Technical Support Document:

Chapter 43
Final Round 3 Area Designations for the 2010 1-Hour SO_2 Primary National Ambient Air Quality Standard for West Virginia

1. Summary

Pursuant to section 107(d) of the Clean Air Act (CAA), the U.S. Environmental Protection Agency (the EPA, we, or us) must designate areas as either "Nonattainment," "Attainment," or "Unclassifiable" for the 2010 1-hour sulfur dioxide (SO_2) primary national ambient air quality standard (NAAQS) (2010 SO_2 NAAQS). Our Notice of Availability (NOA)[1] and our Technical Support Document[2] for our intended designations for the round of designations we are required to complete by December 31, 2017, provided background on the relevant CAA definitions and the history of the designations for this NAAQS. Chapter 1 of this TSD for the final designations explains the definitions we are applying in the final designations. The TSD for the intended Round 3 area designations also described West Virginia's recommended designations, assessed the available relevant monitoring, modeling, and any other information, and provided our intended designations.

This TSD for the final Round 3 area designations for West Virginia addresses any change in West Virginia's recommended designations since we communicated our intended designations for areas in West Virginia. It also provides our assessment of additional relevant information that was submitted too close to the signature of the NOA to have been considered in our intended designations, or that has been submitted by West Virginia or other parties since the publication of the NOA. This TSD does not repeat information contained in the TSD for our intended designations except as needed to explain our assessment of the newer information and to make clear the final action we are taking and its basis, but that information is incorporated as part of our final designations. If our assessment of the information already considered in our TSD for our intended designations has changed based on new information and we are finalizing a designation based on such change in our assessment, this TSD also explains that change. For areas of West Virginia not explicitly addressed in this chapter, we are finalizing the designations described in our 120-day letters and the TSD for the intended Round 3 area designations. All the final designations are listed in Table 1 below.

[1] EPA Responses to Certain State Designation Recommendations for the 2010 Sulfur Dioxide Primary National Ambient Air Quality Standard: Notification of Availability and Public Comment Period, September 5, 2017 (82 FR 41903)

[2] Intended Round 3 Area Designations for the 2010 1-Hour SO_2 Primary National Ambient Air Quality Standard Technical Support Document, August 2017. https://www.epa.gov/sulfur-dioxide-designations/initial-technical-support-documents-area-designations-round-3

On October 20, 2017, West Virginia submitted a revised recommendation regarding designations for the 2010 1-hour SO_2 NAAQS. In this submittal, West Virginia recommended that the entirety of Mason County be designated attainment. West Virginia did not revise its prior recommendation for any other areas, which are summarized in EPA's TSD for the intended Round 3 area designations.

As part of its October 20, 2017 revised recommendation submittal, West Virginia submitted revised modeling to demonstrate that Mason County should be designated attainment in its entirety. Although West Virginia indicated that they felt an analysis with all the sources was not needed, they provided a new modeling analysis which included the nearby Ohio sources of Gavin and Kyger Creek power plants in order to address EPA's concerns about the need to include these sources in the modeling analysis. EPA considered this newly submitted modeling for purposes of reassessing here that portion of our prior, intended designation of Mason County.

For the areas in West Virginia that are part of the Round 3 designations process, Table 1 identifies EPA's final designations and the counties or portions of counties to which they apply. It also lists West Virginia's current recommendations. West Virginia reiterated its recommendation that Mason County be designated Unclassifiable/Attainment in a letter dated October 20, 2017, but otherwise left unchanged their prior recommendations for other areas of the state. The EPA's final designations for these areas are based on an assessment and characterization of air quality through ambient air quality data, air dispersion modeling, other evidence and supporting information, or a combination of the above.

Table 1. Summary of the EPA's Final Designations and the Designation Recommendations by West Virginia

Area/ County	West Virginia's Recommended Area Definition	West Virginia's Recommended Designation	EPA's Intended Designation	EPA's Final Area Definition	EPA's Final Designation[3]
Grant	Grant County	Unclassifiable	Unclassifiable/ Attainment	Grant County	Attainment/ Unclassifiable
Harrison	Harrison County	Unclassifiable	Unclassifiable/ Attainment	Harrison County	Attainment/ Unclassifiable
Mason	Mason County	Unclassifiable/ Attainment	Mason County was split with an Unclassifiable portion and an Unclassifiable/ Attainment portion	Mason County	Attainment/ Unclassifiable

[3] Refer to Chapter 1 of Technical Support Document: Final Round 3 Area Designations for the 2010 1-Hour SO_2 Primary National Ambient Air Quality Standard for definitions of the designation categories and the terminology change from Unclassifiable/Attainment to Attainment/Unclassifiable.

Monongalia	Monongalia County	Attainment/ Unclassifiable	Unclassifiable/ Attainment	Monongalia County	Attainment/ Unclassifiable
Pleasants	Pleasants County	Unclassifiable	Unclassifiable/ Attainment	Pleasants County	Attainment/ Unclassifiable
Putnam	Putnam County	Unclassifiable	Unclassifiable/ Attainment	Putnam County	Attainment/ Unclassifiable
Wood	Wood County	Attainment/ Unclassifiable	Same as State's Recommendation	Wood County	Unclassifiable
Excluding Mineral County, WV All Remaining Undesignated Areas to Be Designated in this Action[4]	County Boundary or Tax Districts	Attainment or Attainment/ Unclassifiable or Unclassifiable	Same as State's Recommendation	Remaining Undesignated Areas to Be Designated in this Action	Attainment/ Unclassifiable

The area for which Maryland elected to install and began timely operation of a new, approved SO_2 monitoring network is listed in Table 2. The EPA is required to designate this area, pursuant to a court ordered schedule, by December 31, 2020. Table 2 also lists the SO_2 emissions sources around which each new, approved monitoring network has been established.

Table 2 – Undesignated Areas Which the EPA Is Not Addressing in this Round of Designations and Associated Source

Area	Source
Mineral County	Verso Luke Paper Company (Maryland Source)

[4] Except for this area that is associated with a source for which Maryland elected to install and began operation of a new, approved SO2 monitoring network in West Virginia meeting EPA specifications referenced in the EPA's SO_2 DRR (see Table 2), the EPA is designating the remaining undesignated counties (or portions of counties) in West Virginia as "attainment/unclassifiable." These areas that we are designating as attainment/unclassifiable (those to which this row of this table is applicable) are identified more specifically in section 10 of Chapter 43 (addressing West Virginia) of the TSD for our intended designations.

2. Technical Analysis of New Information for the Mason County Area

2.1. Introduction

The EPA must designate the Mason County, West Virginia area by December 31, 2017, because the area has not been previously designated and West Virginia has not installed and begun timely operation of a new, approved SO_2 monitoring network to characterize air quality in the vicinity of any source in Mason County. Pursuant to the Data Requirements Rule (see 40 CFR part 51, subpart BB), states had the option to characterize large sources of SO_2 by either monitoring, modeling, or limiting emissions below 2,000 tons of SO_2 per year. Because West Virginia has a large SO_2 source the American Electric Power Mountaineer Power Plant (or the Mountaineer Power Plant), the state elected to conduct modeling for the Mountaineer Power Plant that emits more than 2,000 tons of SO_2 per year. However, adjacent to Mason County, WV, Ohio elected to install a SO_2 monitoring network, which included placing a SO_2 monitor in Mason County, West Virginia.

On October 20, 2017, West Virginia submitted a revised modeling analysis and an updated recommendation for designation of Mason County in response to EPA's 120-day letter announcing intended designations for the state. The revised West Virginia modeling now includes the nearby Gavin and Kyger Creek Power Plants located in Gallia County, Ohio, which coupled with the Mountaineer Power Plant are the only significant sources of SO_2 emissions in the area. West Virginia used updated hourly emission files that reflected emissions from the Gavin and Kyger Creek Power Plants, which are much larger than those of the Mountaineer Power Plant. The revised West Virginia modeling uses the most current version of the AERMOD model (version 16216r) coupled with existing meteorological data (AERMET version 15181). West Virginia's October 2017 analysis uses the same receptor grid used by West Virginia in its prior analysis reviewed by EPA in its TSD for Round 3 intended designations.

2.2. Summary of Information Reviewed in the TSD for the Intended Round 3 Area Designations

For the Round 3 intended designations, the EPA considered all available information for the Mason County area, including the initial modeling assessment provided by West Virginia on January 12, 2017. The state's January 2017 analysis relied on actual hourly continuous emissions monitoring systems (CEMS) data from the Mountaineer Power Plant, but did not explicitly model emissions from the nearby General James M Gavin and Kyger Creek Power Plants in Ohio. However, West Virginia's modeled receptor grid extended beyond West Virginia into Ohio Counties, including Gallia where the Gavin and Kyger Creek Power Plants are located, and the adjacent Meigs county (with varying grid spacing and no excluded model receptors).

Since West Virginia's modeling analysis of the Mountaineer Power Plant reviewed by EPA for intended designations did not sufficiently analyze impacts from the Gavin and Kyger Creek Power Plants in Ohio, EPA proposed that the northern portion of Mason County (consisting of the Lewis, Robinson, Waggener, Graham and Copper Tax Districts) be designated Unclassifiable, while proposing that the remaining southern portion (having no SO_2 sources greater than 1 ton per year) be designated Unclassifiable/Attainment.

Chapter 43 of the TSD for the intended Round 3 area designations provides additional details about EPA's proposed designation for Mason County as partially Unclassifiable and partially Unclassifiable/Attainment, based on all available information.

The following Table 2A identifies all the modeling assessments evaluated for the 120-day letters and discussed in the TSD for the intended Round 3 area designations. Additional detail can be found in the TSD for the Intended Round 3 Area Designations, Chapter 43.

Table 2A. Modeling Assessments Evaluated in the TSD for the Intended Designation for the Mason County Area

Organization Submitting Assessment	Date of the Assessment	Identifier used in the TSD for the Intended Round 3 Area Designations, Chapter 43	Distinguishing or Otherwise Key Features
West Virginia DEP	January 12, 2017	January 2017 submittal	Only Mountaineer Power Plant explicitly modeled

Because West Virginia's modeling analysis of the Mountaineer Power Plant should have, but did not, adequately capture the SO_2 emissions from the Gavin and Kyger Creek Power Plants in Ohio, EPA's intended designation of the Mason County was split, with the Lewis, Robinson, Waggener, Graham, and Cooper tax districts proposed with the intended designation as Unclassifiable, with the remainder of Mason County proposed as Unclassifiable/Attainment.

2.3. Assessment of New Air Quality Monitoring Data for the Mason County Area

This factor considers the SO_2 air quality monitoring data in the area of Mason County, West Virginia. In the TSD for our intended designations, EPA indicated that our designations for Mason County were primarily based on an available modeling analysis. However, EPA has now reviewed more recently available data in the area of Mason County, including the most recent monitoring information. There are a total of four monitors, with one located in Mason County and three others in the adjacent Gallia County, OH. The 99^{th} percentile hourly data for all of the

monitors shows no violation of the primary SO_2 NAAQS, for the limited timeframe for which monitoring data is available.

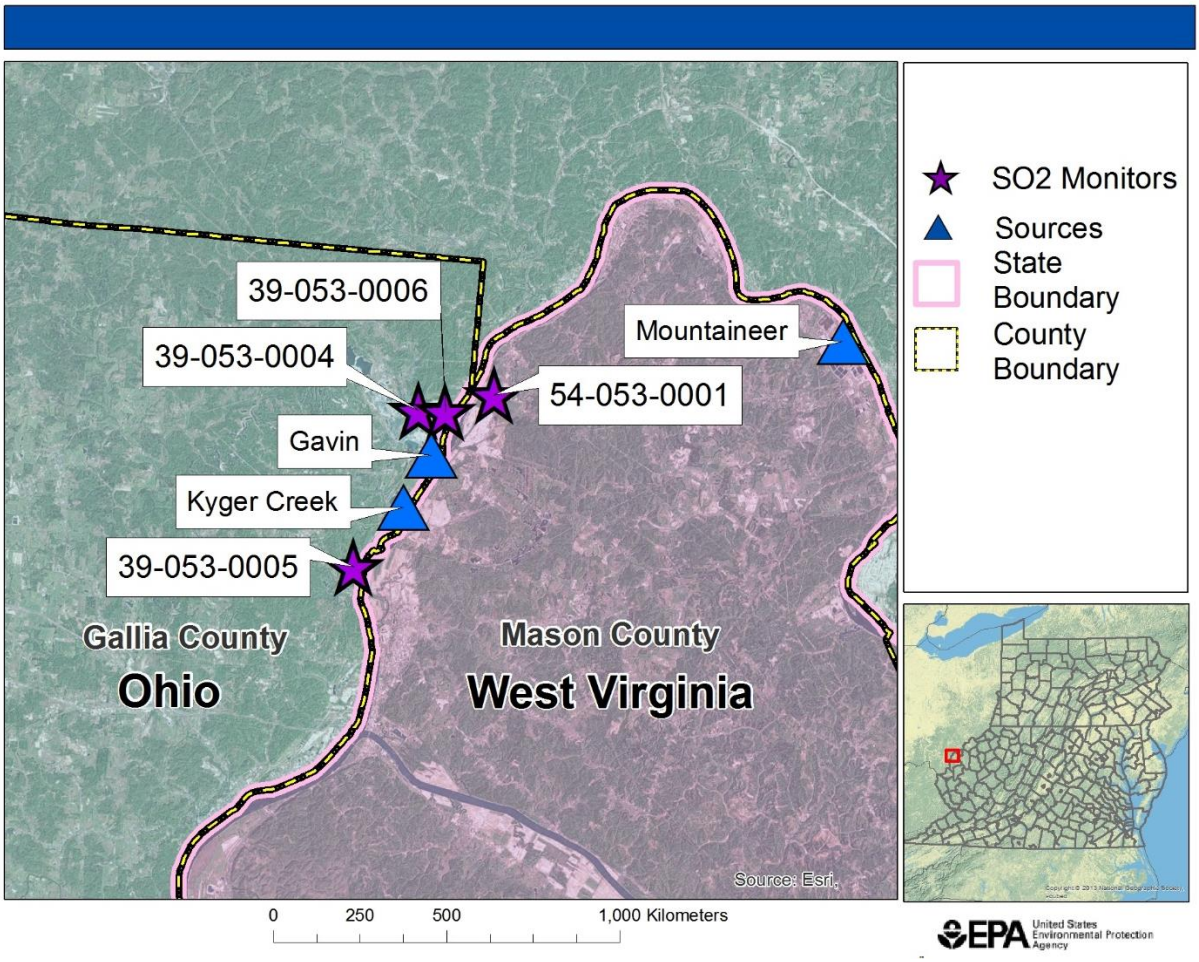
The SO_2 monitor in Mason County, AQS ID: 54-053-0001 was installed in January 2017 by Ohio, pursuant to the DRR (see 40 CFR part 51, subpart BB), to characterize the Gavin and Kyger Creek Power Plants in Gallia County, OH. At the time of preparation of this TSD, hourly SO_2 monitoring data is available from January 2017 through November 2017. For this limited timeframe, the available monitoring does not indicate a violation of the NAAQS. In particular, the four highest hourly values reported to AQS for the Mason County monitor through November 30, 2017 are 53, 37, 36 and 35 ppb. Table 2B shows the results of available data at the monitoring network for the monitoring network in and nearby Mason County.

Table 2B. Preliminary Hourly SO_2 Monitoring Values (in ppb) in Mason County, WV and Gallia County, OH for the January-November 2017 Period

	2017 Highest Hour	2017 Second Highest Hour	2017 Third Highest Hour	2017 Fourth Highest Hour	Monitoring Period (January 2017 through time period below)
54-053-0001 HWY 62, Lakin, WV Mason County, WV	53	37	36	35	11/30/2017
39-053-0004 Watson Grove Rd. Gallia County, OH	51	48	27	27	11/30/2017
39-053-0005 583 Honeysuckle Rd. Gallia County, OH	46	39	36	34	11/30/2017
39-053-0006 8323 SR 7 North Gallia County, OH	77	40	39	38	10/31/2017

At the time this TSD was prepared, available hourly SO_2 monitoring data (shown in the above table) does not indicate a violation of the NAAQS. Given this trend in the hourly data for the first 11 months that the monitors have been operational, EPA does not anticipate that monitoring at these sites will show Nonattainment. Figure 2C below shows the location of the monitors in and nearby to Mason County, with respect to the significant SO_2 emission sources in the area.

Figure 2C. Location of SO_2 Monitors and Sources in and Nearby to Mason County, West Virginia



2.4. Assessment of New Air Quality Modeling Analysis for the Mason County Area Addressing the Mountaineer Power Plant

2.4.1. Introduction

This section 2.4 presents all the newly available air quality modeling information for the portion of Mason County that includes the Mountaineer Power Plant. This portion of Mason County will often be referred to as "the Mason County area" within this section 2.4. This area contains the following SO_2 sources, principally the sources around which West Virginia was required by the DRR to characterize SO_2 air quality:

- The Mountaineer Power Plant facility emits 2,000 tons or more annually. Specifically, the Mountaineer Power Plant emitted approximately 4,411 tons of SO_2 according to the 2014 NEI. This source meets the DRR criteria and thus is on the SO_2 DRR Source list, and West Virginia has chosen to characterize it via modeling.

- The Philip Sporn Plant emits 2,000 tons or more annually. Specifically, the Philip Sporn Plant emitted approximately 10,649 tons of SO_2 according to the 2014 NEI. This source meets the DRR criteria and thus is on the SO_2 DRR Source list. On November 30, 2016, West Virginia granted American Electric Power (AEP)'s request for the Philip Sporn Plant to be placed inactive. The Title V operating permit for this facility is considered to be surrendered, meaning that the permit cannot be used by AEP nor any other entity which may purchase the facility or equipment. If operations were to be restarted in the future, the facility would have to complete the permitting process as a new facility.

On October 20, 2017, West Virginia submitted new modeling analyzing air quality in the area surrounding the Mountaineer Power Plant. This new assessment and characterization was performed using air dispersion modeling software, i.e., AERMOD, analyzing actual emissions from 2012-2014. The area that West Virginia has assessed via air quality modeling is identical to the area it examined in its 120-day modeling submittal. This includes all of Jackson and Mason Counties and portions of Cabell, Kanawha, Putnam, Roane, Wirt, and Wood Counties in West Virginia. The model receptor grid also covers portions of the state of Ohio including all of Meigs County and portions of Athens, Gallia, Hocking, Jackson, Lawrence, Vinton, and Washington Counties. West Virginia's analysis supports a different designation than the EPA's intended designation for this area. The EPA expressed an intent to designate the following tax districts of Mason County as /Unclassifiable/Attainment: Hannah, Clendenin, Arbuckle, Cologne, and Union, and the following tax districts in Mason County as Unclassifiable: Lewis, Robinson, Waggener, Graham, and Cooper. West Virginia has asked to designate all of Mason County as Attainment/Unclassifiable based on its most recent modeling analysis.

As seen in Figure 2D below, the Mountaineer Power Plant is located in the northeastern portion of Mason County along the Ohio River. The Gavin and Kyger Creek power plants are located approximately 17 kilometers (km) west south-west of Mountaineer along the Ohio River in neighboring Gallia County, OH. These plants were not included in West Virginia's 120-day modeling analysis. The EPA cited the exclusion of these two plants in Ohio as the primary reason that portions of Mason County, WV were proposed to be Unclassifiable with respect to designations.

Also included in the figure are other nearby emitters of SO_2.[5] These are the Gavin and Kyger Creek power plants located in Gallia County, OH approximately 17 km west south-west of the Mountaineer Power Plant. According to information provided by the state of Ohio[6], the Gavin Power Plant emitted 36,873 tons per year (tpy) of SO_2 emission in 2014 and Kyger Creek Station emitted 13,748 tpy of SO_2 emissions in 2014. Combined the Ohio power plants emit over ten (10) times the amount of SO_2 as the Mountaineer Power Plant.

[5] All other significant SO_2 emitters of 2,000 tpy or more (based on emission information provided by the state of Ohio) are shown in Figure 2B. If no sources not named previously are shown, there are no additional SO_2 emitters above this emission level in the vicinity of the named source(s).
[6] http://epa.ohio.gov/portals/27/SIP/SO2/GavinKyg_Desig_Draft.pdf

Figure 2D. Map of the Mason County Area Addressing the Mountaineer, Gavin and Kyger Creek power plants

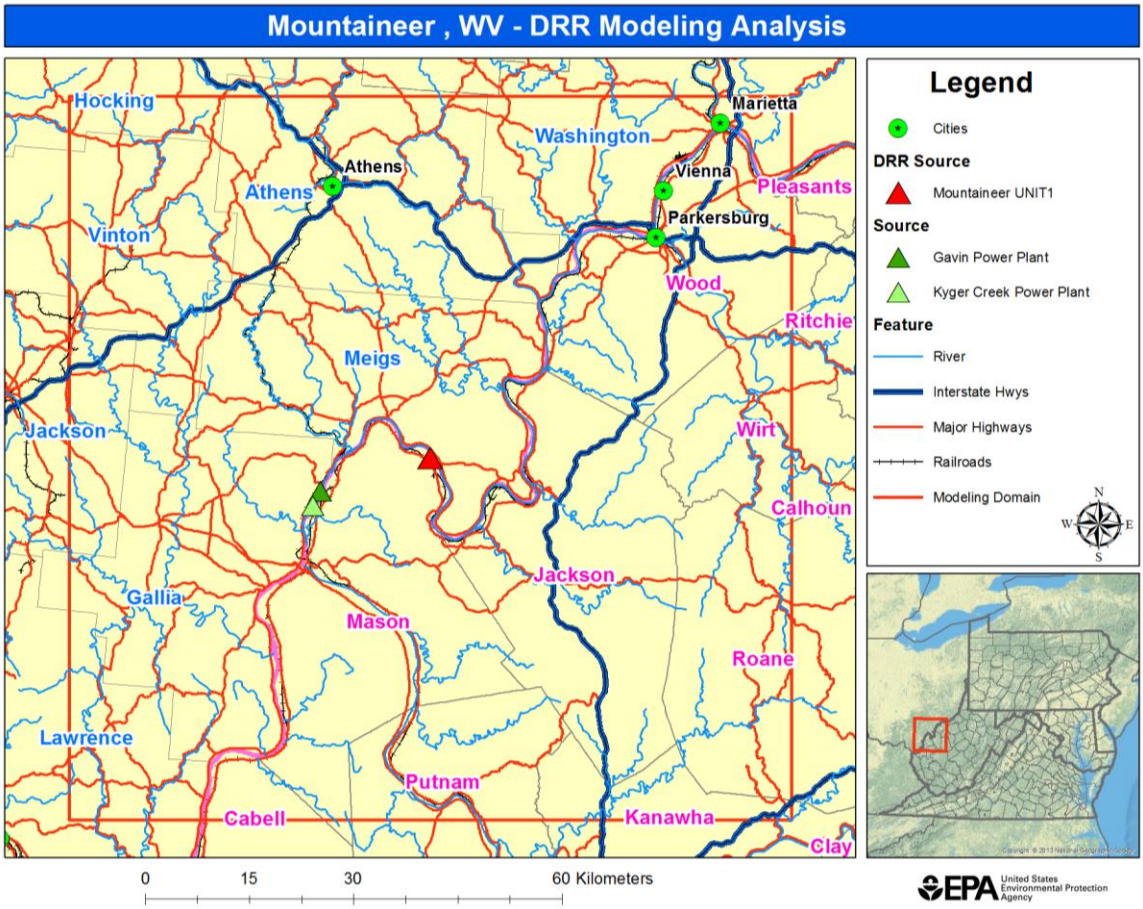
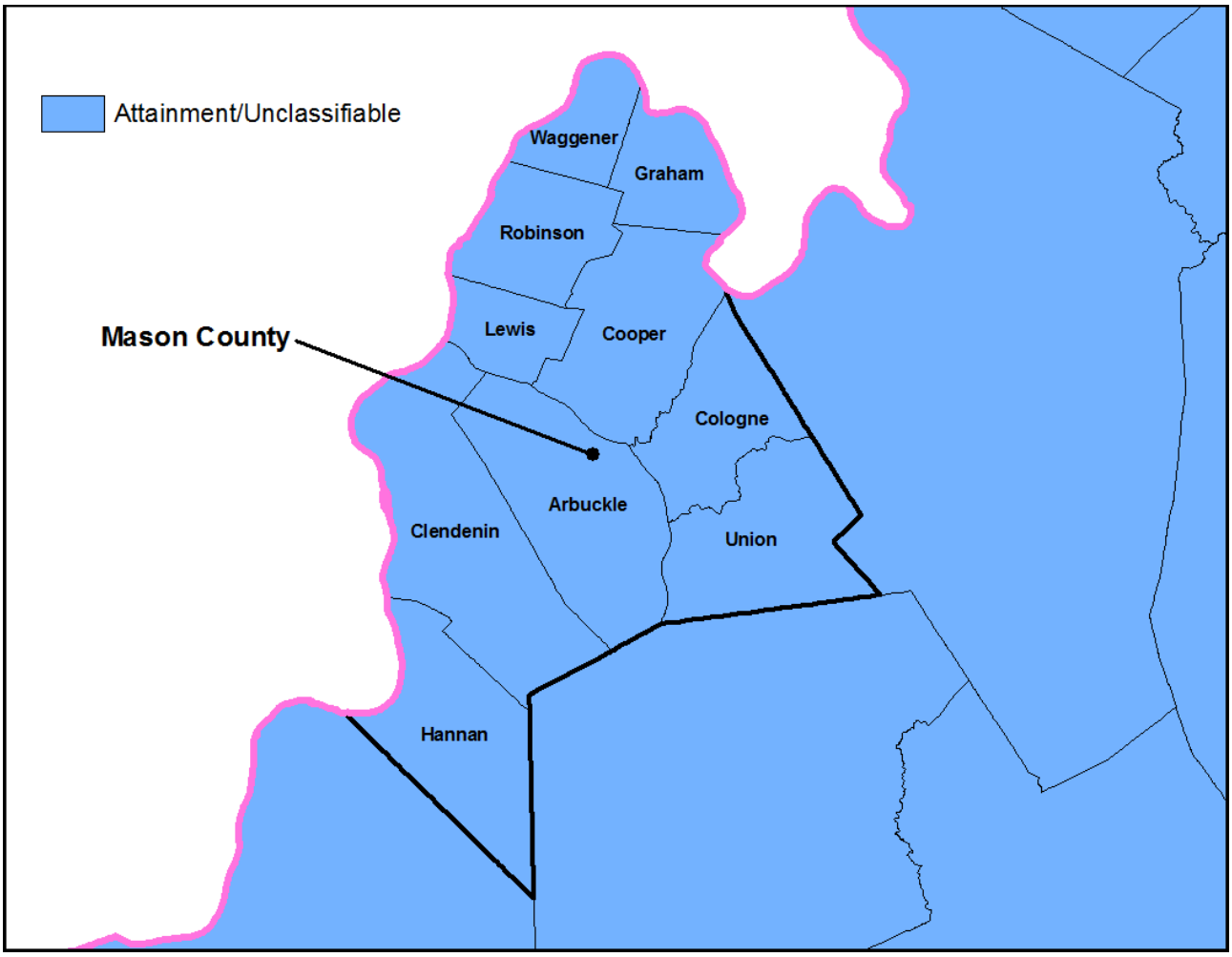


Figure 2E below shows the state's recommended area for the Attainment/Unclassifiable designation. The EPA's final designation boundary for the Mason County area is not shown in this figure, but is shown in a figure in the section below that summarizes our final designation.

Figure 2E. Map of the Mason County Area showing West Virginia's requested designation and Tax District subdivisions



The discussion and analysis that follows below will reference the Modeling TAD and the factors for evaluation contained in the EPA's July 22, 2016, guidance and March 20, 2015, guidance cited in Chapter 1 of this TSD, as appropriate.

West Virginia submitted revised modeling on October 20, 2017, in response to EPA's 120-day letter announcing intended designations for the state. This most recent West Virginia modeling explicitly modeled impacts for Mountaineer, along with the Gavin and Kyger Creek facilities in Gallia County, Ohio. Hourly emissions data developed by AEP for the Gavin and Kyger Creek Power Plants was used in the revised modeling analysis. These are the only significant nearby sources of SO_2 that could contribute to in the Mason County area, with combined annual SO_2 emissions from Gavin and Kyger Creek in Ohio over ten times larger than that of the Mountaineer Power Plant in Mason County. The most recent West Virginia modeling uses the most current version of the AERMOD model coupled with the prior, processed meteorological AERMET data. West Virginia retained the receptor grid from its 120-day modeling submittal.

All other supporting information from the 120-day analysis are unchanged in West Virginia's revised modeling.

For this area, the EPA received and considered only this one new modeling assessment provided by West Virginia, beyond those identified above in Table 2F that were reviewed in its TSD for its intended designations. EPA received a comment letter but no other new modeling assessments from any party other than the state. All other third-party provided supplemental information submitted in response to the 120-day letter is addressed in the response to comments document for EPA's final Round 3 designations action. The following table lists the assessment received, indicates when it was received, provides an identifier for the assessment that is used in the discussion that follows, and identifies any distinguishing features of the modeling assessment.

Table 2F. New Modeling Assessments for the Mason County Area

Organization Submitting Assessment	Date of the Assessment	Identifier Used in this TSD	Distinguishing or Otherwise Key Features
West Virginia DEP	October 20, 2017	Revised modeling (submitted in response to 120-day letter)	Modeling explicitly includes Gavin and Kyger Creek Power Plants (using hourly emission data)

2.4.2. Modeling Analysis Provided by the State

On October 20, 2017 West Virginia e-mailed modeling files for its Mountaineer Power Plant to EPA Region 3. Two (2) sets of modeling files were provided; one that included downwash from the Mountaineer Power Plant's cooling towers and one that did not include building downwash from the Mountaineer Power Plant's cooling towers. The former was the one that was reviewed by the EPA as including downwash from the cooling towers is more representative of the conditions in the area. West Virginia only sent the AERMOD input and output files, the processed meteorological files, a model receptor grid file and an emission file that contained the actual hourly emissions for the Mountaineer, Gavin and Kyger Creek power plants. It is assumed that most of the modeling preprocessing steps were identical to those West Virginia used in its 120-day modeling analysis.

2.4.2.1. Differences Among and Relevance of the Modeling Assessments

West Virginia's most recent modeling submittal supplements its 120-day modeling analysis for Mason County by including two (2) SO_2 sources in nearby Gallia County, OH. These include the Gavin Power Plant and Kyger Creek Station. Both Ohio sources are significantly larger emitters than the Mountaineer Power Plant. It appears West Virginia's most recently submitted, revised

modeling uses most of the preprocessing steps used in its modeling analysis reviewed by EPA for the intended designations, with the only significant difference being the addition of the two power plants in neighboring Gallia County, OH.

2.4.2.1.1. Model Selection and Modeling Components

The EPA's Modeling TAD notes that for area designations under the 2010 SO_2 NAAQS, the AERMOD modeling system should be used, unless use of an alternative model can be justified. The AERMOD modeling system contains the following components:

- AERMOD: the dispersion model
- AERMAP: the terrain processor for AERMOD
- AERMET: the meteorological data processor for AERMOD
- BPIPPRM: the building input processor
- AERMINUTE: a pre-processor to AERMET incorporating 1-minute automated surface observation system (ASOS) wind data
- AERSURFACE: the surface characteristics processor for AERMET
- AERSCREEN: a screening version of AERMOD

The state used AERMOD version 16216r, the most current version, in its most recent modeling submittal. A discussion of the state's approach to the individual components is provided in the corresponding discussion that follows, as appropriate.

2.4.2.2. Modeling Parameter: Rural or Urban Dispersion

For any dispersion modeling exercise, the determination of whether a source is in an "urban" or "rural" area is important in determining the boundary layer characteristics that affect the model's prediction of downwind concentrations. For SO_2 modeling, the urban/rural determination is also important because AERMOD invokes a 4-hour half-life for urban SO_2 sources. Section 6.3 of the Modeling TAD details the procedures used to determine if a source is urban or rural based on land use or population density.

For the purpose of performing the modeling for the area of analysis, the state determined that it was most appropriate to run the model in rural mode (as determined in its 120-day modeling analysis). This was based on an analysis of 1992 land-use land-cover (LULC) data within 3 km of the facility. LULC data showed over 50% of the land use classifications were either forested land or open grassland or farm land. Developed land, including low density residential and industrial areas represent less than 20% of the area with the only fully developed areas being the Mountaineer Power Plant site and the adjacent now retired Philip Sporn Plant site. EPA agrees that this analysis still fully supports using AERMOD's rural dispersion coefficients.

2.4.2.2.1. Modeling Parameter: Area of Analysis (Receptor Grid)

The TAD recommends that the first step towards characterization of air quality in the area around a source or group of sources is to determine the extent of the area of analysis and the spacing of the receptor grid. Considerations presented in the Modeling TAD include but are not limited to: the location of the SO_2 emission sources or facilities considered for modeling; the

extent of significant concentration gradients due to the influence of nearby sources; and sufficient receptor coverage and density to adequately capture and resolve the model predicted maximum SO_2 concentrations.

For the Mason County area, West Virginia included the Mountaineer Power Plant (in Mason County, WV) along with the Gavin and Kyger Creek power plants in neighboring Gallia County, OH as the only SO_2 sources included in its most recent modeling analysis. The state determined that this was appropriate to adequately characterize air quality through modeling to include the potential extent of any SO_2 NAAQS exceedances in the area of analysis and any potential impact on SO_2 air quality from other sources in nearby areas. The Gavin and Kyger Creek power plants are located approximately 16.5 km and 18 km west-southwest (respectively) from the Mountaineer Power Plant.

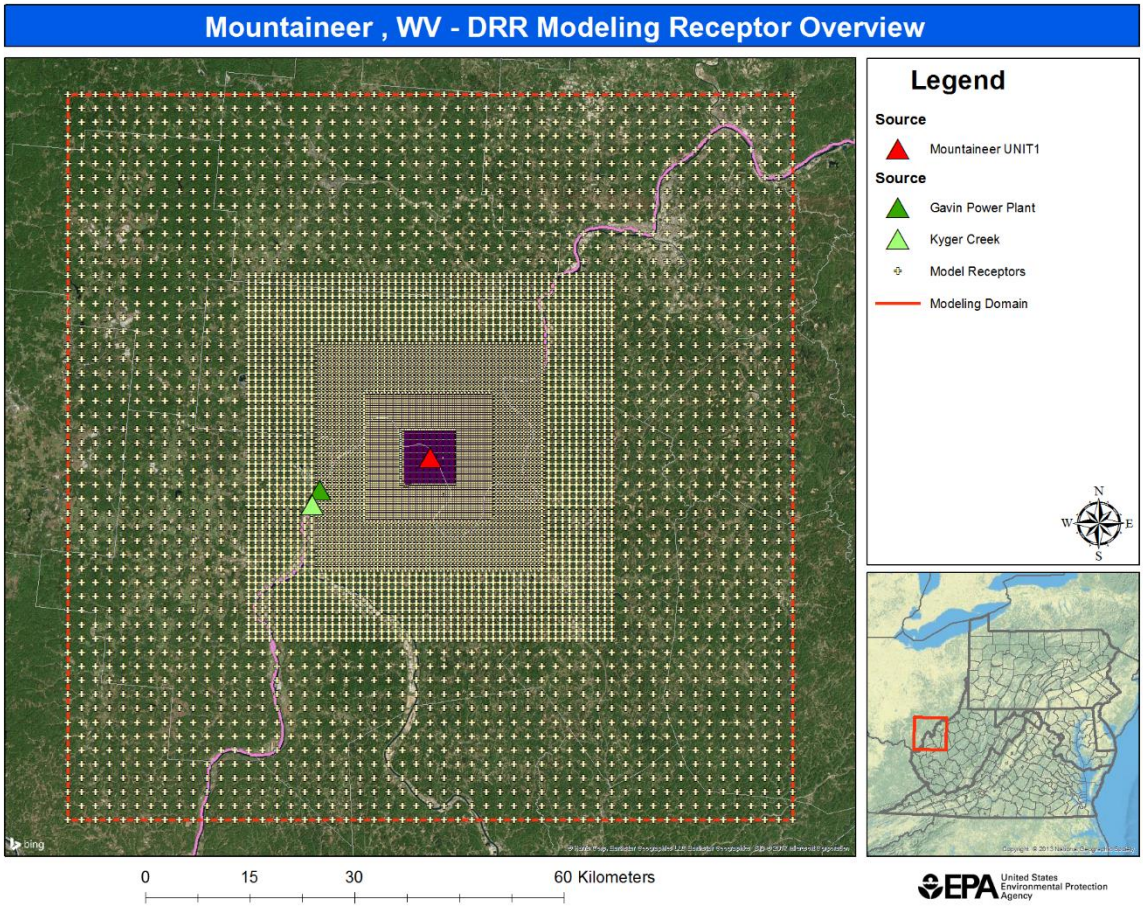
The grid receptor spacing for the area of analysis in West Virginia's most recent modeling analysis is identical to the receptor grid it used in its 120-day modeling analysis and is described as follows:

- No fence line receptors were defined in this analysis so model receptors within any ambient air boundary for the Mountaineer Power Plant were not excluded. Site access does appear to be controlled.
- a 100 meter (m) Cartesian receptor grid extending out 4 km from the Mountaineer Power Plant
- a 250 m Cartesian receptor grid extending from 4 to 9 km from the Mountaineer Power Plant
- a 500 m Cartesian receptor grid extending from 9 to 16 km from the Mountaineer Power Plant
- a 1,000 m Cartesian receptor grid extending from 16 to 26 km from the Mountaineer Power Plant
- a 2,000 m Cartesian receptor grid extending from 26 to 52 km from the Mountaineer Power Plant

The receptor network contained 17,445 receptors, and the network covered a 52 km by 52 km area centered around the Mountaineer Power Plant that extends into the state of Ohio. Figure 2G, produced using GIS software using modeling files from West Virginia's most recent and 120-day modeling, shows the state's chosen area of analysis surrounding the Mountaineer Power Plant as well as the receptor grid for the area of analysis.

Consistent with the Modeling TAD, the state placed receptors for the purposes of this designation effort in locations that would be considered ambient air relative to each modeled facility, including other facilities' property. The model receptor grid is roughly divided from southwest to northeast by the Ohio River. Receptors cover all of Jackson and Mason Counties and portions of Cabell, Kanawha, Putnam, Roane, Wirt, and Wood Counties in West Virginia. As noted previously, the model receptor grid also covers portions of the state of Ohio including all of Meigs County and portions of Athens, Gallia, Hocking, Jackson, Lawrence, Vinton, and Washington Counties. The state did not exclude model receptors from any areas within the modeling domain.

Figure 2G. Receptor Grid for the Mason County Area



The modeling receptor grid was developed using conservative principles that would avoid underestimating emissions impacts. Since no areas were excluded from model receptor placement, the analysis did not remove receptors within the Mountaineer Power Plant's apparent ambient air boundary, as would be allowed by EPA's Modeling TAD.

2.4.2.2.2. Modeling Parameter: Source Characterization

Section 6 of the Modeling TAD offers recommendations on source characterization including source types, use of accurate stack parameters, inclusion of building dimensions for building downwash (if warranted), and the use of actual stack heights with actual emissions or following GEP policy with allowable emissions.

West Virginia's most recent modeling analysis includes emissions from the Mountaineer Power Plant in Mason County, WV and the Gavin and Kyger Creek power plants in neighboring Gallia County, OH. Information regarding the Ohio plants was taken from the Round 2 designations process and includes stack parameters, hourly emissions and final modeled building downwash parameters. Only the main emissions points appear to be in West Virginia's final modeling analysis; any ancillary emissions from emergency or auxiliary units were not included.

Based on information from West Virginia's 120-day modeling analysis, the Mountaineer Power Plant contains the main coal fired steam generator serving the generating unit and two #2 fuel oil fired auxiliary boilers that are used for unit startup and for building heating purposes when the generating unit is out of service. These two (2) auxiliary boilers are classified as Limited Use Boilers under the IB MACT and consume ultralow sulfur #2 fuel oil. Additionally, there are two coping power emergency generators commissioned in 2015 for use in a loss of power event that are classified as emergency generators under the National Emission Standards for Hazardous Air Pollutants (NESHAP) Maximum Available Control Technology (MACT) applicable to Reciprocating Internal Combustion Engines (RICE), (or RICE MACT), per the requirements of 40 CFR part 63, subpart ZZZZ. SO_2 emissions from the auxiliary boilers and emergency generators are reported in the annual emission statement filed with the WV DEP and generally total less than 5 tpy. There are also two diesel driven emergency fire pumps at the plant that operate only for testing purposes and in the event of an emergency and one diesel driven Emergency Quench Pump on the flue gas desulfurization (FGD) system for use in the event of a unit trip with full loss of site power to protect the FGD absorbers and downstream ductwork and flue from high temperatures that would be experienced in a black shutdown situation (no external power available). The emissions from the fire pump engines are not reported as part of the annual emissions statements due to their low annual operation levels and classification as emergency engines under the RICE MACT. The emissions from the Emergency Quench Pump engine are calculated, but are less than 0.01 tons per year. This engine is classified as an emergency engine under the RICE MACT and operates only for routine testing and maintenance and emergency events. Only emissions from the main coal boiler were included in the final modeling analysis. The other on-site emissions are expected to be small (less than 0.5 tpy) and were excluded from the final analysis consistent with EPA's March 1, 2011, Clarification Memo and Modeling TAD.

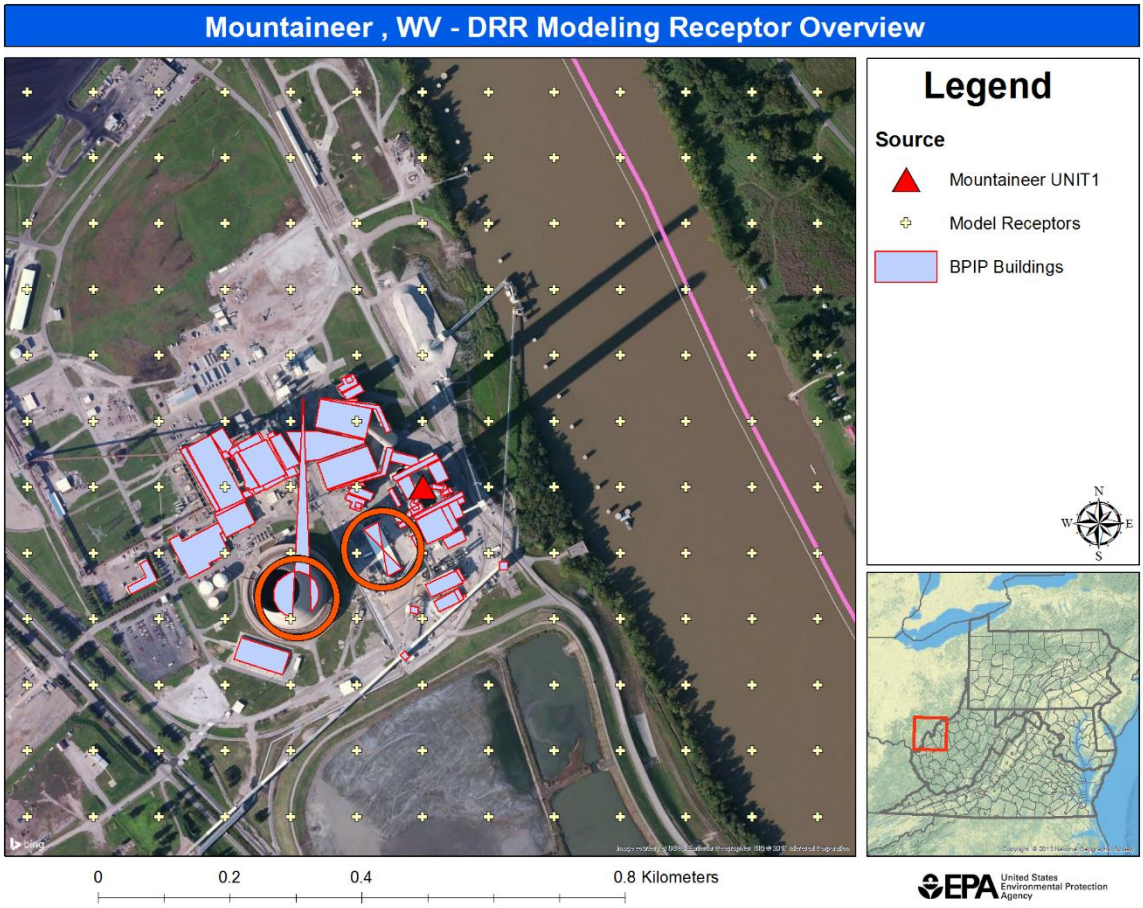
The Mountaineer Power Plant was originally permitted in the mid-1970's and is subject to the Good Engineering Practice (GEP) Stack Height Rules that were in effect at that time. Based on the GEP Rules in effect when Mountaineer Power Plant was permitted, it was determined to have a GEP Stack Height of 838.6 feet based on the height of the natural draft cooling tower. Even though Mountaineer Power Plant is subject to the GEP Stack Height Rules, the original stack constructed at Mountaineer Power Plant was 1,100 feet tall. The original stack was replaced with a 1,000-foot-tall stack as part of the installation of the FGD system that was commissioned in 2007. The current actual stack height (304.8 m) was used in the modeling analysis.

In regards to this parameter of the modeling for the source modeled, the state characterized the Mountaineer Power Plant mostly in accordance with the best practices outlined in the Modeling TAD. Specifically, the state used actual stack heights in conjunction with actual emissions. The state also characterized the source's building layout and location, as well as the stack parameters, e.g., exit temperature, exit velocity, location, and diameter. Where appropriate, the AERMOD component BPIPPRM was used to assist in addressing building downwash. West Virginia did not provide any additional details regarding the Ohio sources included in West Virginia's modeling analysis other than the hourly emissions file was provided by the state of Ohio.

EPA examined the Mountaineer Power Plant's stack location and Building Profile Input Program (BPIP) building analysis contained in West Virginia 120-day modeling submittal for accuracy

using GIS software. It is assumed that model downwash for West Virginia's most recent submittal was identical to its 120-day modeling submittal. The main stack appears to be located in the correct position but it appears that the BPIP file may have included incorrect building information (see Figure 2F below). Building "WRHSE" appears to have its corners flipped and one of the projection points for the Hyperbolic tower seems to be incorrect. There is also a large (inactive) stack that was not included in the BPIP analysis (this may not contribute to any downwash and it's not the general practice to include the stacks themselves in a downwash analysis). Given the stack height (304.8 m) and the final distance to the peak model receptor, it doesn't appear that these BPIP errors would have had significant impacts in the final modeling concentrations.

Figure 2H. Mountaineer Power Plant Receptor Grid and BPIP Building Information from West Virginia's 120-Day Modeling Analysis



2.4.2.2.3. Modeling Parameter: Emissions

The EPA's Modeling TAD notes that for the purpose of modeling to characterize air quality for use in designations, the recommended approach is to use the most recent 3 years of actual emissions data and concurrent meteorological data. However, the TAD also indicates that it would be acceptable to use allowable emissions in the form of the most recently permitted

(referred to as potential to emit (PTE) or allowable) emissions rate that is federally enforceable and effective.

The EPA believes that CEMS data provide acceptable historical emissions information, when they are available. These data are available for many electric generating units. In the absence of CEMS data, the EPA's Modeling TAD highly encourages the use of AERMOD's hourly varying emissions keyword HOUREMIS, or through the use of AERMOD's variable emissions factors keyword EMISFACT. When choosing one of these methods, the EPA recommends using detailed throughput, operating schedules, and emissions information from the impacted source(s).

In certain instances, states and other interested parties may find that it is more advantageous or simpler to use PTE rates as part of their modeling runs. For example, where a facility has recently adopted a new federally enforceable emissions limit or implemented other federally enforceable mechanisms and control technologies to limit SO_2 emissions to a level that indicates compliance with the NAAQS, the state may choose to model PTE rates. These new limits or conditions may be used in the application of AERMOD for the purposes of modeling for designations, even if the source has not been subject to these limits for the entirety of the most recent 3 calendar years. In these cases, the Modeling TAD notes that a state should be able to find the necessary emissions information for designations-related modeling in the existing SO_2 emissions inventories used for permitting or SIP planning demonstrations. In the event that these short-term emissions are not readily available, they may be calculated using the methodology in Table 8-1 of appendix W to 40 CFR part 51 titled, "Guideline on Air Quality Models."

West Virginia's most recent modeling analysis included emissions from the Mountaineer Power Plant along with emissions from the Gavin and Kyger Creek power plants in neighboring Gallia County, OH. Hourly emissions for these plants were provided by the state of Ohio and represent revised actual hourly emissions provided by West Virginia, as obtained by Ohio from modeling actual emissions submitted by Ohio as part of Round 2 for Gavin and Kyger Creek. EPA confirmed that the hourly file for West Virginia's most recent modeling analysis included the actual emissions developed for the two (2) Ohio plants by comparing them to the hourly emissions that EPA Region 5 received for Gavin and Kyger Creek power plants during the Round 2 Designation process.

Modeled emissions for the Mountaineer, Gavin and Kyger Creek power plants were compared to the emissions taken from EPA Clean Air Markets Data (CAMD) website[7]. Annual emissions for all three (3) sources are listed in Table 2I. Emissions from the two (2) Ohio power plants are both significantly higher than emissions from the Mountaineer Power Plant over the 2012-2014 period.

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

Table 2I. Actual SO_2 Emissions Between 2012–2014 from the AEP Mountaineer Power Plant in the Mason County Area, and the Gavin and Kyger Creek Power Plants in Neighboring Gallia County, Ohio

Modeled Emissions

Facility Name	SO_2 Emissions (tpy)		
	2012	2013	2014
Mountaineer Power Plant	1,160.0	2,903.6	4,411.0
Gavin Power Plant	28,227.2	25,998.1	29,920.4
Kyger Creek Power Plant	3,650.8	9,366.9	13,688.7
Total Emissions from All Modeled Facilities in the State's Area of Analysis	**33,038.1**	**38,268.7**	**48,020.2**

CAMD Emissions

Facility Name	SO_2 Emissions (tpy)		
	2012	2013	2014
Mountaineer Power Plant	1,151.3	2,903.0	4,410.2
Gavin Power Plant	31,269.0	27,852.1	36,871.9
Kyger Creek Power Plant	4,988.9	9,434.0	13,747.8
Total Emissions from All Modeled Facilities in the State's Area of Analysis	**37,409.2**	**40,189.1**	**55,029.9**

2014 NEI Emissions

Facility	2014 NEI SO_2 Emissions (tpy)
Mountaineer Power Plant	4,410.88
Gavin Power Plant	36,871.05
Kyger Creek Power Plant	13,748.00

For the Mountaineer Power Plant, the actual hourly SO_2 emissions data were obtained from CEM data provided by the facility and used in the West Virginia modeling analysis. In addition to this data, the EPA also constructed actual hourly emissions available from EPA's Clean Air Markets Data (CAMD) website[8] and emissions from the 2014 NEI for comparison. As shown in the previous tables, the annual modeled emissions for the Mountaineer Power Plant are very similar to totals from EPA's CAMD website and the 2014 NEI.

The Mountaineer Power Plant has CEMS installed and operated under 40 CFR part 75 that measure SO_2, flow, temperature, and other parameters as specified in 40 CFR part 75. This data was then processed and reported to EPA's CAMD in units of parts per million (ppm) SO_2, pounds per hour (lb/hr) SO_2, and wet-standard cubic feet per hour for flow. Temperature is used

[8] https://ampd.epa.gov/ampd/

in the derivation of the reported flow, but is not reported to CAMD; the CAMD reporting protocols do not allow for the explicit reporting of the temperature data. Certain hours may also be impacted by data substitution requirements and other data management requirements found in 40 CFR part 75. These hours may require manual editing prior to the data being truly representative of the actual operating conditions present.

The Mountaineer Power Plant's hourly emission rates varied according to CEM collected values to reflect actual hourly emissions from the facility. Hourly modeled emissions for the Mountaineer Plant's main unit were compared with hourly rates extracted from CAMD. Modeled hourly rates were very close to the rates from CAMD. A table showing the difference between hourly modeled and the hourly CAMD emission rates for the Mountaineer Power Plant's main unit are shown in Table 2J. The table shows modeled hourly emission rates were nearly all within +/- 250 pounds/hour of the hourly rates recorded in CAMD.

Table 2J. Table showing the difference between modeled and CAMD hourly emission rates (in pounds per hour) for the Mountaineer Power Plant's main unit.

AEP Mountaineer Power Plant Main Unit	
Bin	**Frequency**
-500	0
-250	0
0	15,987
250	10,315
500	1
750	1
More	0

Emissions for the Gavin and Kyger Creek power plants were reviewed by Ohio with input from the facility operators. They "*…identified erroneous emissions data resulting from faults in the continuous emissions monitors at the facilities, part 75 data substitutions, and other variables which contribute to erroneous emissions data*.[9]" The revised hourly emissions files were included in West Virginia's most recent modeling submittal. Both the Gavin and Kyger Creek modeled SO_2 emissions were less than the SO_2 emission totals in CAMD. Modeled emissions for the Kyger Creek Power Plant were only nominally less than the CAMD emission totals for 2013 and 2015 with about a 27% reduction for 2012. Revised model emission totals for Gavin were consistently lower than SO_2 emissions reported to CAMD; 10% less in 2012, 7% less in 2013 and 19% less in 2014. Though the percentages were lower for Gavin, the emission reductions represent larger amount of emissions since the Gavin Power Plant is a much larger emission source than the Kyger Creek Power Plant.

Differences between the hourly modeled SO_2 emission rates and hourly SO_2 emission rates reported to CAMD for the Gavin and Kyger Creek power plants is summarized in Table 2I.

[9] See page 4 of Ohio Remarks – Attachment at: https://www.epa.gov/sulfur-dioxide-designations/so2-designations-round-2-ohio-state-recommendation-and-epa-response

A count of the number of hours over a range of differences in the modeled and CAMD reported hourly emission rates (in pounds per hour) are summarized in Table 2J for the Gavin and Kyger Creek power plants. Each facility has two (2) separate stacks that vent multiple boiler units. Differences in modeled and reported SO_2 emission rates are nearly all within several hundred pounds of each other. The differences in Gavin appear to be more substantial with many hours having hourly emission differences of over a thousand pounds per hour. This seems to indicate substantial over reporting of emissions for this facility.

Table 2K. Table showing the difference between modeled and CAMD hourly emission rates (in pounds per hour) for the Gavin and Kyger Creek power plants, each having two stacks.

Gavin Power Plant

Gavin, Stack 1		**Gavin, Stack 2**	
Bin	**Frequency**	**Bin**	**Frequency**
-3,000	859	-3,000	636
-2,000	449	-2,000	436
-1,000	1,923	-1,000	2,000
0	17,874	0	16,081
1,000	4,945	1,000	6,908
2,000	242	2,000	194
More	12	More	49

Kyger Creek Power Plant

Kyger Creek, Stack 1		**Kyger Creek Stack 2**	
Bin	Frequency	Bin	Frequency
-3,000	1	-3,000	0
-2,000	0	-2,000	0
-1,000	1	-1,000	1
0	13,388	0	12,000
1,000	12,817	1,000	14,302
2,000	7	2,000	0
More	90	More	1

2.4.2.2.4. Modeling Parameter: Meteorology and Surface Characteristics

As noted in the Modeling TAD, the most recent 3 years of meteorological data (concurrent with the most recent 3 years of emissions data) should be used in designations efforts. The selection of data should be based on spatial and climatological (temporal) representativeness. The representativeness of the data is determined based on: 1) the proximity of the meteorological monitoring site to the area under consideration, 2) the complexity of terrain, 3) the exposure of the meteorological site, and 4) the period of time during which data are collected. Sources of meteorological data include National Weather Service (NWS) stations, site-specific or onsite data, and other sources such as universities, Federal Aviation Administration (FAA), and military stations.

For the area of analysis for the Mountaineer Power Plant area, the state selected the surface meteorology from Huntington, West Virginia, Tri-State Airport automated surface observation system (ASOS) based surface data, paired with Pittsburgh Upper Air Data as processed by Ohio EPA for use in the Gavin/Kyger Creek Plant 1-Hour SO_2 SIP Modeling submitted to the EPA as part of the response to the 120-Day Letter on April 19, 2016.[10] This data set is a revised version of the data set used in the original filing to support the recommended designation dated September 2015.[11] No changes appear to have been made to the meteorological data processing used in West Virginia's most recent modeling analysis; they appear to be identical to the 120-day submission files.

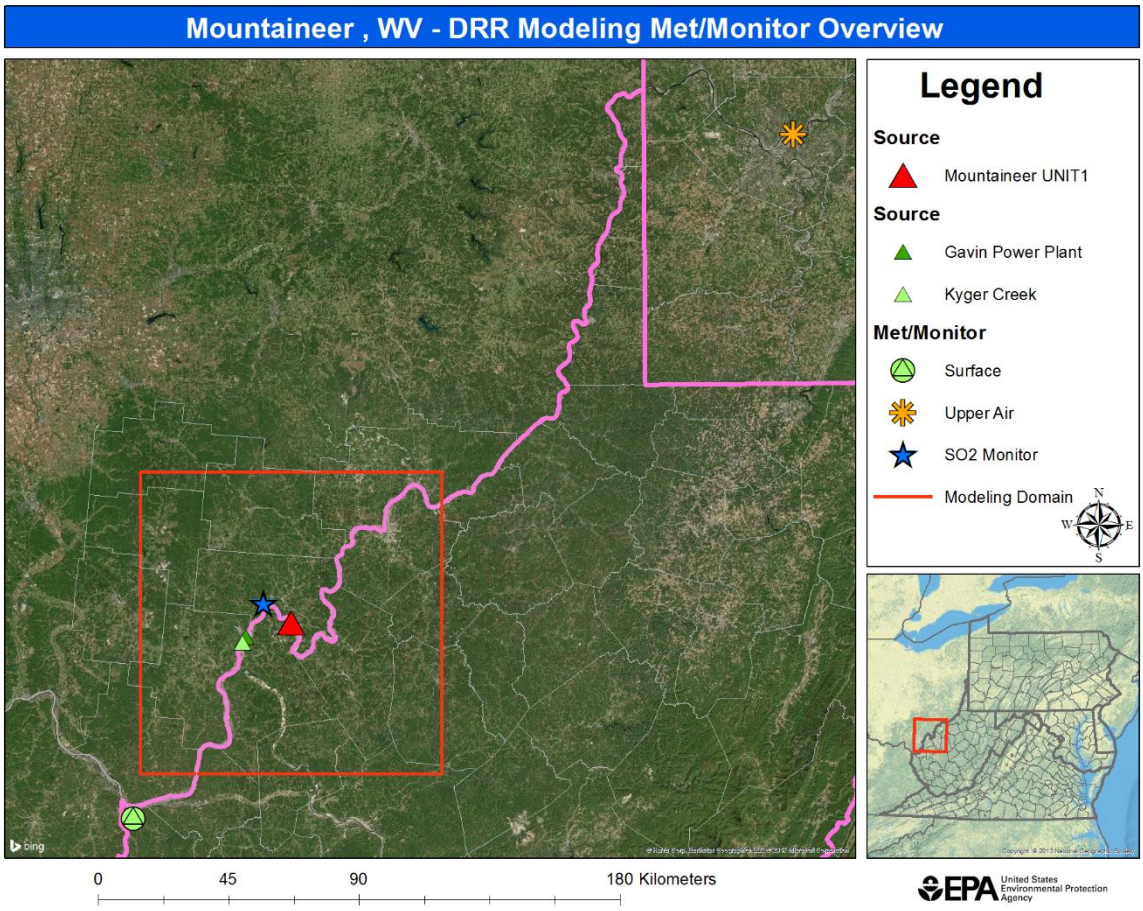
West Virginia submitted the final processed meteorological data sets for 2012-2014. Processing information was not included in the final reports submitted. Elevation and anemometer height information was checked via the final AERMET surface file. The anemometer height was confirmed and the surface station elevation was found to be off by a few meters, which is not expected to impact the final modeling analysis.

The report included with the modeling analysis noted that the surface meteorological data was altered to resolve an issue discovered with the cloud cover data for the Huntington Tri-State Airport data. For 2014, unrealistic calculations of mixing heights were noted during periods when a large number of noncontiguous hours were being substituted by AERMET or there were apparent errors in the reported cloud cover data based on a review of other available sky cover data in the region. The substitution performed by Ohio EPA resolved the unrealistic mixing height calculations observed in the surface methodological data set.

[10] Ohio Environmental Protection Agency, *Dispersion Modeling Analysis for General James M. Gavin Source Area: 2010 SO_2 NAAQS: Technical Support Document for the General James M. Gavin/Kyger Creek Station Power Plant Source Area*, April 19, 2016, pages 2-4.
[11] Ohio Environmental Protection Agency, *State of Ohio 2010 Revised Sulfur Dioxide National Ambient Air Quality Standard Recommended Source Area Designation: General James M Gavin and Kyger Creek Station Power Plants*, September 2015, Appendix A, page 2.

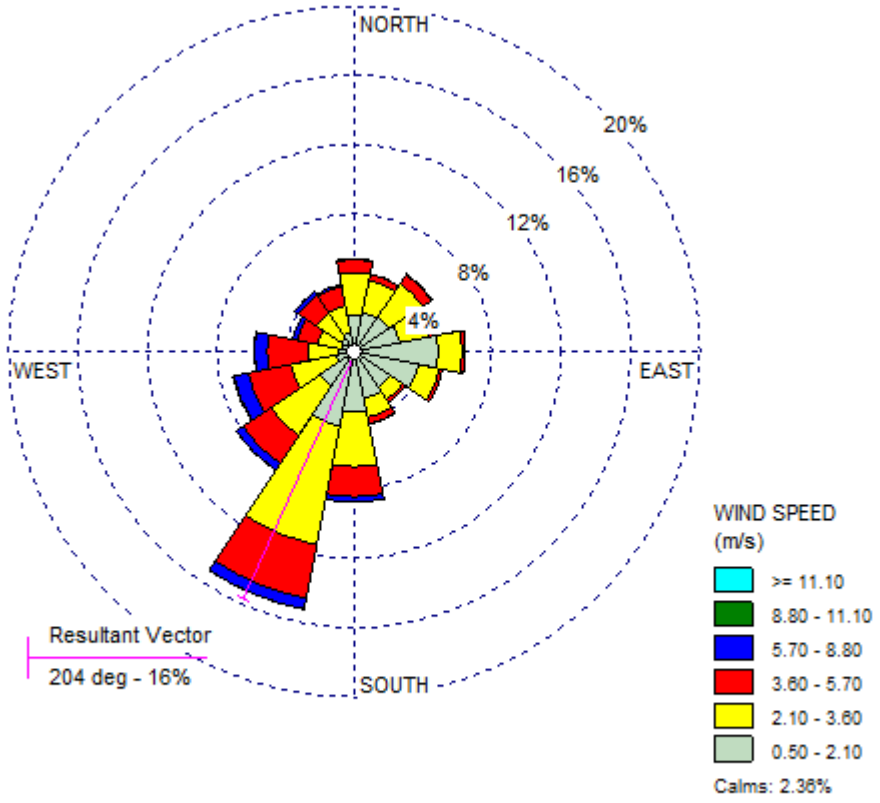
In Figure 2L, generated by the EPA, the locations of the NWS stations used in the final modeling analysis is shown relative to the area of analysis.

Figure 2L. Area of Analysis and the NWS Stations in the Mason County Area



As part of its recommendation, the state provided the 3-year surface wind rose for the Huntington Tri-State Airport. In Figure 2M, the frequency and magnitude of wind speed and direction are defined in terms of from where the wind is blowing. Predominant wind directions were from the south-southwest. Periods of relatively low wind speeds were also present from an easterly direction. Given these wind fields, emissions are generally pushed into Meigs County, OH.

Figure 2M. Huntington Tri-State Airport Cumulative Annual Wind Rose for Years 2012-2014



Meteorological data from the above surface and upper air NWS stations were used in generating AERMOD-ready files with the AERMET processor. The output meteorological data created by the AERMET processor (version 15181) is suitable for being applied with AERMOD input files for AERMOD modeling runs. West Virginia did not use the low wind (ADJ U*) option in its final modeling analysis. Since AERMET was used in default mode, there were no issues with using the older version since the low wind (ADJ U*) option that contained a known formulation bug was not used. Raw meteorological files were not included in the modeling analysis. The final processed meteorological data was taken from a previous analysis for the Gavin/Kyger Creek analysis done by the OH EPA. These two (2) power plant are approximately 16 to 18 kilometers southwest of the Mountaineer Power Plant located downstream along the Ohio River in Gallia County, OH.

Hourly surface meteorological data records are read by AERMET, and include all the necessary elements for data processing. However, wind data taken at hourly intervals may not always portray wind conditions for the entire hour, which can be variable in nature. Hourly wind data may also be overly prone to indicate calm conditions, which are not modeled by AERMOD. In order to better represent actual wind conditions at the meteorological tower, wind data of 1-minute duration was provided from the Huntington Tri-State Airport but in a different formatted file to be processed by a separate preprocessor, AERMINUTE. These data were subsequently integrated into the AERMET processing to produce final hourly wind records of AERMOD-ready meteorological data that better estimate actual hourly average conditions and that are less prone to over-report calm wind conditions. This allows AERMOD to apply more hours of meteorology to modeled inputs, and therefore produce a more complete set of concentration estimates. As a guard against excessively high concentrations that could be produced by AERMOD in very light wind conditions, the state set a minimum threshold of 0.5 meters per second in processing meteorological data for use in AERMOD. In setting this threshold, no wind speeds lower than this value would be used for determining concentrations. This threshold was specifically applied to the 1-minute wind data.

As noted previously in this section, only the final processed meteorological data was included in the state's most recent modeling analysis. The final processed meteorological data was lifted from an earlier modeling analysis completed by the OH EPA for the Gavin and Kyger Creek power plants located downstream from the Mountaineer Power Plant in Gallia County, OH, along the Ohio River. This data should be representative of wind patterns near all three facilities included in West Virginia's most recent modeling analysis.

2.4.2.2.5. Modeling Parameter: Geography, Topography (Mountain Ranges or Other Air Basin Boundaries) and Terrain

The terrain in the area of analysis is best described as generally hilly. The Mountaineer Power Plant sits along the Ohio River near New Haven, WV. Terrain rises approximately 80 meters as one moves away from the river. Similar terrain is also located across the Ohio River in Meigs County, OH. Terrain is also similar for the two (2) Ohio power plants included in West Virginia's most recent modeling analysis.

To account for these terrain changes, the AERMAP terrain program within AERMOD was used to specify terrain elevations for all the receptors. The receptor grid for the study used DEM data sourced from the Multi-Resolution Land Characterization (MRLC) System at a 1/3 arc second resolution in geo tiff format and processed through AERMAP Version 11103. EPA concludes that the receptor grid was developed properly and should capture the maximum impacts of the Mountaineer Power Plant and allow the assessment of impacts of the Mountaineer Power Plant's emissions near the Gavin/Kyger Creek Power Plant area, including where DRR SO_2 monitors have been placed for those listed sources.

2.4.2.2.6. Modeling Parameter: Background Concentrations of SO_2

The Modeling TAD offers two mechanisms for characterizing background concentrations of SO_2 that are ultimately added to the modeled design values: 1) a "tier 1" approach, based on a monitored design value, or 2) a temporally varying "tier 2" approach, based on the 99th percentile monitored concentrations by hour of day and season or month. For this area of analysis, the state revised its background SO_2 concentration from a conservative, uniform value of 10 ppb in its 120-day modeling analysis to more realistic time-varying SO_2 background concentrations that vary by season and hour-of-day in its most recent submission, consistent with EPA guidance. A brief discussion regarding this change was included in West Virginia's October 20, 2017 letter included in its most recent modeling submission.

The SO_2 background concentration data was provided by Ohio EPA and is from the Pomeroy, Meigs County site (ID# 39-105-1001), which last reported data in 2012 on EPA's Air Trends website[12]. The background concentrations for this area of analysis were determined by the state to vary from 36.7 micrograms per cubic meter ($\mu g/m^3$), equivalent to 14 ppb[13], to 2.6 $\mu g/m^3$ (1 ppb), with an average value of 13.6 $\mu g/m^3$ (5.2ppb). EPA believes these values are representative of background in the area.

2.4.2.3. Summary of Modeling Inputs and Results

The AERMOD modeling input parameters for the Mason County area of analysis are summarized below in Table 2N.

[12] https://www.epa.gov/air-trends/air-quality-design-values#previous

[13] The SO_2 NAAQS level is expressed in ppb but AERMOD gives results in $\mu g/m^3$. The conversion factor for SO_2 (at the standard conditions applied in the ambient SO_2 reference method) is 1ppb = approximately 2.619 $\mu g/m^3$.

Table 2N. Summary of AERMOD Modeling Input Parameters for the Area of Analysis for the Mason County Area

Input Parameter	Value
AERMOD Version	16216r
Dispersion Characteristics	Rural
Modeled Sources	3
Modeled Stacks	5
Modeled Structures	47+
Modeled Fencelines	None
Total receptors	17,445
Emissions Type	Actual (Revised by Ohio)
Emissions Years	2012-14
Meteorology Years	2012-14
NWS Station for Surface Meteorology	Huntington Tri-State Airport, WV
NWS Station Upper Air Meteorology	Pittsburgh International Airport, PA
NWS Station for Calculating Surface Characteristics	Huntington Tri-State Airport, WV
Methodology for Calculating Background SO_2 Concentration	Tier 2 Seasonal Hourly Varying
Calculated Background SO_2 Concentration	1.0 – 14.0 ppb

The results presented below in Table 2O show the magnitude and geographic location of the highest predicted modeled concentration based on the input parameters.

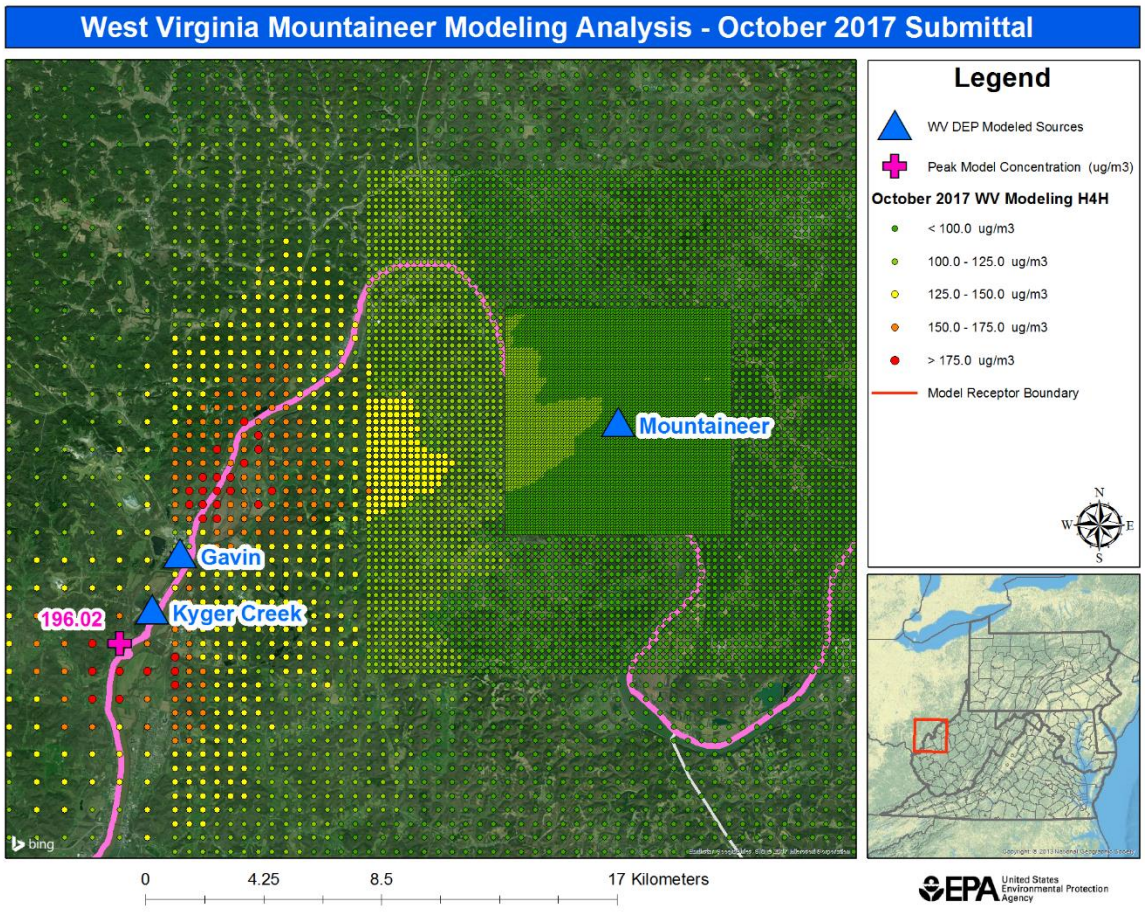
Table 2O. Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentration Averaged Over Three Years for the Area of Analysis for the Mason County Area

		Receptor Location UTM zone 17		**99th percentile daily maximum 1-hour SO_2 Concentration (µg/m³)**	
Averaging Period	**Data Period**	**UTM East**	**UTM North**	**Modeled concentration (including background)**	**NAAQS Level**
99th Percentile 1-Hour Average	2012-14	401103	4306858	196.02	196.4*

*Equivalent to the 2010 SO_2 NAAQS of 75 ppb reflecting a 2.619 µg/m³ conversion factor

The state's modeling indicates that the highest predicted 99th percentile daily maximum 1-hour concentration within the chosen modeling domain is 196.02 μg/m^3, equivalent to 74.8 ppb. This modeled concentration included a background concentration of SO_2, and is based on actual emissions from the three (3) facilities included in the state's most recent modeling analysis. Figure 2P below was produced using GIS software for West Virginia's most recent modeling analysis, and indicates that the predicted value occurred approximately 1.4 km southwest of the Kyger Creek Power Plant in Gallia County, OH and slightly over 17 km southwest of the Mountaineer Power Plant in Mason County, WV. The state's receptor grid is also shown in Figure 2P.

Figure 2P. Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations Averaged Over Three Years for the Mason County Area



The modeling submitted by the state indicates that the 1-hour SO_2 NAAQS is attained at all receptors over the model receptor grid. West Virginia's peak model concentration occurs approximately17 km southwest of the Mountaineer Plant, closer to the Kyger Creek and Gavin sources in Ohio.

2.4.3. The EPA's Assessment of the Modeling Information Provided by the State

West Virginia's modeling analysis addresses the source exclusion deficiency identified in its original January 2017 submission. The modeling shows concentrations including a suitable background concentration that are below the standard at all model receptors. The remainder of Mason County that EPA proposed as Unclassifiable will be categorized in our final action as Attainment/Unclassifiable.

2.5. Emissions and Emissions-Related Data, Meteorology, Geography, and Topography for the Mason County Area

These factors have been incorporated into the air quality modeling efforts and results discussed above. The EPA is giving consideration to these factors by considering whether they were properly incorporated and by considering the air quality concentrations predicted by the modeling.

2.6. Jurisdictional Boundaries in the Mason County Area

Existing jurisdictional boundaries are considered for the purpose of informing the EPA's designation action for Mason County. Our goal is to base designations on clearly defined legal boundaries, and to have these boundaries align with existing administrative boundaries when reasonable.

West Virginia updated its recommendation for Mason County in a letter dated October 20, 2017. West Virginia recommended that Mason County be designated Unclassifiable/Attainment in its entirety, on the basis that the state's updated modeling information demonstrates attainment of the 2010 SO_2 NAAQS, even with the inclusion of emissions from the nearby Gavin and Kyger Creek Power Plants in Ohio. West Virginia feels that on the basis of this revised modeling and all other previously submitted information, no part of Mason County should be designated Unclassifiable.

2.7. The EPA's Assessment of the Available Information for the Mason County Area

EPA has reviewed the most recently available air monitoring information available in the northern portion of Mason County along with air quality data in the adjacent area in Ohio. While this information is not yet certified, preliminary data do not indicate that the area is violating the NAAQS. Although the northern portion of Mason County now contains an air quality monitor, the amount of data that has been collected is insufficient to produce a design value. However, EPA anticipates that a design value will be available in 2020. In addition, EPA has carefully reviewed the revised modeling analysis submitted by West Virginia in October 2017 in conjunction with their revised recommendation that the entirety of Mason County be designated Unclassifiable/Attainment. The revised modeling addressed EPA's main concern expressed in the 120-day TSD for the need to include additional sources from Ohio explicitly in the modeling analysis. The revised analysis, which includes the nearby Ohio sources, shows that the 1-hour SO_2 NAAQS is being attained at all receptors over the model receptor grid.

The EPA noted in the intended designation TSD that we could not determine at that time based on available information whether the area around Mountaineer is contributing to SO_2 air quality and, possibly, a violation of the SO_2 standard in the area around the Ohio facilities. However, the EPA has re-evaluated this conclusion and determined that available information does not indicate that there is a NAAQS violation in the Ohio area or any other area surrounding the Mountaineer facility. Therefore, available information does not indicate that Mountaineer is contributing to a NAAQS violation in any nearby area. As stated in Chapter 1 of the Technical Support Document: Final Round 3 Area Designations for the 2010 1-Hour SO_2 Primary National Ambient Air Quality Standard, the EPA is clarifying that it interprets the phrase "does not contribute to ambient air quality in a nearby area that does not meet the NAAQS" within the definition of "attainment/unclassifiable area" to encompass situations where the EPA does not have available information indicating that an area in fact contributes to a NAAQS violation in a nearby area. For these reasons, the EPA is designating the Mason County area as attainment/unclassifiable.

Additionally, the available monitoring data does not contradict the revised modeling indicating that the northern portion of Mason County in West Virginia is meeting the 1-hour SO_2 NAAQS. Therefore, EPA now intends to designate all of Mason County as Attainment/Unclassifiable. EPA intends to use the county boundary for the designation and will not use the tax district boundaries as discussed in the proposal.

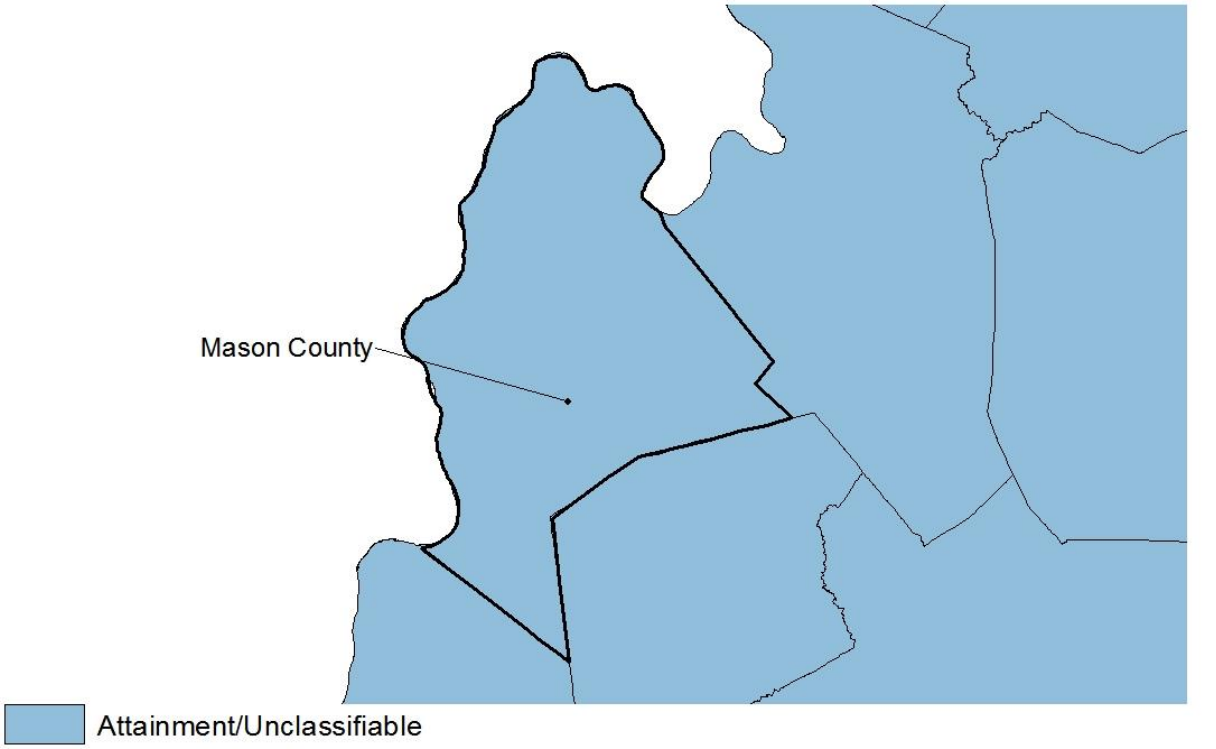
The EPA believes that our final designation of Attainment/Unclassifiable for Mason County in its entirety will ensure clearly defined legal boundaries. We find the county boundary to be a suitable basis for defining our designated areas.

2.8. Summary of Our Final Designation for the Mason County Area

After careful evaluation of the state's recommendation and supporting information, as well as all available relevant information, the EPA is designating all of Mason County Attainment/Unclassifiable for the 2010 SO_2 NAAQS, based on available air quality data and revised modeling, which indicates that this area is meeting the NAAQS and is not contributing to nearby areas that do not meet the NAAQS.

Figure 2Q shows the boundary of this final designated area.

Figure 2Q. Boundary of the Final Mason County Area



At this time, our final designations for West Virginia only apply to this area and the other areas presented in this chapter. The EPA intends in a separate action to evaluate and designate all remaining undesignated areas in West Virginia by December 31, 2020.