2025 Ambient Air Monitoring Annual Network Plan and SO_2 Data Requirement Rule Annual Report

DRAFT May 23, 2025

West Virginia Department of Environmental Protection
Division of Air Quality
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Charleston, WV 25304
304-926-0499

Executive Summary

The Annual Network Plan (ANP) provides information on each site within the West Virginia Department of Environmental Protection Division of Air Quality's (DAQ's) ambient air quality network. The requirement for this ANP was established by the United States Environmental Protection Agency (EPA) in 40 CFR Part 58.

Appendix A to this document provides DAQ's Sulfur Dioxide Data Requirements Rule (SO_2 DRR) Annual Report, including an emissions assessment, pursuant to the requirements of 40 CFR 51, Subpart BB, at §51.1205(b).

A public inspection and comment period is open for 30 days from the date this document is posted on our website.

A summary of air monitoring network changes and updates since the previous approval includes:

- Per the provisions of §58.11(e), DAQ requests exclusion of Federal Equivalent Method (FEM) $PM_{2.5}$ data for National Ambient Air Quality Standards (NAAQS) determination at all sites with Federal Reference Method (FRM) $PM_{2.5}$ data; requests EPA discontinue the practice of substituting FEM data on non-FRM days; requests EPA correct historical data using this practice; and requests EPA update historical and current design value (DV) calculations accordingly.

  The results from EPA's FRM-FEM $PM_{2.5}$ Continuous Monitor Compatibility Assessment Tool for 2022-2024 can be found in Appendix B.

  NCore (54-039-0020) – The results from EPA's FRM-FEM $PM_{2.5}$ Continuous Monitor Compatibility Assessment Tool for 2022-2024 can be found in Appendix B. While the results from the BAM 1020 fall within EPA's acceptance criteria, we request that EPA use only the FRM data at this site and discontinue the practice of substituting FEM data on non-FRM days.

  Moundsville (54-051-1002) – EPA Region 3 has concurred the 2021-2023 FEM data from the continuous FEM $PM_{2.5}$ T640x should be excluded from NAAQS determinations. We request continued exclusion of 2022-2024 FEM data for data substitution and NAAQS determination due to failing EPA's comparability assessment criteria over the period, including the coffin plot. The on-site FRM data will continue to be used for NAAQS determination without data substitution from the FEM. The FEM data may be used for AQI.

  Huntington/Prindle Field (54-011-0007), Summit Circle (54-029-0009), Marland Heights (54-009-0011) – The Teledyne API T640X continuous $PM_{2.5}$ monitors, with the EPA-approved firmware correction software installed, began reporting $PM_{2.5}$ data to EPA's AQS on January 1, 2024 from these sites.

  These monitors are still within the two-year special purpose monitor period, and we request exclusion of 2024 FEM data for data substitution and NAAQS determination. Further, the 2024 data at Summit Circle (54-029-0009) does not fall within EPA's coffin plot.

- A co-located $PM_{2.5}$ FRM monitor started reporting from **Vienna (054-107-1002)** on July 1, 2024. The co-located $PM_{2.5}$ FRM monitor at **Marland Heights (54-009-0011)** reported through the end of June 2024.

- EPA Region 3 conducted a Technical Systems Audit in August 2023.

  - EPA Region 3 recommended the **Fairmont (54-049-0006)** and **Clarksburg (054-033-0003)** sites be relocated to remove them from rooftop locations. We are searching for new locations that allow us to maintain DV, meet EPA siting requirements and EPA approval, and have property owners amenable to working with WVDEP to enter into a lease agreement. EPA has reviewed one site for a Fairmont relocation but had concerns; we continue to search.

  - Another rooftop site is located in **South Charleston (054-039-1005)** and we may request EPA approval to move this site if an alternate location can be identified that allows us to maintain DV, meets EPA siting requirements and EPA approval, and has property owners amenable to working with WVDEP to enter into a lease agreement.

- As noted in the previous year's Annual Network Plan, DAQ continues to anticipate consolidation of the remaining two air monitoring sites in Brooke County, WV – **Follansbee (54-009-0005)** and **Marland Heights (54-009-0011).**
  - These sites are within four (4) air-miles of one another
  - Consultation with EPA Region 3 indicates this plan is acceptable, pending final advance approval from EPA Region 3 of the consolidated location, once it has been identified.
  - The remaining SO_2 monitor will fulfill the SO_2 SIP monitoring requirement.
  - A continuous PM_{10} monitor will remain in the geographic area though the end of the second 10-year maintenance period of the PM_{10} SIP in 2026.

  - DAQ closed down its in-house laboratory in 2024, and transitioned to external laboratories. The in-house toxics metals analysis program shut down in March 2024. The in-house gravimetric lab shutdown in September 2024. These changes necessitated changes in field and data handling procedures. While meeting regulatory requirements, these transitions occurred with no loss of data. The physical in-house laboratory was shut down in October 2024, including disposition of physical assets, and moving personnel and records needed to be retained to the Charleston office.

Purpose

The Annual Network Plan (ANP) provides information on permanent air monitors within the West Virginia Department of Environmental Protection Division of Air Quality's (DAQ's) State or Local Air Monitoring Stations (SLAMS) ambient air quality network. The primary purpose of SLAMS is for NAAQS comparison.

If necessary, the ANP includes documentation of any changes to the state's $PM_{2.5}$ monitoring that would affect the location of a violating $PM_{2.5}$ monitor. It should be noted that there are no $PM_{2.5}$ monitors in West Virginia that currently violate the 24-hour NAAQS. DAQ will be evaluating $PM_{2.5}$ monitoring results with respect to the new annual $PM_{2.5}$ NAAQS promulgated in 2024.

Except for circumstances not anticipated during this review period, such as inadequate federal or state funding, leasing issues, site maintenance issues, personnel resource issues or equipment failures, no other *intentional* changes are expected to be made to the $PM_{2.5}$ FRM monitoring network or the criteria pollutant monitoring network/stations during the next 12 months except those discussed within this document. With the exception of the Follansbee site, all monitoring sites are leased and those leases are subject to periodic renewals which can affect the DAQ's ability to retain a monitoring site location. The proposed changes are listed in the specific air monitoring site section.

In the pages that follow, each individual monitoring site and corresponding photograph, is listed by county along with the Air Quality Subsystem (AQS) site ID number, site location information, the Metropolitan Statistical Area (MSA) that is represented by the site, a statement as to whether it meets the requirements of Part 58, sampling and analytical method for each parameter, proposed site changes, and any other general comments regarding the site. Other pertinent information, such as latitude/longitude, site purpose, the monitor's objective/site type and representative scale, is also listed for each site.

Background

On October 17, 2006, the EPA published final amendments to 40 CFR Part 53 and 58 "Revisions to Ambient Air Monitoring Regulations; Final Rule". This rule became effective on December 18, 2006.

Under Part 58, Subpart B-Monitoring Network, § 58.10 Annual Monitoring Network Plan and Periodic Assessments (a)(1): "Beginning July 1, 2007, the State, or where applicable local, agency shall adopt and submit to the Regional Administrator an annual monitoring network plan which shall provide for the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations including FRM, FEM, and ARM monitors that are part of SLAMS, NCore stations, STN stations, State speciation stations, SPM stations, and/or, in serious, severe and extreme ozone nonattainment areas, PAMS stations, and SPM monitoring stations. The plan shall include a statement of purposes for each monitor and evidence that siting and operation of each monitor meets the requirements of appendices A, C, D, and E of this part, where applicable. The annual monitoring network plan must be made available for public inspection for at least 30 days prior to submission to EPA."

On March 28, 2016 (effective April 27, 2016) EPA finalized revisions to 40CFR Part 58 "Revision to Ambient Monitoring Quality Assurance and Other Requirements; Final Rule".

Under Part 58 §58.10 (a)(1) "Annual monitoring network plan and periodic network assessment" EPA amended the 2006 language to clarify the handling of any public comment received on the plan: "The annual monitoring network plan must be made available for public inspection and comment for at least 30 days prior to submission to the EPA *and the submitted plan shall include and address, as appropriate, any received comments* (emphasis added).

To review the September 2006 and April 2016 Monitoring Regulations please visit https://www.epa.gov/amtic/monitoring-regulations.

Additional information and to view data publicly available from the AQS data system can be found at www.epa.gov/airdata/ . A copy of the latest DAQ annual air monitoring report can be found at https://dep.wv.gov/daq/air-monitoring/Pages/default.aspx

SO_2 Data Requirement Rule (DRR)

On August 10, 2015, EPA finalized requirements for air agencies to monitor or model ambient sulfur dioxide (SO_2) levels in areas with large sources of SO_2 emissions to help implement the 1-hour SO_2 National Air Ambient Quality Standard (NAAQS). The rule establishes that, at a minimum, air agencies must characterize air quality around sources which emit 2,000 tons per year (tpy) or more of actual SO_2 emissions. An air agency may avoid the requirement for air quality characterization near a source by adopting enforceable emission limits which ensure that the source will not emit more than 2,000 tpy of SO_2. The rule requires agencies to use either modeling of actual source emissions or appropriately sited ambient air quality monitors to assess local SO_2 concentrations.

As stated in previous ANPs, there are no West Virginia sources subject to the DRR rule which elected to conduct ambient air monitoring for SO_2. However, there is currently one DRR ambient SO_2 monitoring site in Mason County, West Virginia, near the Ohio border. Two sources in Ohio – the Gavin Power, LLC James M. Gavin power plant and the Ohio Valley Electric Corporation Kyger Creek power plant – began conducting air monitoring under the SO_2 DRR in 2017. One of these monitoring sites is located in Lakin, West Virginia. Both facilities are electric generating utilities and are located within two miles of each other along the Ohio River in Gallia County, Ohio. The Ohio Environmental Protection Agency (OEPA) is the Primary Quality Assurance Organization (PQAO). DAQ is not responsible for the operation, maintenance, data collection, reporting or quality assurance activities at this site. Additional details may be found in the specific West Virginia counties sections of this report.

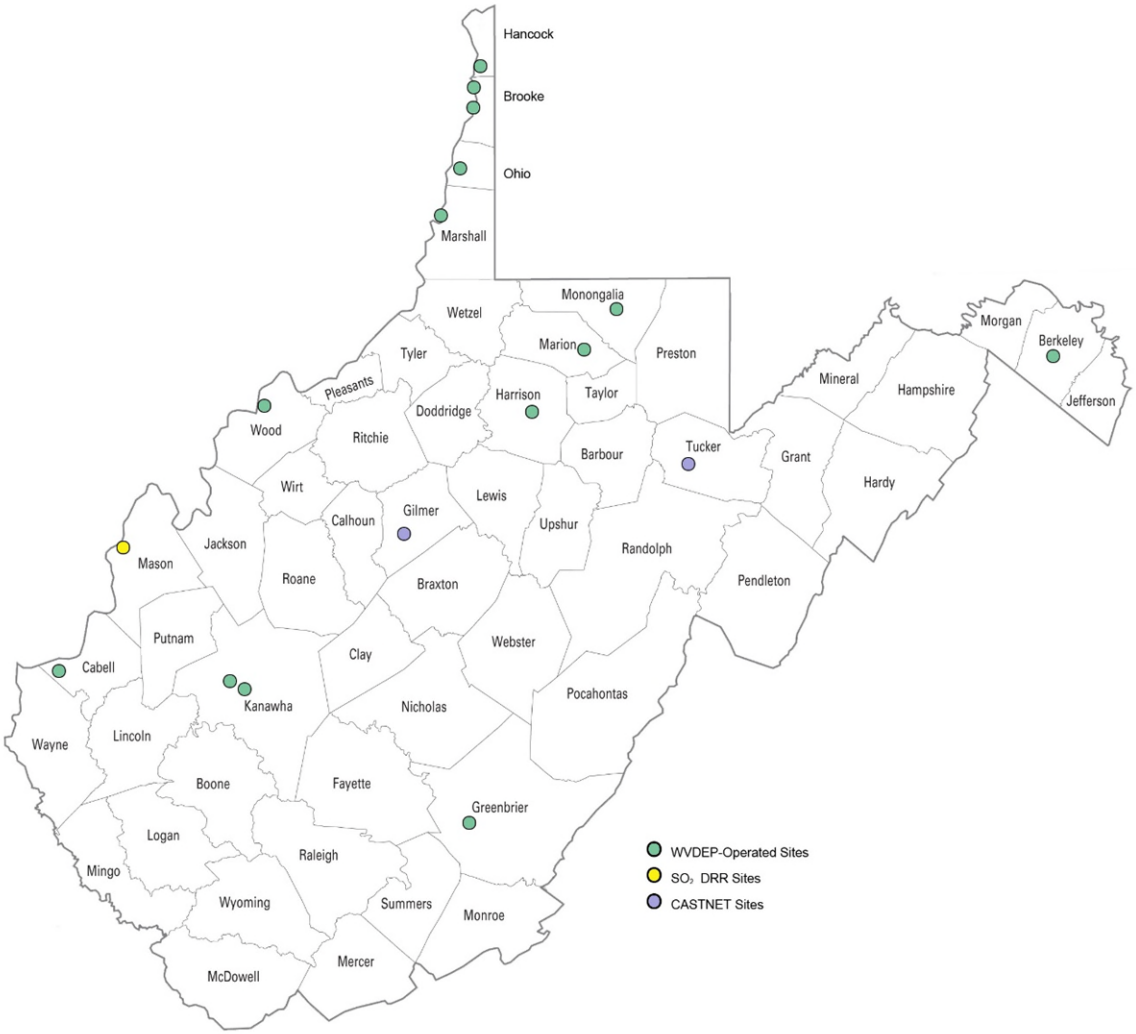
Appendix A to this document provides DAQ's SO_2 DRR Annual Report, including an emissions assessment, pursuant to the requirements of 40 CFR 51, Subpart BB, at §51.1205(b).

Overview

This ANP covers operations during 2024 as well as proposed changes for 2025. The map below shows all known air quality monitoring sites in West Virginia using FRM/FEM monitors. WVDEP-DAQ operates 14 sites across the state, as shown on the map.

DAQ is neither the operator nor the Primary Quality Assurance Organization for the one (1) SO_2 DRR monitoring site nor for the two (2) Clean Air Status and Trends Network (CASTNET) sites. EPA suspended operations at a number of CASTNET locations throughout the country in May 2022 due to budget constraints, including at the Cedar Creek State Park site in Gilmer County, WV (https://www.epa.gov/castnet). The Parsons, WV CASNTET site in Tucker County continues to operate.

Air Monitoring Sites in West Virginia



The table below provides summary information on DAQ's current air monitoring sites. DAQ currently operates 14 sites across the state.

		Pollutants Monitored													
County/Location	**AQS ID**	**AIR TOXICS**	**$PM_{10-2.5}$**	**PM10 T640X**	**$PM_{2.5}$ FRM**	**$PM_{2.5}$ FRM co-located**	**$PM_{2.5}$ Cont.**	**$PM_{2.5}$ SPEC**	**CO**	**SO2**	**O3**	**NOx**	**MET**	**AQS Latitude**	**AQS Longitude**
Berkeley															
Martinsburg/Ball Field (MT)	540030003				X						X			39.448001	-77.964130
Brooke															
Follansbee/Mahan Lane (F1)	540090005				X					X				40.340933	-80.596533
Weirton/Marland Heights (W5)	540090011			X	X	X [1]	X			X				40.394583	-80.612017
Cabell															
Huntington/Prindle Field (H3)	540110007				X	X	X				X			38.410242	-82.432436
Greenbrier															
Sam Black Church/DOH Garage (SB)	540250003										X			37.908533	-80.632633
Hancock															
Weirton/Summit Circle (W3)	540290009			X	X		X			X	X			40.427372	-80.592318
Harrison															
Clarksburg/Washington Irving JHS (CL)	540330003				X									39.278117	-80.342250
Kanawha															
Charleston NCore (C6)	540390020	X	X		X		X	X	X	X	X	X	X	38.346258	-81.621161
South Charleston Library (SC)	540391005				X									38.366183	-81.693727
Marion															
Fairmont/Marion Health Care Hosp (FT)	540490006				X									39.481483	-80.134667
Marshall															
Moundsville/Nat'l Guard Armory (MV)	540511002				X		X	X		X				39.915961	-80.733858
Monongalia															
Morgantown Airport (MA)	540610003				X					X	X			39.649444	-79.920278
Ohio															
Warwood (WD)	540690010	X			X						X			40.114760	-80.700972
Wood															
Vienna/Neale School (V1)	541071002				X	X [1]				X	X			39.323553	-81.552367
Statewide Total:	**14 sites**	**2**	**1**	**2**	**13**	**2**	**5**	**2**	**1**	**7**	**8**	**1**	**1**		

** PM10 LO-VOL = Toxic Metals Analysis Only Manual 3-day sampler (Charleston NCore) Manual every 6 days sampler (Chester) **Shut-down 3/31/2020**
** TEOM = Continuous Particulate samplers
** PM2.5 = Manual 3-day samplers ** FRM = Federal Reference Method ** SPEC = Speciated ** MET = Meteorology
1 A $PM_{2.5}$ FRM co-located site was operated through June 2024 at Marland Heights. Starting in July 2024, a co-located $PM_{2.5}$ FRM site began operations at Vienna.

Berkeley County

Site: Martinsburg Ball Field
Location: Martinsburg Ball Field, Charlotte Prather Park, Martinsburg, Berkeley County, WV 25401
AQS ID: 54-003-0003
MSA: Hagerstown-Martinsburg, MD-WV
Latitude: 39.448001
Longitude: -77.96413

Comment: Site complies with Appendix A, C, D, E of Part 58. This site is suitable for NAAQS comparisons. Current site established in 1999 to provide air quality monitoring in Berkeley County and the Eastern Panhandle of WV.

Parameters monitored, sampling method, scale, and purpose:

Particulates:
$PM_{2.5}$ sequential Lo-Volume sampler, Federal Reference Method, samples once every three days. Samples analyzed by gravimetric analysis.
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted: 4/8/2024 and 10/10/2024

Gaseous:
Ozone – UV absorption continuous gas monitor operated during ozone season March – October
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State accuracy audit conducted 4/16/2024

Brooke County

Site: Mahan Lane
Location: Mahan Lane, Follansbee, Brooke County, WV 26037
AQS ID: 54-009-0005
MSA: Weirton-Steubenville OH-WV
Latitude: 40.340933
Longitude: -80.596533

Comment: Site complies with Appendix A, C, D, E of Part 58. This site is suitable for NAAQS comparisons. The site was established in 1983 to provide air quality monitoring in an industrialized area of Brooke County. DAQ had some historical leasing issues with this site and currently operates without a lease in place. This site underwent an extensive upgrade in 2019.

Parameters monitored, sampling method, scale, and purpose:

Particulates:
$PM_{2.5}$ sequential Lo-Volume sampler, Federal Reference Method, samples once every three days. Samples analyzed by gravimetric analysis.
Representative siting scale: Neighborhood
Monitoring objective/site type: Population oriented
State audit conducted 4/22/2024 and 10/22/2024
EPA performance evaluation audit conducted 9/18/2024

Gaseous:
Sulfur Dioxide – UV fluorescent continuous gas monitor
Representative siting scale: Neighborhood
Monitoring objective/site type: Population oriented
State accuracy audit conducted 12/18/2024

Site: Marland Heights
Location: Marland Heights, Weirton, Brooke County, WV 26062
AQS ID: 54-009-0011
MSA: Steubenville-Weirton, OH-WV
Latitude: 40.394583
Longitude: -80.612017

Comment: Site complies with Appendix A, C, D, E of Part 58. This site is suitable for NAAQS comparisons. Site established in 1992 to provide air quality monitoring in an industrial area of Brooke and Hancock Counties in West Virginia.

Implemented Change: The co-located $PM_{2.5}$ FRM monitor at this site reported through the end of June 2024 and then was discontinued. A co-located $PM_{2.5}$ FRM monitor started reporting on July 1, 2024 from the Vienna site.

Requested Change: The Teledyne API T640X continuous $PM_{2.5}$ monitors, with the EPA-approved firmware correction software installed, began reporting $PM_{2.5}$ data to EPA's AQS on January 1, 2024. This monitor is still within the two-year special purpose monitor period, and we request exclusion of 2024 FEM data for data substitution and NAAQS determination. The results from EPA's FRM-FEM $PM_{2.5}$ Continuous Monitor Compatibility Assessment Tool for 2022-2024 can be found in Appendix B.

Parameters monitored, sampling method, scale, and purpose:

Particulates:
$PM_{2.5}$ sequential Lo-Volume sampler, Federal Reference Method, samples once every three days. A collocated $PM_{2.5}$ monitor samples every 12^{th} day. Samples analyzed by gravimetric analysis.
Representative siting scale: Neighborhood
Monitoring objective/site type: Population oriented
State audit conducted 4/22/2024 and 10/22/2024
EPA performance evaluation audit conducted 9/18/2024
Co-located state audit conducted 4/22/2024

Teledyne API T640x continuous $PM_{2.5}$ and PM_{10} monitor, Federal Equivalent Method
Representative siting scale: Neighborhood
Monitoring objective/site type: Population oriented
State flow rate audit conducted 6/7/2024 and 10/18/2024

Gaseous:
Sulfur Dioxide – UV fluorescent continuous gas monitor
Representative siting scale: Neighborhood
Monitoring objective/site type: Population oriented
State accuracy audit conducted 3/19/2024

Cabell County

Site: Huntington/ Prindle Field
Location: 1313 14th Street, Huntington, Cabell County, WV 25701
AQS-ID: 54-011-0007
MSA: Huntington-Ashland, WV-KY-OH
Latitude: 38.410242
Longitude: -82.432436

Comment: Site complies with Appendix A, C, D, E of Part 58. This site is suitable for NAAQS comparisons. This site replaced the Marshall University, Huntington site, and started reporting data in 2019.

Requested Change: The Teledyne API T640X continuous $PM_{2.5}$ monitors, with the EPA-approved firmware correction software installed, began reporting $PM_{2.5}$ data to EPA's AQS on January 1, 2024. This monitor is still within the two-year special purpose monitor period, and we request exclusion of 2024 FEM data for data substitution and NAAQS determination. The results from EPA's FRM-FEM $PM_{2.5}$ Continuous Monitor Compatibility Assessment Tool for 2022-2024 can be found in Appendix B.

Parameters monitored, sampling method, scale, and purpose:

Particulates:
$PM_{2.5}$ sequential Lo-Volume sampler, Federal Reference Method, samples once every three days. A collocated sequential $PM_{2.5}$ monitor samples every 12^{th} day. Samples analyzed by gravimetric analysis.
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted 4/25/2024 and 10/7/2027
Co-located state audit conducted 4/25/2024 and 10/7/2024

Teledyne API T640x continuous $PM_{2.5}$ monitor, Federal Equivalent Method
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted 4/25/24 and 10/23/2024

Gaseous:
Ozone – UV absorption continuous gas monitor operated during ozone season March – October
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted 9/18/2024

Greenbrier County

Site: Sam Black Church
Location: 235 Gray Gables Rd, Crawley, Department of Highway Garage, Greenbrier County, WV 24913
AQS ID: 54-025-0003
MSA: NA
Latitude: 37.908533
Longitude: -80.632633

Comment: Site complies with Appendix A, C, D, E of Part 58. This site is suitable for NAAQS comparisons. The current site was established in 1999 to continue historical background ozone air quality monitoring that started in 1984 in Greenbrier County, a rural area of West Virginia. A new shelter was installed, along with upgraded power in early 2019. The shelter was moved within the perimeter of the DOH facility on October 12, 2022 to make way for a new salt shed. The new location is next to an old shelter that has been repurposed by DOH for storage.

Parameters monitored, sampling method, scale, and purpose:

Gaseous:
Ozone – UV absorption continuous gas monitor operated during ozone season March – October
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State accuracy audit conducted 6/26/2024

Hancock County

Site: Summit Circle
Location: Summit Circle, Weirton, Hancock County, WV 26062
AQS ID: 54-029-0009
MSA: Weirton-Steubenville, WV-OH
Latitude: 40.427372
Longitude: -80.592318

Comment: Site complies with Appendix A, C, D, E of Part 58. This site is suitable for NAAQS comparisons. The site was established in 1992 to provide air quality monitoring in an industrial area of Hancock County, West Virginia.

As part of an extensive upgrade to the site, including electrical lines, fencing and decking, and a new shelter, operations were suspended in September 2019, and resumed by early-mid 2020.

Requested Change: The Teledyne API T640X continuous $PM_{2.5}$ monitors, with the EPA-approved firmware correction software installed, began reporting $PM_{2.5}$ data to EPA's AQS on January 1, 2024. This monitor is still within the two-year special purpose monitor period, and we request exclusion of 2024 FEM data for data substitution and NAAQS determination. Further, the 2024 data at Summit Circle (54-029-0009) does not fall within EPA's coffin plot. The results from EPA's FRM-FEM $PM_{2.5}$ Continuous Monitor Compatibility Assessment Tool for 2022-2024 can be found in Appendix B.

Parameters monitored, sampling method, scale, and purpose:

Particulates:
$PM_{2.5}$ sequential sampler, Federal Reference Method, samples once every three days.
Samples analyzed by gravimetric analysis.
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State accuracy audit conducted 4/22/2024 and 10/22/2024

Teledyne API T640x continuous PM_{10} and $PM_{2.5}$ monitor, Federal Equivalent Method
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State accuracy audit conducted 6/7/2024 and 10/18//2024

Gaseous:
Sulfur Dioxide – UV fluorescent continuous gas monitor
Representative siting scale: Neighborhood
Monitoring objective/site type: Population oriented
State accuracy audit conducted 6/12/2024

Ozone – UV absorption continuous gas monitor operated during ozone season Mar – Oct
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State accuracy audit conducted 9/3/2024

Harrison County

Site: Clarksburg
Location: Washington Irving Middle School, Clarksburg, Harrison County, WV 26301
AQS ID: 54-033-0003
MSA: NA
Latitude: 39.278117
Longitude: -80.342250

Comment: Site complies with Appendix A, C, D, E of Part 58. This site is suitable for NAAQS comparisons. The site was established in 1997 to monitor $PM_{2.5}$ in Harrison County, West Virginia.

Proposed Change: EPA Region 3 recommended this site be relocated to remove it from the current rooftop location. We are searching for new locations that will allow us to maintain DV, meet EPA siting requirements and EPA approval, and have property owners amenable to working with WVDEP to enter into a lease agreement.

Parameters monitored, sampling method, scale, and purpose:

Particulates:
$PM_{2.5}$ sequential Lo-Volume sampler, Federal Reference Method, samples once every three days. Samples analyzed by gravimetric analysis.
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted 4/22/2024 and 10/7/2024
EPA performance evaluation audit conducted 8/28/2024

Kanawha County

Site: NCore
Location: 1436 Dixie St., Charleston, Kanawha County, WV 25301
AQS ID: 54-039-0020
MSA: Charleston, WV
Latitude: 38.346258
Longitude: -81.621161

Comment: Site complies with Appendix A, C, D, E of Part 58. The site was required to be established by EPA as part of the national NCore multi-pollutant monitoring network. This site started reporting data in 2016.

Requested Change: The results from EPA's FRM-FEM $PM_{2.5}$ Continuous Monitor Compatibility Assessment Tool for 2021-2024 can be found in Appendix B. While the results fall within EPA's acceptance criteria, we request that EPA use only the FRM data at this site and discontinue the practice of substituting FEM data on non-FRM days.

Parameters monitored, sampling method, scale, and purpose:

Particulates:
Met One BAM 1020 continuous $PM_{2.5}$ monitor
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted 4/23/2024 and 10/17/2024

$PM_{2.5}$ sequential sampler, Federal Reference Method, samples once every three days. Samples analyzed by gravimetric analysis.
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted 4/23/2024 and 10/8/2024

PM_{10} sequential sampler, Federal Reference Method, samples once every three days. Samples analyzed by gravimetric analysis. Data is used only to calculate and report PM Coarse which equals PM_{10} minus $PM_{2.5}$.
Representative siting scale: Urban
Monitoring objective/site type: Population oriented

Gaseous:
Sulfur Dioxide – UV fluorescent continuous trace gas monitor
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted 12/11/2024

Ozone – UV absorption continuous trace gas monitor
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted 9/12/2024

NO/NO_y – Chemiluminescence continuous trace gas monitor
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted – This unit has been out of service since August 2023

Carbon Monoxide –Gas filter correlation continuous trace gas monitor
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted 3/22/2024

$PM_{2.5}$ Speciation
Speciation Trends Network (STN) site equipped with Met One Super SASS and URG 3000N Carbon sampler. Both sample on a once every three-day schedule.
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State flow rate audit conducted 3/27/2024, 6/25/2024, 9/26/2024 and 12/30/2024

Toxics
TSP metals, certain Volatile Organic Compounds, and Carbonyls
Representative siting scale: Neighborhood
Samples once every 12 days
Monitoring objective/site type: Population oriented

Other
Ultra-Sonic wind sensor
Temperature
Barometric Pressure
Relative Humidity

Site: South Charleston
Location: South Charleston Public Library 312 4th Ave., South Charleston, Kanawha County, WV 25303
AQS ID: 54-039-1005
MSA: Charleston, WV
Latitude: 38.366183
Longitude: -81.69372717

Comment: Site complies with Appendix A, C, D, E of Part 58. This site is suitable for NAAQS comparisons. The site was established in 1974 to provide air quality monitoring in Kanawha County, West Virginia.

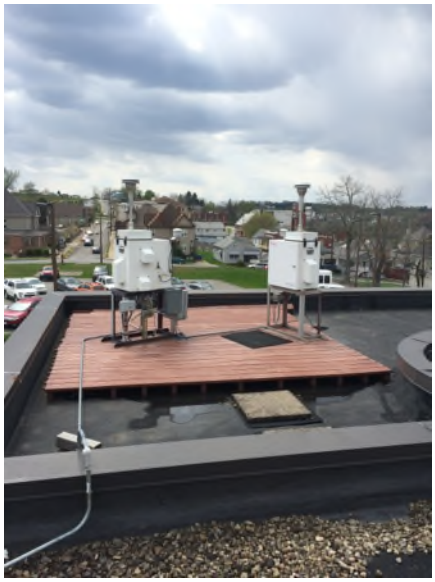
Proposed Change: We may request EPA approval to move this site off the rooftop location, if an alternate location can be identified that would allow us to maintain DV, meet EPA siting requirements and EPA approval, and have property owners amenable to working with WVDEP to enter into a lease agreement.

Parameters monitored, sampling method, scale, and purpose:

Particulates
$PM_{2.5}$ sequential Low-Volume sampler, Federal Reference Method. Samples once every three days. Samples analyzed by gravimetric analysis.
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted 4/25/2024 and 10/7/2024

Marion County

Site: Fairmont
Location: 401 Guffey Street, Manchin Health Care Center, Fairmont, Marion County, WV 26554
AQS ID: 54-049-0006
MSA: NA
Latitude: 39.481483
Longitude: -80.134667



Comment: Site complies with Appendix A, C, D, E of Part 58. This site is suitable for NAAQS comparisons. The site was established in 2000 to monitor $PM_{2.5}$ in Marion County, West Virginia.

Proposed Change: EPA Region 3 recommended this site be relocated to remove it from the current rooftop location. We are searching for new locations that will allow us to maintain DV, meet EPA siting requirements and EPA approval, and have property owners amenable to working with WVDEP to enter into a lease agreement.

Parameters monitored, sampling method, scale, and purpose:

Particulates:
$PM_{2.5}$ sequential sampler, Federal Reference Method, samples once every three days.
Samples analyzed by gravimetric analysis.
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted 4/22/2024 and 10/7/2024
EPA performance evaluation audit conducted 12/11/2024

Marshall County

Site: Moundsville
Location: Moundsville National Guard Armory, Moundsville, Marshall County, WV 26041
AQS ID: 54-051-1002
MSA: Wheeling, WV-OH
Latitude: 39.915961
Longitude: -80.733858

Comment: Site complies with Appendix A, C, D, E of Part. This site is suitable for NAAQS comparisons except for the $PM_{2.5}$ continuous special purpose monitor. The site was established in 1983 to provide air quality monitoring in Marshall County, West Virginia.

Requested Change: The results from EPA's FRM-FEM $PM_{2.5}$ Continuous Monitor Compatibility Assessment Tool for 2022-2024 can be found in Appendix B. EPA Region 3 has concurred the 2021-2023 FEM data from the continuous FEM $PM_{2.5}$ T640x should be excluded from NAAQS determinations. We request continued exclusion of 2022-2024 FEM data for data substitution and NAAQS determination due to failing EPA's comparability assessment criteria over the period, including the coffin plot. The on-site FRM data will continue to be used for NAAQS determination without data substitution from the FEM. The FEM data may be used for AQI.

Parameters monitored, sampling method, scale, and purpose:

Particulates:
$PM_{2.5}$ sequential sampler, Federal Reference Method. Samples once every three days.
Samples analyzed by gravimetric analysis.
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted 4/23/2024 and 10/23/2023

$PM_{2.5}$ Teledyne API T640X continuous $PM_{2.5}$ monitor, Federal Equivalent Method.
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted 6/6/2024 and 12/23/2024

$PM_{2.5}$ Speciation
Chemical Speciation Network site. Met One Super SASS and URG 3000N Carbon sampler. Both sample on a once every six-day schedule
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State flow rate audit conducted 2/7/2024, 6/13/2024, and 8/26/2024

Gaseous:
Sulfur Dioxide – UV fluorescent continuous gas monitor
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State accuracy audit conducted 9/24/2024

Mason County

Site: Lakin
Location: HWY 62, Lakin, WV
AQS ID: 54-053-0001
CBSA: Point Pleasant WV-OH
Latitude: 38.95649
Longitude: -82.08866

Comment: American Electric Powers' (AEP) James M. Gavin and Ohio Valley Electrical Corporation (OVEC) Kyger Creek electric generating facilities located in Gallia County, Ohio have elected to conduct air monitoring under the SO_2 Data Requirements Rule. One of the SO_2 air monitoring sites is in Lakin, Mason County, West Virginia and is included herein for reference. The site is operated by Shell Engineering on behalf of AEP and OVEC. The Ohio Environmental Protection Agency is the responsible Primary Quality Assurance Organization. The DAQ does not have any role in the operation, data reporting, or quality assurance of this site.

Gaseous:
Sulfur Dioxide – UV fluorescent continuous gas monitor
Representative siting scale: Neighborhood
Monitoring objective/site type: Source-oriented

Monongalia County

Site: Morgantown
Location: Morgantown Municipal Airport, Morgantown, Monongalia County, WV 26505
AQS ID: 54-061-0003
MSA: Morgantown, WV
Latitude: 39.649444
Longitude: -79.920278

Comment: Site complies with Appendix A, C, D, E of Part 58. This site is suitable for NAAQS comparisons. The site was established in 1983 to provide air quality monitoring in Monongalia County, West Virginia. EPA approved a shelter move within the Airport perimeter; the move was required by the Airport to allow for construction of a car wash. The new location is further from the roadway and has improved site access for operators.

Parameters monitored, sampling method, scale, and purpose:

Particulates:
$PM_{2.5}$ sequential sampler, Federal Reference Method. Samples once every three days.
Samples analyzed by gravimetric analysis.
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted 4/8/2024 and 10/7/2024
EPA performance evaluation audit conducted 8/28/2024

Gaseous:
Sulfur Dioxide – UV fluorescent continuous gas monitor
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State accuracy audit conducted 9/9/2024
EPA performance evaluation audit attempted 6/13/2024 but did not occur due to auditor equipment issues. Audit was considered complete by EPA.

Ozone – UV absorption continuous gas monitor operated during ozone season March – October
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State accuracy audit conducted 4/15/2024
EPA performance evaluation audit conducted 6/13/2024

Ohio County

Site: Warwood/Wheeling
Location: Warwood Water Treatment Plant, Wheeling, Ohio County, WV 26003
AQS ID: 54-069-0010
MSA: Wheeling, WV-OH
Latitude: 40.11476
Longitude: -80.700972

Comment: Site complies with Appendix A, C, D, E of Part 58. This site is suitable for NAAQS comparisons. The current site was established in 2005 to continue to provide air quality monitoring in Ohio County, West Virginia.

Parameters monitored, sampling method, scale, and purpose:

Particulates:
$PM_{2.5}$ sequential sampler, Federal Reference Method, samples once every three days.
Samples analyzed by gravimetric analysis.
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted 4/23/2024 and 10/23/2024
EPA performance evaluation audit conducted 9/18/2024

Gaseous:
Ozone – UV absorption continuous gas monitor operated during ozone season March – October
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State accuracy audit conducted 5/20/2024
EPA performance evaluation audit conducted 6/13/2024

Toxics
TSP metals, certain Volatile Organic Compounds, and Carbonyls.
Representative siting scale: Neighborhood
Samples once every 12 days
Monitoring objective/site type: Population oriented

Wood County

Site: Vienna
Location: Neale Elementary School, Vienna, Wood County, WV 26105
AQS ID: 54-107-1002
MSA: Parkersburg-Marietta, WV-OH
Latitude: 39.323553
Longitude: -81.552367

Comment: Site complies with Appendix A, C, D, E of Part 58. This site is suitable for NAAQS comparisons. The site established in 1975 to provide air quality monitoring in Wood County, West Virginia.

Implemented Change: A co-located $PM_{2.5}$ FRM monitor started reporting on July 1, 2024 from this site. The co-located $PM_{2.5}$ FRM monitor at the Marland Heights site reported through the end of June 2024.

Parameters monitored, sampling method, scale, and purpose:

Particulates:
$PM_{2.5}$ sequential sampler, Federal Reference Method. Samples once every three days.
Samples analyzed by gravimetric analysis.
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State audit conducted 4/22/2024 and 10/11/2024
Co-located state audit conducted 10/11/2024

Gaseous:
Sulfur Dioxide – UV fluorescent continuous gas monitor
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State accuracy audit conducted 6/11/2024

Ozone – UV absorption continuous gas monitor operated during ozone season March – October
Representative siting scale: Urban
Monitoring objective/site type: Population oriented
State accuracy audit conducted 9/9/2024

Appendix A - SO_2 Data Requirement Rule Annual Report

Introduction

On August 21, 2015, the U.S. Environmental Protection Agency (EPA) published the *Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard (NAAQS)* (80 FR 51051)[1]. This rule, referred to as the Data Requirements Rule (DRR), includes provisions in 40 CFR 51.1205(b) requiring an air agency to submit a report to the EPA documenting SO_2 emissions for areas where modeling of actual SO_2 emissions served as the basis for designating the area attainment for the 2010 1-hour SO_2 NAAQS. The report must include an assessment of the cause of any emission increases from the previous year and a recommendation regarding whether additional modeling is needed. These annual reports are due by July 1 after the effective date of an area's initial designation.

Regulatory History

On June 2, 2010, the EPA signed a final rule (75 FR 35519)[2] revising the SO_2 NAAQS and established a new 1-hour SO_2 primary NAAQS of 75 parts per billion (ppb), based on the three-year average of the annual 99th percentile of daily 1-hour maximum concentrations. Whenever the EPA revises a NAAQS, the Clean Air Act (CAA) requires the EPA to designate areas as "attainment" (meeting), "nonattainment" (not meeting), or "unclassifiable" (insufficient data). Within one year of a NAAQS revision, each state must submit their designation recommendations. The CAA requires the EPA to complete the designations process within three years of a NAAQS revision.

On August 5, 2013, the EPA published (78 FR 47191)[3], a final rule designating 29 areas, in 16 states, including two areas in West Virginia (Steubenville, OH-WV and Marshall, WV), as nonattainment for the 2010 1-hour SO_2 NAAQS. In that rulemaking, the EPA stated the agency would address the designation of all other areas in separate future actions. At that time, the EPA was still developing its strategy for completing the designations process. The EPA anticipated using a hybrid approach, allowing the use of either modeling or monitoring data for designations purposes, but the agency anticipated the need to issue additional rulemaking and guidance documents prior to finalizing additional designations. Shortly thereafter, three lawsuits were filed against the EPA in different U.S. District Courts, alleging the agency had failed to perform a nondiscretionary duty under the CAA by not issuing 1-hour SO_2 designations for all portions of the country within three years of NAAQS promulgation. To resolve the legal challenges, a consent decree was entered in federal court on March 2, 2015.

[1] https://www.govinfo.gov/content/pkg/FR-2015-08-21/pdf/2015-20367.pdf
[2] https://www.govinfo.gov/content/pkg/FR-2010-06-22/pdf/2010-13947.pdf
[3] https://www.govinfo.gov/content/pkg/FR-2013-08-05/pdf/2013-18835.pdf

This consent decree established the criteria and deadlines for the EPA to complete a second, third, and fourth round of designations for the 2010 1-hour SO_2 NAAQS. The second round mostly affected only those areas that contained a source meeting certain emissions-related criterion established in the consent decree. Such areas were required to be designated no later July 2, 2016. The third round affected all undesignated areas that had not deployed a new, operating SO_2 monitoring network by January 1, 2017. The deadline for the third round was December 31, 2017. Most areas in the U.S. were designated in this round. In the fourth and final round, the remaining undesignated areas were to be designated by December 31, 2020.

On August 21, 2015, the consent decree was finalized, and the EPA published the DRR (80 FR 51051)[4]. The primary purpose of the DRR is to require air agencies to characterize maximum 1-hour SO_2 concentrations around sources emitting 2,000 tons per year (tpy) or more of SO_2. Implementation of the DRR requires states to use either modeling or ambient monitoring to assess SO_2 concentrations or to establish federally enforceable emission limits to bind sources to emissions of less than 2,000 tpy.

The initial implementation step of the DRR required states to identify by January 15, 2016, sources not located in a nonattainment area which had actual annual SO_2 emissions of at least 2,000 tons or were deemed by the air agency as requiring further air quality characterization.

The DRR established January 13, 2017, as the deadline for states to submit the results of source modeling. This date also served as the compliance deadline for any new federally enforceable emission limits used to satisfy the DRR. While these deadlines, and those associated with the monitoring option, allow the third and fourth rounds of designations to be informed by data that must be submitted pursuant to the DRR, meeting the second round's July 2, 2016, designation deadline required states and the EPA to take actions before the DRR was finalized.

Effective August 12, 2020, the EPA redesignated the West Virginia portion of the Steubenville, OH-WV area to attainment for the 2010 SO_2 NAAQS (85 FR 41925)[5]. Further, effective November 25, 2020, the EPA redesignated the Marshall, WV area to attainment (85 FR 67661)[6].

Emissions Assessment

Applicable SO_2 emission sources, defined as having actual annual SO_2 emissions of 2,000 tons or more, were modeled by the Division of Air Quality (DAQ) as the basis for designating the area as attainment with the 2010 1-hour SO_2 NAAQS. The applicable sources modeled were all electrical generating units (EGU). Because emissions were modeled based on actual emissions instead of allowable emissions, §51.1205(b) requires an annual report to be submitted to EPA

[4] https://www.govinfo.gov/content/pkg/FR-2015-08-21/pdf/2015-20367.pdf
[5] https://www.govinfo.gov/content/pkg/FR-2020-07-13/pdf/2020-13452.pdf
[6] https://www.govinfo.gov/content/pkg/FR-2020-10-26/pdf/2020-21757.pdf

documenting the annual SO_2 emissions from each applicable source and providing an assessment of any emission increases from the previous year. Additionally, §51.1205(b)(1) requires an agency's recommendation regarding whether additional modeling characterizing an area's air quality is needed to determine whether the area meets or does not meet the 2010 1-hr SO_2 NAAQS.

The DRR requires an assessment of SO_2 emissions increases from the previous year. Therefore DAQ is assessing actual SO_2 source emissions from the year 2023 that may have impacted the 2024 monitoring data. Assessing only the SO_2 increase from a previous year limits the analysis to a two-year period and does not allow for an accurate assessment to determine the need for additional modeling. A comparison of actual annual SO_2 emissions from each applicable source during the initial modeling period, which demonstrated attainment with the 2010 NAAQS, to the previous year actual emissions allows for a better and more meaningful assessment. Therefore, DAQ has made our assessment based upon the initial modeling years as compared to the previous year. Table 1 below shows the three-year initial modeling period for each applicable source and the results of that modeling as a maximum percentage of the 2010 1-hour SO_2 NAAQS.

Table 1: EGU Modeled Year and Percent of NAAQS

EGU Modeled	Years Modeled (actual emissions)	Maximum Percent of NAAQS Modeled
Fort Martin	2013-2015	64%
Harrison Power Station	2012-2014	52.8%
John Amos	2013-2015	< 50%
Mountaineer	2012-2014	< 50%
Mount Storm	2013-2015	< 50%
Pleasants Power	2013-2015	77.7%

Figure 1 shows the actual annual SO_2 emissions for each modeled EGU from 2014 through 2024. These emissions were taken from the EPA Clean Air Markets Program Data (CAMPD) database[7]. CAMPD's online interface allows users to review the data cited in this report, as well as prior years. This includes the years referenced in Table 1. As the chart illustrates, SO_2 emissions from each EGU have been largely stable or decreasing over the assessment period. As was the case for most facets of the supply and demand network, the global pandemic of 2020 caused some disruptions in the energy sector. Electricity demand and generation were certainly affected. Though most EGUs experienced a slight increase in SO_2 production, Pleasants Power Station saw

[7] https://campd.epa.gov/

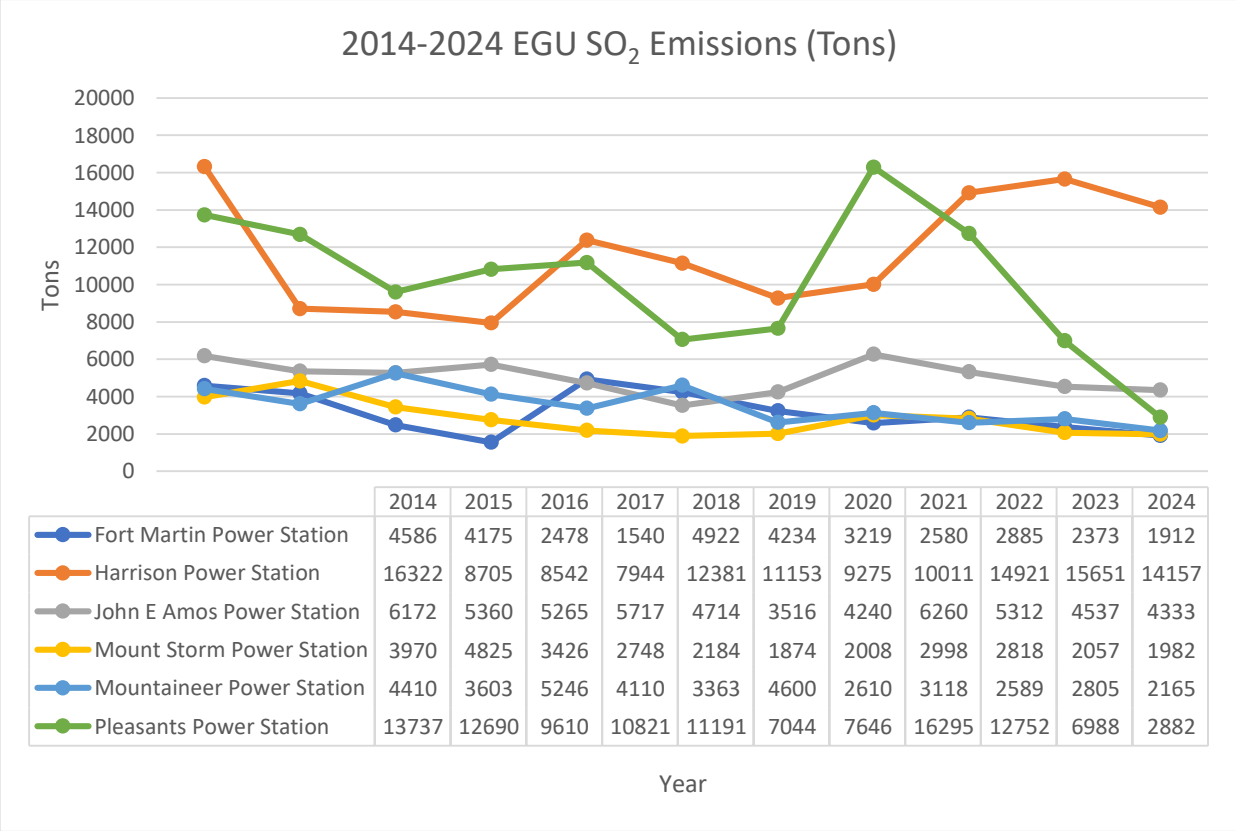
a large increase. While there was an increase in emissions from Pleasants from 2020 to 2021, there has been a significant decline in SO_2 emissions each year from 2021 to 2024 as demand for electricity has decreased.

There has also been an increase in emissions from Harrison since 2021. The increase in operational hours in 2021 over 2020 was common among coal-fired EGUs throughout the country, as frequent spiking and generally rising average natural gas prices[8] throughout 2021 allowed coal units to be more cost competitive with natural gas units in markets where lowest cost generation assets are dispatched first. The U.S. Energy Information Administration (EIA) reports coal electricity generation in the United States increased from 773 billion kilowatt-hours (kWh) in 2020 to 899 billion kWh in 2021, while natural gas generation decreased from 1,624 billion kWh to 1,575 billion kWh over the same time period[9]. While still below the highest modeled value, SO_2 emission from Harrison Power Station has increased from pre-pandemic levels. United States Energy Information Administration (USEIA) indicates that Harrison sources the coal used for fuel from the nearby Harrison County Mine, which has been supplying increasingly lower Btu coal with a higher sulfur content. CAMPD data indicates little fluctuation in load and heat input demonstrating consistent electricity demand. For Harrison to maintain this load and heat, they must consume more coal and the higher-sulfur content amplifies SO_2 generation.

From Figure 1, the highest actual SO_2 emissions from the initial three-year modeling period can be compared to the actual 2024 emissions for each source. Table 2 shows this comparison and demonstrates that actual 2024 SO_2 emissions were less than those of the highest modeled year.

[8] https://www.eia.gov/dnav/ng/hist/rngwhhdm.htm
[9] https://www.eia.gov/energyexplained/electricity/electricity-in-the-us.php

Figure 1: 2014-2024 EGU SO_2 Emissions in tons



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Fort Martin Power Station	4586	4175	2478	1540	4922	4234	3219	2580	2885	2373	1912
Harrison Power Station	16322	8705	8542	7944	12381	11153	9275	10011	14921	15651	14157
John E Amos Power Station	6172	5360	5265	5717	4714	3516	4240	6260	5312	4537	4333
Mount Storm Power Station	3970	4825	3426	2748	2184	1874	2008	2998	2818	2057	1982
Mountaineer Power Station	4410	3603	5246	4110	3363	4600	2610	3118	2589	2805	2165
Pleasants Power Station	13737	12690	9610	10821	11191	7044	7646	16295	12752	6988	2882

Table 2: Highest Modeled Year SO_2 Emissions vs. 2024 SO_2 Emissions

EGU Modeled	Highest Modeled Year	Highest Modeled Year Emissions (tons)	2024 Emissions (tons)	Change from Highest Modeled Year to 2024 (tons)
Fort Martin	2013	6,767	1,912	-4,855
Harrison	2013	19,266	14,157	-5,109
John Amos	2014	6,172	4,333	-1,839
Mountaineer	2014	4,410	2,165	-2,245
Mount Storm	2015	4,825	1,982	-2,843
Pleasants Power	2013	14,477	2,882	-11,595

Conclusions

As shown in Table 1, emissions initially modeled for each source were substantially less than the SO_2 1-hour NAAQS, with one-half of the sources modeled less than 50 percent of the standard. The emission comparison in Table 2 demonstrates that 2024 actual SO_2 emissions were less than the emissions for the highest modeled year for all EGUs.

If the 2024 actual SO_2 emissions were modeled, the results would be less than those modeled during the three-year initial modeling period, and less than the maximum percent of the NAAQS shown in Table 1 for all EGUs.

With consideration of, and despite recent, unprecedented global events, emissions from these facilities remain below the modeled years and demonstrate a generally stable trend overall. Therefore, as required in §51.1205(b), and based on this assessment, the air quality areas represented by the modeled sources continue to meet the 2010 1-hour SO_2 NAAQS and DAQ recommends no additional modeling is needed to characterize air quality in these areas.

Appendix B – DAQ requests exclusion of FEM $PM_{2.5}$ data for NAAQS determination at all sites with FRM $PM_{2.5}$ data per §58.11(e)

Per the provisions of §58.11(e), DAQ requests exclusion of Federal Equivalent Method (FEM) $PM_{2.5}$ data for National Ambient Air Quality Standards (NAAQS) determination at all sites with Federal Reference Method (FRM) PM2.5 data; requests EPA discontinue the practice of substituting FEM data on non-FRM days; requests EPA correct historical data using this practice; and requests EPA update historical and current design value (DV) calculations accordingly.

The results from EPA's FRM-FEM $PM_{2.5}$ Continuous Monitor Compatibility Assessment Tool for 2022-2024 can be found in Appendix B.

NCore (54-039-0020) – The results from EPA's FRM-FEM $PM_{2.5}$ Continuous Monitor Compatibility Assessment Tool for 2022-2024 can be found in Appendix B. While the results from the BAM 1020 fall within EPA's acceptance criteria, we request that EPA use only the FRM data at this site and discontinue the practice of substituting FEM data on non-FRM days.

Moundsville (54-051-1002) – EPA Region 3 has concurred the 2021-2023 FEM data from the continuous FEM $PM_{2.5}$ T640x should be excluded from NAAQS determinations. We request continued exclusion of 2022-2024 FEM data for data substitution and NAAQS determination due to failing EPA's comparability assessment criteria over the period, including the coffin plot. The on-site FRM data will continue to be used for NAAQS determination without data substitution from the FEM. The FEM data may be used for AQI.

Huntington/Prindle Field (54-011-0007), Summit Circle (54-029-0009), Marland Heights (54-009-0011) – The Teledyne API T640X continuous $PM_{2.5}$ monitors, with the EPA-approved firmware correction software installed, began reporting $PM_{2.5}$ data to EPA's AQS on January 1, 2024 from these sites.

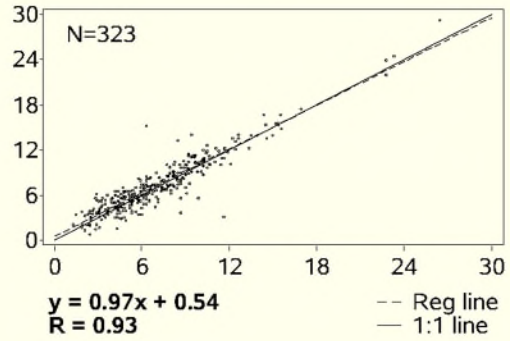
These monitors are still within the two-year special purpose monitor period, and we request exclusion of 2024 FEM data for data substitution and NAAQS determination. Further, the 2024 data at Summit Circle (54-029-0009) does not fall within EPA's coffin plot.

$PM_{2.5}$ Continuous Monitor Comparability Assessment

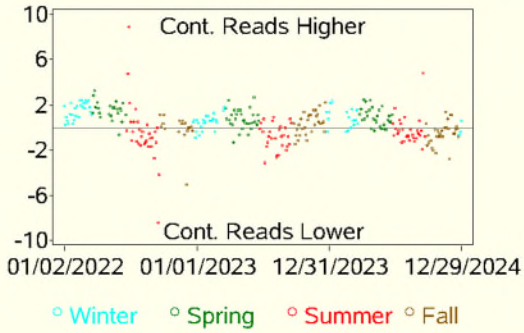
Site 54-039-0020: Charleston, WV

FRM: R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC - Gravimetric (145), PM2.5 - Local Conditions (88101), POC=1
Cont: Met One BAM-1020 Mass Monitor w/VSCC - Beta Attenuation (170), PM2.5 - Local Conditions (88101), POC=2

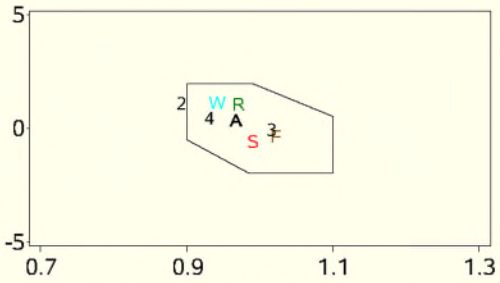
Cont. (y) vs. FRM (x) ($\mu g/m^3$)



Cont. minus FRM ($\mu g/m^3$)

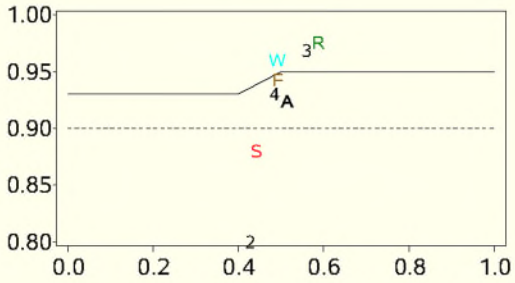


Additive (y) vs. Multiplicative (x) Bias



A=AllData, 2=2022, 3=2023, 4=2024
W=Winter, R=Spring, S=Summer, F=Fall

R (y) vs. FRM CCV (x)



A=AllData, 2=2022, 3=2023, 4=2024
W=Winter, R=Spring, S=Summer, F=Fall

Mean Concentration ($\mu g/m^3$)

Dataset	N	FRM	Cont	Ratio (Cont/FRM)
AllData	**323**	**7.0**	**7.4**	**1.04**
Winter	71	6.5	7.4	1.14
Spring	85	7.2	8.2	1.14
Summer	88	8.0	7.5	0.94
Fall	79	6.4	6.3	0.99
2022	102	6.6	7.2	1.08
2023	113	7.9	8.1	1.03
2024	108	6.6	6.7	1.03

Includes all data
Data Source: EPA AQS Data Mart

Appendix A Statistics

Dataset	N (all observations)	Bias	N (only >= 2 ug/m^3)	Bias
AllData	**323**	**5.0**	**313**	**5.2**
Winter	71	13.7	69	13.3
Spring	85	15.0	84	14.6
Summer	88	-6.4	85	-5.6
Fall	79	-0.9	75	-0.5
2022	102	8.8	98	8.8
2023	113	3.1	111	3.2
2024	108	3.4	104	3.9

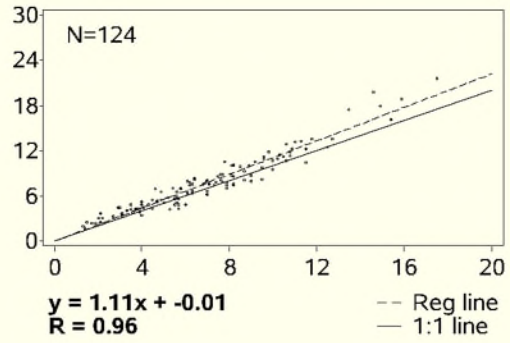
Based on 2024 Appendix A revision
Generated: May 20, 2025

$PM_{2.5}$ Continuous Monitor Comparability Assessment

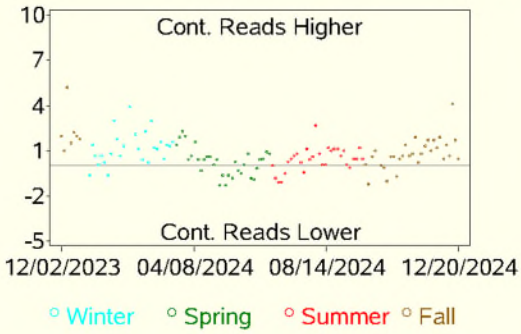
Site 54-051-1002: Moundsville, WV

FRM: R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC - Gravimetric (145), PM2.5 - Local Conditions (88101), POC=1
Cont: Teledyne T640X at 16.67 LPM w/Network Data Alignment enabled - Broadband spectroscopy (638), PM2.5 - Local Conditions (88101), POC

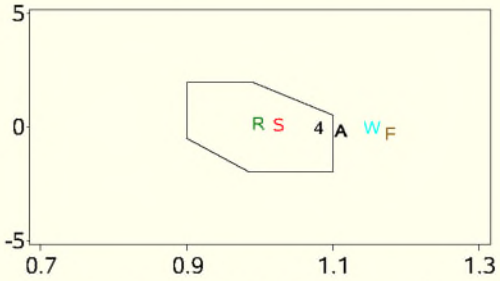
Cont. (y) vs. FRM (x) ($\mu g/m^3$)



Cont. minus FRM ($\mu g/m^3$)

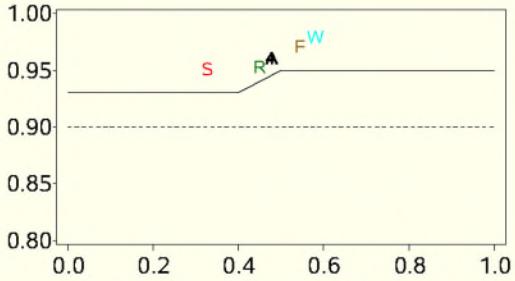


Additive (y) vs. Multiplicative (x) Bias



A=AllData, 2=2022, 3=2023, 4=2024
W=Winter, R=Spring, S=Summer, F=Fall

R (y) vs. FRM CCV (x)



A=AllData, 2=2022, 3=2023, 4=2024
W=Winter, R=Spring, S=Summer, F=Fall

Mean Concentration ($\mu g/m^3$)

Dataset	N	FRM	Cont	Ratio (Cont/FRM)
AllData	**124**	**7.0**	**7.7**	**1.11**
Winter	26	6.9	8.1	1.17
Spring	31	6.8	7.1	1.04
Summer	30	7.4	7.9	1.06
Fall	37	6.7	7.8	1.16
2022	0	.	.	.
2023	8	8.7	10.6	1.22
2024	116	6.8	7.5	1.10

Includes all data
Data Source: EPA AQS Data Mart

Appendix A Statistics

Dataset	N (all observations)	Bias	N (only >= 2 ug/m^3)	Bias
AllData	**124**	**9.9**	**119**	**9.6**
Winter	26	15.9	23	15.7
Spring	31	4.3	30	4.0
Summer	30	5.4	30	5.4
Fall	37	14.1	36	13.7
2022	0	.	.	.
2023	8	20.5	8	20.5
2024	116	9.2	111	8.8

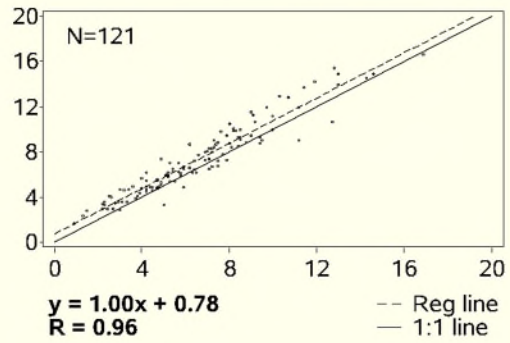
Based on 2024 Appendix A revision
Generated: May 20, 2025

$PM_{2.5}$ Continuous Monitor Comparability Assessment

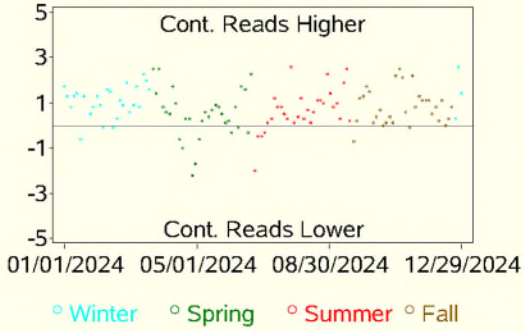
Site 54-011-0007: Huntington, WV

FRM: R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC - Gravimetric (145), PM2.5 - Local Conditions (88101), POC=1,2
Cont: Teledyne T640X at 16.67 LPM w/Network Data Alignment enabled - Broadband spectroscopy (638), PM2.5 - Local Conditions (88101), POC

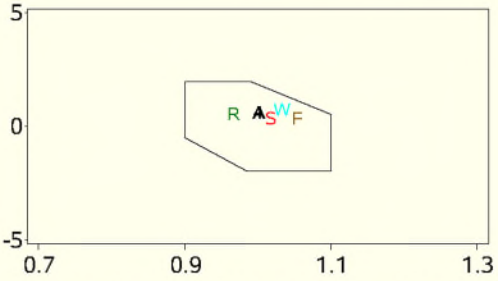
Cont. (y) vs. FRM (x) ($\mu g/m^3$)



Cont. minus FRM ($\mu g/m^3$)

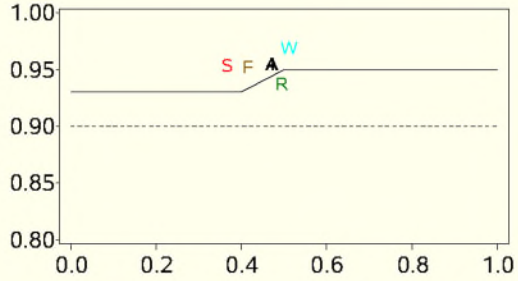


Additive (y) vs. Multiplicative (x) Bias



A=AllData, 2=2022, 3=2023, 4=2024
W=Winter, R=Spring, S=Summer, F=Fall

R (y) vs. FRM CCV (x)



A=AllData, 2=2022, 3=2023, 4=2024
W=Winter, R=Spring, S=Summer, F=Fall

Mean Concentration ($\mu g/m^3$)

Dataset	N	FRM	Cont	Ratio (Cont/FRM)
AllData	**121**	**6.5**	**7.3**	**1.12**
Winter	29	5.7	6.8	1.19
Spring	31	6.3	6.8	1.08
Summer	30	8.4	9.0	1.08
Fall	31	5.7	6.5	1.15
2022	0	.	.	.
2023	0	.	.	.
2024	121	6.5	7.3	1.12

Appendix A Statistics

Dataset	N (all observations)	Bias	N (only >= 2 ug/m^3)	Bias
AllData	**121**	**11.2**	**118**	**10.7**
Winter	29	17.3	27	16.3
Spring	31	7.5	31	7.5
Summer	30	8.0	30	8.0
Fall	31	12.4	30	11.7
2022	0	.	.	.
2023	0	.	.	.
2024	121	11.2	118	10.7

Includes all data
Data Source: EPA AQS Data Mart

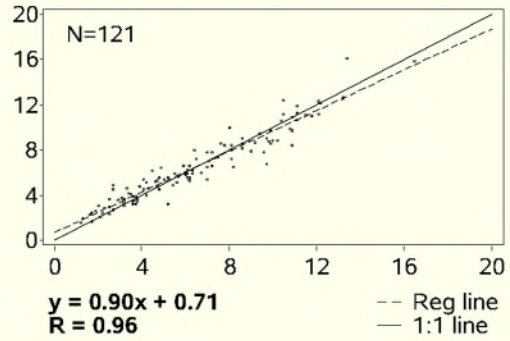
Based on 2024 Appendix A revision
Generated: May 20, 2025

$PM_{2.5}$ Continuous Monitor Comparability Assessment

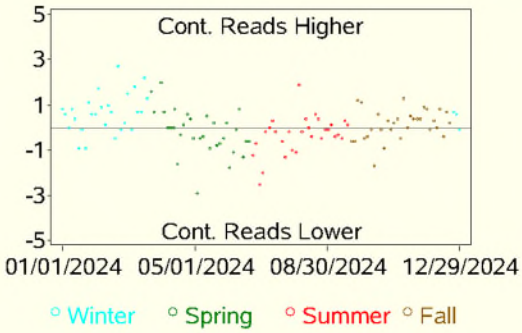
Site 54-029-0009: Weirton, WV

FRM: R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC - Gravimetric (145), PM2.5 - Local Conditions (88101), POC=1
Cont: Teledyne T640X at 16.67 LPM w/Network Data Alignment enabled - Broadband spectroscopy (638), PM2.5 - Local Conditions (88101), POC

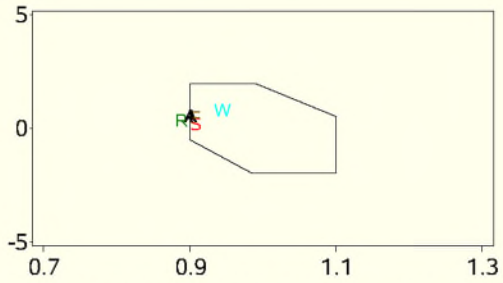
Cont. (y) vs. FRM (x) ($\mu g/m^3$)



Cont. minus FRM ($\mu g/m^3$)

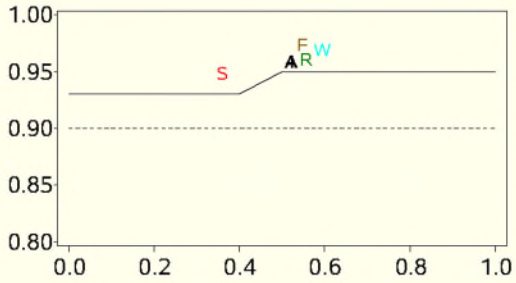


Additive (y) vs. Multiplicative (x) Bias



A=AllData, 2=2022, 3=2023, 4=2024
W=Winter, R=Spring, S=Summer, F=Fall

R (y) vs. FRM CCV (x)



A=AllData, 2=2022, 3=2023, 4=2024
W=Winter, R=Spring, S=Summer, F=Fall

Mean Concentration ($\mu g/m^3$)

Dataset	N	FRM	Cont	Ratio (Cont/FRM)
AllData	**121**	**6.4**	**6.4**	**1.01**
Winter	30	6.0	6.6	1.11
Spring	31	6.6	6.4	0.97
Summer	29	7.5	7.2	0.96
Fall	31	5.5	5.6	1.03
2022	0	.	.	.
2023	0	.	.	.
2024	121	6.4	6.4	1.01

Appendix A Statistics

Dataset	N (all observations)	Bias	N (only >= 2 ug/m^3)	Bias
AllData	**121**	**2.6**	**114**	**1.8**
Winter	30	11.0	27	10.2
Spring	31	-0.9	28	-2.4
Summer	29	-3.5	29	-3.5
Fall	31	3.6	30	3.4
2022	0	.	.	.
2023	0	.	.	.
2024	121	2.6	114	1.8

Includes all data
Data Source: EPA AQS Data Mart

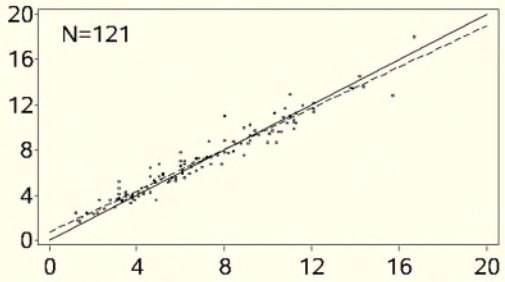
Based on 2024 Appendix A revision
Generated: May 20, 2025

$PM_{2.5}$ Continuous Monitor Comparability Assessment

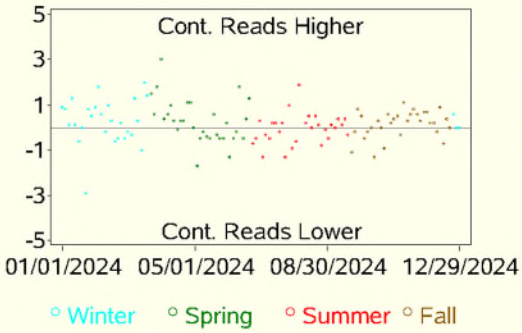
Site 54-009-0011: Weirton, WV

FRM: R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC - Gravimetric (145), PM2.5 - Local Conditions (88101), POC=1,2
Cont: Teledyne T640X at 16.67 LPM w/Network Data Alignment enabled - Broadband spectroscopy (638), PM2.5 - Local Conditions (88101), POC

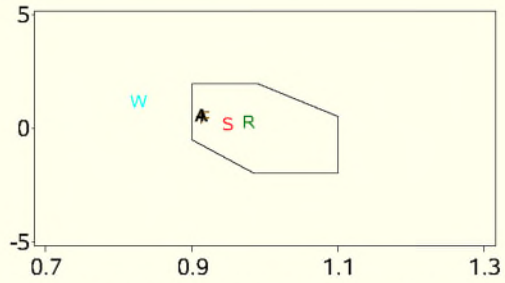
Cont. (y) vs. FRM (x) ($\mu g/m^3$)



Cont. minus FRM ($\mu g/m^3$)

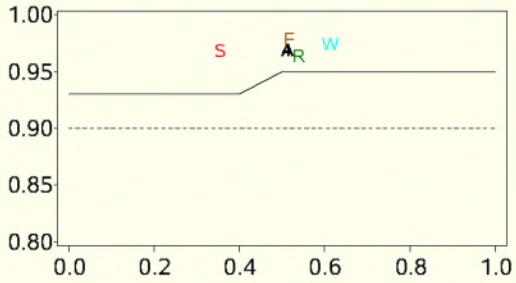


Additive (y) vs. Multiplicative (x) Bias



A=AllData, 2=2022, 3=2023, 4=2024
W=Winter, R=Spring, S=Summer, F=Fall

R (y) vs. FRM CCV (x)



A=AllData, 2=2022, 3=2023, 4=2024
W=Winter, R=Spring, S=Summer, F=Fall

Mean Concentration ($\mu g/m^3$)

Dataset	N	FRM	Cont	Ratio (Cont/FRM)
AllData	**121**	**6.8**	**6.9**	**1.02**
Winter	30	6.3	6.6	1.04
Spring	31	7.0	7.3	1.04
Summer	29	8.0	7.9	0.99
Fall	31	5.9	6.1	1.03
2022	0	.	.	.
2023	0	.	.	.
2024	121	6.8	6.9	1.02

Appendix A Statistics

Dataset	N (all observations)	Bias	N (only >= 2 ug/m^3)	Bias
AllData	**121**	**3.6**	**115**	**2.9**
Winter	30	7.1	27	5.2
Spring	31	4.6	29	4.0
Summer	29	-0.5	29	-0.5
Fall	31	3.2	30	3.0
2022	0	.	.	.
2023	0	.	.	.
2024	121	3.6	115	2.9

Includes all data
Data Source: EPA AQS Data Mart

Based on 2024 Appendix A revision
Generated: May 20, 2025