities in the District's inventory to support regional modeling.

2. Emissions Factors by Boiler Size and Fuel Type

Table 1 summarizes the NO_x emissions factors applied to boilers based on heat input rating and fuel type, consistent with the 2022 RACT rule.

Table 1. Emissions Factors Used for OSTd Development

Fuel Type	Applicable Units	Emissions Factor (lb/MMBtu)
Natural Gas	Boilers subject to § 805.5	0.05
Fuel Oil or Fuel Oil + Natural Gas	Boilers with heat input 25–100 MMBtu/hr	0.12
Fuel Oil or Fuel Oil + Natural Gas	Boilers with heat input \geq 100 MMBtu/hr	0.9

3. SCCs Used to Identify NO_x RACT Unit SCCs

Table 2 lists the Source Classification Codes (SCCs) used to identify units subject to NO_x RACT requirements.

Table 2. SCCs for RACT-Applicable Units

SCC	Description
10100601	External Combustion - Electric Generation: Boilers - Natural Gas - ≥ 100 Million BTU/hr
10100602	External Combustion - Electric Generation: Boilers - Natural Gas - < 100 Million BTU/hr
10200601	External Combustion - Industrial: Boilers - Natural Gas
10200602	External Combustion Boilers - Industrial Boilers - Natural Gas - 10-100 Million BTU/hr
10200603	External Combustion - Industrial: Boilers - Natural Gas - < 10 Million BTU/hr
10200604	External Combustion - Industrial: Boilers - Natural Gas - Cogeneration
10300501	External Combustion - Commercial/Institutional: Boilers - Distillate Oil - Grades 1 and 2: Boiler
10300502	External Combustion - Commercial/Institutional: Boilers - Distillate Oil - 10-100 Million BTU/hr
10300601	External Combustion - Commercial/Institutional: Boilers - Distillate Oil - > 100 Million BTU/hr
10300602	External Combustion - Commercial/Institutional: Boilers - Natural Gas - 10-100 Million BTU/hr
10300603	External Combustion - Commercial/Institutional: Boilers - Natural Gas - < 10 Million BTU/hr
10300701	External Combustion Boilers - Commercial/Institutional - Process Gas - POTW Digester Gas-fired Boiler
20100102	Internal Combustion Engines - Electric Generation - Distillate Oil - Reciprocating
20200101	Internal Combustion Engines - Industrial - Distillate Oil - Turbine
20200102	Internal Combustion Engines - Industrial - Diesel - Reciprocating
20200201	Internal Combustion Engines - Industrial - Natural Gas - Turbine
20200202	Internal Combustion Engines - Industrial - Natural Gas - Reciprocating
20300201	Internal Combustion Engines - Commercial/Institutional - Natural Gas - Reciprocating
20300202	Internal Combustion Engines - Commercial/Institutional - Natural Gas - Turbine
20300203	Internal Combustion Engines - Commercial/Industrial - Natural Gas - Turbine: Cogeneration
30500245	Industrial Processes - Mineral Products - Asphalt Concrete - Batch Mix Plant: Hot Elevators, Screens, Bins, Mixer & NG Rot Dryer
30500246	Industrial Processes - Mineral Products - Asphalt Concrete - Batch Mix Plant: Hot Elevators, Screens, Bins, Mixer & #2 Oil Rot Dryer

3.1 Data Sources

DOEE relied on the following data sources:

- Combined Air Emissions Reporting System (CAERS) for emissions, operating data, and SCC assignments
- Facility-submitted RACT analyses
- U.S. Energy Information Administration (EIA) heat content data

4. Approach for OSTd and Ratio Development

OSTd values were developed using the following steps:

- Fuel usage, emission factors, and summer operating percentages were applied to each unit.
- Fuel use was multiplied by the applicable emission factor, converted from pounds to tons ($\div 2000$), then divided by 92 (days in June through August).
- Conversion factors were based on the U.S. Energy Information Administration (EIA) heat content data for natural gas DC (2022) and other EIA formulas.

5. Methodology

5.1 Fuel Conversion Factors

Table 3 summarizes the conversion factors used to convert fuel units to MMBtu. This is based on the U.S. EIA’s Heat Content of NG Consumed in DC in 2022 and other conversion formulas from their site:

Table 3. Fuel Conversion Factors

Fuel Unit	MMBtu Conversion
1 gallon	0.138 MMBtu
E3GAL	138 MMBtu
FT3SD	0.001034 MMBtu/Day
E6FT3SD	1034 MMBtu/Day

5.2 Example OSTd Calculation for NOx RACT Unit:

Facility	Unit	Fuel Use	Summer %	Fuel Type	Emission Factor
Washington Navy Yard	3	41.71 E6FT3S	25	Natural Gas	0.05 lb/MMBTU

5.3 Example OSTd Calculation for a NOx RACT Unit

Fuel Conversion: $41.71 \times 1,034 = 43,128.14$ MMBtu

Summer Fuel Use: $43,128.14 \times 0.25 = 10,782.035$ MMBtu

OSTd: $(10,782.035 \times 0.05)/2000/92 = 0.00293$ tons of NOx per day

6. RACT Units and Emissions

Fifteen facilities in the District have units subject to the NOx RACT rule. Georgetown University, the U.S. General Services Administration (Central Heating and Refrigeration Plant), and the Architect of the Capitol (Capitol Power Plant) applied for Alternative RACT under 20 DCMR § 805.2. Capitol Power Plant’s 2022 submission was denied (68 DCR12420), but an updated 2024 proposal with more stringent limits and fuel restrictions for boilers 3-7 was proposed for approval. (72 DCR 005234, 72 DCR 006581),

Table 4. NOX RACT Units

Facility	Number of RACT Units	Fuel Types	RACT Category
Georgetown University	4	NG, Oil	1 Alt. NOx RACT 3 Presumptive
Architect of the Capitol - CPP	5	NG, Oil	Alt. NOx RACT
U.S. General Services Administration	5	NG, Oil	1 Alt. NOx RACT 4 Presumptive
D.C. General Hospital	2	NG	Presumptive
George Washington University	3	NG, Oil	Presumptive
Washington Navy Yard	2	NG, Oil	Presumptive
Washington Hospital Center	5	NG, Oil	Presumptive
Gallaudet University	2	NG, Oil	Presumptive
Howard University	5	NG	Presumptive
Naval Research Laboratory	3	NG, Oil	Presumptive
L’Enfant Plaza	2	NG	Presumptive
Sibley Memorial Hospital	2	NG, Oil	Presumptive
Blue Plains Wastewater Treatment Plant	1	NG, Oil	Presumptive
Fort Myer Plant #1	1	NG, Oil	Presumptive
Washington Convention Center	2	NG, Oil	Presumptive

7. Total Point Source OSTd

DOEE also provided OSTd values for all point source units at Title V facilities in the District to support regional modeling.

Table 5. Total Emissions from Point Source Sector (Excluding RACT Units)

Pollutant	OSTd (Excluding RACT)
CO	0.5737
NOX	0.4432

VOC	0.2529
Total	1.2698

7.1 Emissions by SCC for Each Analytic Year

Table 6 provides NOX RACT OSTD values organized by SCC, while Table 7 compiles all associated values, including NOX RACT units, for the analytic years 2022, 2026, 2032, and 2038.

Table 6. NOx RACT OSTd by SCC for All Analytic Years

SCC	2022 OSD	2026 OS (tons/day)	2032 OS (tons/day)	2038 OS (tons/day)
10200604	1.244E-09	1.244E-09	1.244E-09	1.244E-09
10300501	1.427E-05	1.427E-05	1.427E-05	1.427E-05
10300502	2.454E-05	2.454E-05	6.020E-06	6.020E-06
10300601	0.0008	0.0008	0.0008	0.0008
10300602	0.0219	0.0219	0.0189	0.0189
10300701	0.0006	0.0006	0.0006	0.0006
20300203	0	0	0	0
30500245	0.0041	0.0041	0.0041	0.0041
30500246	0	0	0	0
Total	0.0274	0.0274	0.0245	0.0245

Table 7: OSTd by SCC for All Analytic Years (Including NOX RACT units)

SCC	CO (All Years)	VOC (All Years)	NOX (2022)	NOX (2026)	NOX (2032)	NOX (2038)
10100501	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10100601	1.36E-06	1.36E-06	1.36E-06	1.36E-06	1.36E-06	1.36E-06
10100602	0.0001	3.30E-06	0.0001	0.0001	0.0001	0.0001
10200502	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10200503	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10200505	2.45E-05	1.95E-05	1.76E-05	1.76E-05	1.76E-05	1.76E-05
10200602	0.0005	3.43E-05	0.0053	0.0053	0.0053	0.0053
10200603	0.0078	0.0005	0.0108	0.0108	0.0108	0.0108
10200604	0.0050	0.0016	0.0030	0.0030	0.0030	0.0030
10300501	2.01E-05	1.27E-06	0.0131	0.0131	0.0131	0.0131
10300502	0.0166	0.0044	0.0070	0.0070	0.0070	0.0070
10300503	7.87E-06	5.38E-07	3.15E-05	3.15E-05	3.15E-05	3.15E-05
10300601	0.0245	0.0016	0.0352	0.0352	0.0352	0.0352
10300602	0.0650	0.0074	0.0350	0.0350	0.0321	0.0321

SCC	CO (All Years)	VOC (All Years)	NOX (2022)	NOX (2026)	NOX (2032)	NOX (2038)
10300603	0.0547	0.0035	0.0600	0.0600	0.0600	0.0600
10300701	0.1101	0.0096	0.0304	0.0304	0.0304	0.0304
10301002	0.0015	0.0002	0.0026	0.0026	0.0026	0.0026
10500106	0.0003	1.93E-05	0.0004	0.0004	0.0004	0.0004
10500206	0.0001	9.31E-06	0.0002	0.0002	0.0002	0.0002
20100102	0.0250	0.0046	0.1063	0.1063	0.1063	0.1063
20100202	0.0008	3.04E-06	0.0002	0.0002	0.0002	0.0002
20200102	0.0034	0.0009	0.0152	0.0152	0.0152	0.0152
20200103	2.83E-07	2.83E-07	7.02E-05	7.02E-05	7.02E-05	7.02E-05
20200107	0.0014	0.0005	0.0063	0.0063	0.0063	0.0063
20200203	0.0606	0.0348	0.0437	0.0437	0.0437	0.0437
20200254	0.0008	3.32E-05	0.0005	0.0005	0.0005	0.0005
20200401	0.0022	0.0003	0.0105	0.0105	0.0105	0.0105
20201001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002
20300101	0.0137	0.0036	0.0616	0.0616	0.0616	0.0616
20300201	0.0017	0.0001	0.0025	0.0025	0.0025	0.0025
20300203	0.0007	3.56E-05	0.0011	0.0011	0.0011	0.0011
30103332		0.0001				
30201311	0.0002	2.27E-05	0.0004	2.27E-05	2.27E-05	2.27E-05
30203803	0.0003	1.94E-05	0.0004	1.94E-05	1.94E-05	1.94E-05
30500212		0.0008				
30500217	0.0006	0.0002	0.0028	0.0028	0.0028	0.0028
30500245	0.1585	0.0242	0.0227	0.0227	0.0227	0.0227
30500246	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30500270	0.0021	0.0123				
30500850	2.71E-05	1.77E-06	3.22E-05	3.22E-05	3.22E-05	3.22E-05
31000133		0.0000				
31000411	3.27E-06	1.00E-06	1.47E-05	1.47E-05	1.47E-05	1.47E-05
31503001		0.0003				
31503003		1.01E-03				
39090003		0.0008				
39090004		0.0002				
39090005		0.0000				
39091003		3.23E-07				
39990001	0.0002	1.99E-06	0.0008	0.0008	0.0008	0.0008
40100252		0.0000				
40100301		9.51E-06				
40100307		0.0000				
40100310		1.25E-06				

SCC	CO (All Years)	VOC (All Years)	NOX (2022)	NOX (2026)	NOX (2032)	NOX (2038)
40100336		0.0000				
40100399		0.0001				
40100501		1.75E-06				
40188898		0.0017				
40200101		0.0008				
40200301		0.0000				
40200928		9.78E-07				
40201806		0.0000				
40288801		0.0122				
40299998		0.0004				
40301106		0.0001				
40400199		0.0003				
40400316		0.0000				
40400403		4.35E-05				
40400404		1.30E-06				
40500205		0.0005				
40500402		0.0004				
40500403		0.0433				
40500516		0.0397				
40500906		0.0003				
40600306		0.0001				
40600307		0.0002				
40600401		0.0006				
40600402		0.0002				
40600601		0.0003				
40600603		0.0231				
40600706		1.79E-07				
40600707		0.0002				
40799999		0.0083				
49099998		0.0002				
50100301	1.49E-06		0.0002	0.0002	0.0002	0.0002
50100789	0.0152	0.0062	0.0044	0.0044	0.0044	0.0044
50700201	2.08E-05		0.0009	0.0009	0.0009	0.0009
Total	0.5737	0.2530	0.4840	0.4832	0.4803	0.4803

8. Considerations

- Most units have consistent values across analytical years.

- Temporary boilers scheduled for replacement with non-RACT units are assigned zero emissions beginning in the year they are retired.
- Alternative RACT determinations may affect future OSTd values.

Sources:

[Frequently Asked Questions \(FAQs\) - U.S. Energy Information Administration \(EIA\)](#)

[Heat Content of Natural Gas Delivered to Consumers](#)

Table 8 provides emissions for VOC and NOx for both EGU and Non-EGU point sources for jurisdictions in the Washington, DC-MD-VA 2015 ozone NAAQS nonattainment area.

Table 8: Point (EGU & Non-EGU) Emissions Estimates (Tons per day)

Jurisdiction	NOx				VOC			
	2017	2022	2032	2038	2017	2022	2032	2038
District of Columbia	0.78	0.48	0.48	0.48	0.17	0.25	0.25	0.25
Calvert	2.66	2.18	2.19	2.20	0.11	0.10	0.11	0.11
Charles	6.47	9.03	10.61	10.63	0.32	0.34	0.44	0.45
Fredrick	1.75	1.41	1.53	1.61	0.76	1.35	1.42	1.46
Montgomery	13.85	8.38	9.56	9.63	0.33	0.29	0.31	0.32
Prince George's	24.68	15.07	18.58	19.48	0.99	0.80	0.90	0.94
Arlington	0.25	0.00	0.00	0.00	0.02	0.00	0.00	0.00
Fairfax County	10.39	9.04	9.45	9.53	0.81	0.57	0.52	0.53
Loudoun County	10.44	7.36	8.62	9.44	0.71	0.44	0.51	0.55
Prince William County	6.36	2.94	2.56	2.57	0.52	0.45	0.33	0.34
Fairfax City	0.01	0.02	0.02	0.03	0.30	0.34	0.29	0.29
Falls Church City	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manassas City	0.54	0.22	0.26	0.28	0.13	0.10	0.11	0.12
Manassas Park City	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alexandria City	1.37	0.81	0.81	0.81	0.02	0.00	0.00	0.00
NAA Total	79.55	56.95	64.68	66.70	5.19	5.02	5.21	5.37