Appendix A1

Technical support document for the development of point source (EGU & Non-EGU) emissions inventories for 2014, 2025, and 2030

Virginia

Attainment Year 2014 Inventories

Point Non-EGU Sector

Base year inventories for all point nonEGU sources are based on emissions reported in the 2014 National Emissions Inventory (NEI), with the exception of six facilities. Emissions from these six facilities in the 2014 NEI do not match submitted values or values included in Virginia's Comprehensive Environmental Data System (CEDS). CEDS data is certified by responsible officials from each facility and is subjected to internal quality assurance processes by compliance staff at DEQ. Therefore, CEDs data is considered to be of high quality, and those six facilities had 2014 emissions data from CEDS substituted in place of the 2014 NEI information. These six facilities are as follows:

- Covanta Alexandria/Arlington
- Glen-Gery Corporation – Manassas Quarry
- US Army – Fort Belvoir
- Dominion – Leesburg Compressor Statin
- Columbia Gas Transmission Corporation
- US Marine Corps – MCB Quantico

Additionally, the NEI point source inventory for 2014 contained emissions from airports, which DEQ typically includes in the Marine, Air, and Rail (MAR) sector inventory. DEQ reviewed the information in the point source inventory for the airports in the region and determined that these emissions were already included in the MAR inventory sector. Therefore, these facilities were not included in the point nonEGU 2014 inventory for the 2008 ozone NAAQS redesignation request and maintenance plan.

Standard inventory practices were used to develop ozone season tons/day (OSt/d) values from annual estimates.

The spreadsheet entitled, "NonEGU Growth File (revised)(No Airports).xlsx" contains nonEGU point sector 2014 emissions estimates for the Northern Virginia portion of the Washington DC-MD-VA 2008 ozone NAAQS nonattainment area.

Point EGU Sector

For 2014 emissions of NOx, data supplied under 40 CFR Part 75 from unit-specific continuous emission monitoring (CEM) equipment was used to determine the actual annual and ozone emissions of NOx. To determine emissions of NOx in OSt/d, ozone season emissions of NOx

were divided by the number of operating days in the ozone season. Any day with operating time is considered an operating day.

To determine the VOC and CO OSt/d value for each EGU unit, the annual 2014 inventory value for that pollutant was multiplied by a ratio of the 2014 NOx OSt/d value to the 2014 NOx annual emissions in tons:

VOC or CO, OSt/d = $(Emissions_{2014})*(NOx\ OSt/d_{2014})/(NOx\ tpy_{2014})$

The spreadsheet entitled, "BY2014_2025_2030_Average-OS-Tons-Per-Day_2-2-2017.xlsx" contains the point EGU sector emissions estimates.

Projection Years 2025 & 2030 Inventories

Point NonEGU Sector

All emissions from Northern Virginia point non-EGU facilities, with the exception of data centers, were projected into future years using a no-growth (unity, growth rate equivalent to 1) assumption. Historical point source emission estimates show that emissions from this inventory sector decline over time regardless of factors such as economic expansion or improved outputs. This trend is due to a number of factors, including but not limited to:

- Technological efficiency improvements that reduce emissions and reduce costs,
- Application of Best Available Control Technology in Virginia's minor new source review permitting program,
- Changes in fuel costs that make lower-emitting fuels more attractive to industry and commercial enterprises,
- Continued emphasis on fuel economy for industrial equipment due to both economic and environmental pressures; and
- Advancement of federal regulations, such as tighter New Source Performance Standards and more stringent National Ambient Air Quality Standards.

Information from permit applications and facility inspections indicates that data centers are the only source category in Northern Virginia where the application of a no-growth projection would not be appropriate. Data centers are facilities that contain computer systems and their associated components and may act as repositories for electronic information. Emissions from these facilities originate from the large amounts of backup power necessary to ensure system reliability. In the Northern Virginia area, such centers have significant backup generation capacity and therefore have relatively large potential emissions. Since the backup generation capacity is only operated for testing and maintenance purposes and very infrequently for the generation of backup power, actual emissions from these facilities are low relative to potential

emissions. Based on facility-specific information, overall growth in backup generation for new or expanded data centers is expected to overwhelm any reductions associated with Tier 2 backup engine controls. Therefore, for this source category, Virginia chose to grow the point nonEGU data center facility emissions using a growth factor equivalent to the estimated employment growth rate derived from the COG Cooperative Forecast for the county in which the facility is located. Such growth factors should conservatively predict emissions increases for data centers in the point nonEGU inventory.

The spreadsheet entitled, "NonEGU Growth File (revised)(No Airports).xlsx" contains nonEGU point sector projection year emissions estimates.

Point EGU Sector

Virginia projected emissions from EGUs in OSt/d are based on ERTAC CONUS2.6 results. These results and associated documentation, input files, and other supporting information is available on the MARAMA website at http://www.marama.org/2013-ertac-egu-forecasting-tool-documentation. NO_X emissions in OSt/d were calculated by dividing the estimated future year NO_X emissions by the number of days operated during the ozone season. Any day with any operating time was considered one day in this calculation.

To determine the VOC and CO OSt/d value for each EGU unit, the annual 2014 inventory value for that pollutant was multiplied by a ratio of the NOx OSt/d value to the NOx annual emissions in tons for that projection year:

VOC or CO, OSt/d = $(Emissions_{2014})$*(NOx OSt/d)/(NOx tpy)

The spreadsheet entitled, "BY2014_2025_2030_Average-OS-Tons-Per-Day_2-2-2017.xlsx" contains the EGU point sector projection year emissions estimates.

Maryland

Attainment Year 2014 Inventories

Methodologies for the attainment year inventories for all point EGU and nonEGU sources are described in detail in Appendix A1a.

Projection Years 2025 & 2030 Inventories

Point NonEGU Sector

Emissions from Maryland point non-EGU facilities were projected using Maryland Occupational Projections - 2012-2022 (https://www.dllr.state.md.us/lmi/iandoproj/wiasindustry.shtml). These projections are provided by county or region for different types of industries.

Point EGU Sector

Emissions from Maryland point EGU facilities were projected using Annual Energy Outlook 2014 total electricity generation and import projections for 2025 and 2030. Growth factors are presented in Tab entitled "GF" of the Appendix A2 file (MD_MWCOG 2014 Daily RR MP PT_NPT_M-A-R_QPT to MWCOG_EGU+NEGU.xlsx).

District of Columbia

Attainment Year 2014 Inventories

Methodologies for the attainment year inventories for all point EGU and nonEGU sources are described in detail in Appendix xxxx.

Projection Years 2025 & 2030 Inventories

Point NonEGU Sector

Emissions from the District of Columbia point non-EGU facilities were not assumed to grow in the future.

Point EGU Sector

There are no EGUs in the District of Columbia.