Technical Support Document:

Chapter 18
Intended Round 3 Area Designations for the 2010 1-Hour SO_2 Primary National Ambient Air Quality Standard for the State of Maryland

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). The CAA defines a nonattainment area as an area that does not meet the NAAQS or that contributes to a nearby area that does not meet the NAAQS. An attainment area is defined by the CAA as any area that meets the NAAQS and does not contribute to a nearby area that does not meet the NAAQS. Unclassifiable areas are defined by the CAA as those that cannot be classified on the basis of available information as meeting or not meeting the NAAQS. In this action, the EPA has defined a nonattainment area as an area that the EPA has determined violates the 2010 SO_2 NAAQS or contributes to a violation in a nearby area, based on the most recent 3 years of air quality monitoring data, appropriate dispersion modeling analysis, and any other relevant information. An unclassifiable/attainment area is defined by the EPA as an area that either: (1) based on available information including (but not limited to) appropriate modeling analyses and/or monitoring data, the EPA has determined (i) meets the 2010 SO_2 NAAQS, and (ii) does not contribute to ambient air quality in a nearby area that does not meet the NAAQS; or (2) was not required to be characterized under 40 CFR 51.1203(c) or (d) and the EPA does not have available information including (but not limited to) appropriate modeling analyses and/or monitoring data that suggests that the area may (i) not be meeting the NAAQS, or (ii) contribute to ambient air quality in a nearby area that does not meet the NAAQS[1]. An unclassifiable area is defined by EPA as an area that either: (1) was required to be characterized by the state under 40 CFR 51.1203(c) or (d), has not been previously designated, and on the basis of available information cannot be classified as either: (i) meeting or not meeting the 2010 SO_2 NAAQS, or (ii) contributing or not contributing to ambient air quality in a nearby area that does not meet the NAAQS; or (2) was not required to be characterized under 40 CFR 51.1203(c) or (d) and EPA does have available information including (but not limited to) appropriate modeling analyses and/or monitoring data that suggests that the area may (i) not be meeting the NAAQS, or (ii) contribute to ambient air quality in a nearby area that does not meet the NAAQS.

[1] The term "designated attainment area" is not used in this document because the EPA uses that term only to refer to a previous nonattainment area that has been redesignated to attainment as a result of the EPA's approval of a state-submitted maintenance plan.

This technical support document (TSD) addresses designations for nearly all remaining undesignated areas in the State of Maryland for the 2010 SO_2 NAAQS. In previous final actions, the EPA has issued designations for the 2010 SO_2 NAAQS for selected areas of the country.[2] The EPA is under a December 31, 2017, deadline to designate the areas addressed in this TSD as required by the U.S. District Court for the Northern District of California.[3] We are referring to the set of designations being finalized by the December 31, 2017 deadline as "Round 3" of the designations process for the 2010 SO_2 NAAQS. After the Round 3 designations are completed, the only remaining undesignated areas will be those where a state began timely operation of a new SO_2 monitoring network meeting EPA specifications referenced in EPA's SO_2 Data Requirements Rule (DRR). (80 FR 51052). The EPA is required to designate those remaining undesignated areas by December 31, 2020.

Maryland submitted its first recommendation regarding designations for the 2010 1-hour SO_2 NAAQS on April 19, 2011, and recommended that all counties be unclassifiable The state submitted updated air quality analysis and updated recommendations several times between November 20, 2015, and EPA's final action designating areas for Round 2 on July 12, 2016 (*See* 81 FR 45039). In its April 19, 2011, submission to the EPA for designations for the 2010 SO_2 NAAQS, Maryland recommended that an area that includes Wagner, specifically the entirety of Anne Arundel County, be designated as unclassifiable. The 2011 submission, however, did not include any supporting analyses. Subsequently, in its November 20, 2015, updated designation recommendation submission to the EPA, Maryland recommended that the area surrounding Wagner be designated as attainment. Maryland, however, did not recommend any particular boundary for the area in its November 20, 2015, submission. Maryland also stated that no monitors in Maryland violated the 1-hour SO_2 NAAQS, and the EPA has confirmed this. On January 15, 2016, Maryland submitted a supplement to its 2015 recommendation which included a modeling analysis for the area around Wagner. On April 14, 2016, Maryland submitted an alternative model request for use of a non-regulatory default/beta Adjust U* option in their modeling analyses for the area surrounding Wagner. On April 19, 2016, Maryland submitted additional modeling analyses and information, in which they stated that their preferred recommendation for the Wagner area was attainment. Maryland's recommendations and other information is contained in the docket file for this action which can be found here: https://www.regulations.gov/docket?D=EPA-HQ-OAR-2014-0464. Maryland most recently updated their recommendations for two areas not designated in Round 1 or Round 2 on December 19, 2016. Maryland recommended that Charles County and Prince George's County be attainment. In our intended designations, we have considered all the submissions from the state, except where a recommendation in a later submission regarding a particular area indicates that it completely replaces an earlier recommendation for that area we have considered the recommendation in the later submission.

For the areas in Maryland that are part of the Round 3 designations process, Table 1 identifies EPA's intended designations and the counties or portions of counties to which they would apply. It also lists Maryland's current recommendations. The EPA's final designation for these areas

[2] A total of 94 areas throughout the U.S. were previously designated in actions published on August 5, 2013 (78 FR 47191), July 12, 2016 (81 FR 45039), and December 13, 2016 (81 FR 89870).
[3] *Sierra Club v. McCarthy*, No. 3-13-cv-3953 (SI) (N.D. Cal. Mar. 2, 2015).

will be 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 Intended Designations and the Designation Recommendations by Maryland

Area/County	Maryland's Recommended Area Definition	Maryland's Recommended Designation	EPA's Intended Area Definition	EPA's Intended Designation
Charles County, Maryland	Charles County	Attainment	Same as State's Recommendation	Unclassifiable/ Attainment
Prince George's County Maryland	Prince George's County	Attainment	Same as State's Recommendation	Unclassifiable/ Attainment
Remaining Undesignated Areas to Be Designated in this Action*	County or City Boundary	Unclassifiable	Same as State's Recommendation	Unclassifiable/ Attainment

* Except for areas that are associated with sources for which Maryland elected to install and began timely operation of a new, approved SO_2 monitoring network meeting EPA specifications referenced in the EPA's SO_2 DRR (*see* Table 2), the EPA intends to designate the remaining undesignated counties in Maryland as "unclassifiable/attainment" as these areas were not required to be characterized by the state under the DRR and the EPA does not have available information including (but not limited to) appropriate modeling analyses and/or monitoring data that suggests that the areas may (i) not be meeting the NAAQS, or (ii) contribute to ambient air quality in a nearby area that does not meet the NAAQS. These areas that we intend to designate as unclassifiable/attainment (those to which this row of this table is applicable) are identified more specifically in sections 3, 4 and 5of this TSD.

Areas for which Maryland elected to install and began operation of a new, approved SO_2 monitoring network are listed in Table 2. The EPA is required to designate these areas, 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. The Verso Luke Paper facility is located in Allegany County in Maryland. Two monitors are being placed in Allegany County as part of the network to assess air quality in the vicinity of the Verso Luke facility. EPA is not proposing a designation for Allegany County at this time. Maryland originally recommended this area to be unclassifiable in their 2011 recommendation, but did not make an updated recommendation for this county. A monitor is also being placed in Mineral County, West Virginia, as part of the network to assess the impacts of the Verso Luke Paper facility. A discussion of the implications of this action in West Virginia is contained in the TSD for that state.

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

Area	Source(s)
Allegany County	Verso Luke Paper Company

Areas that the EPA previously designated unclassifiable in Round 1 (*see* 78 FR 47191) and Round 2 (*see* 81 FR 45039 and 81 FR 89870) are not affected by the designations in Round 3 unless otherwise noted. In Round 2, Baltimore City was designated unclassifiable/attainment, and portions of Anne Arundel County and Baltimore County were designated nonattainment.

2. General Approach and Schedule

Updated designations guidance documents were issued by the EPA through a July 22, 2016, memorandum and a March 20, 2015, memorandum from Stephen D. Page, Director, U.S. EPA, Office of Air Quality Planning and Standards, to Air Division Directors, U.S. EPA Regions I-X. These memoranda supersede earlier designation guidance for the 2010 SO_2 NAAQS, issued on March 24, 2011, and identify factors that the EPA intends to evaluate in determining whether areas are in violation of the 2010 SO_2 NAAQS. The documents also contain the factors that the EPA intends to evaluate in determining the boundaries for designated areas. These factors include: 1) air quality characterization via ambient monitoring or dispersion modeling results; 2) emissions-related data; 3) meteorology; 4) geography and topography; and 5) jurisdictional boundaries.

To assist states and other interested parties in their efforts to characterize air quality through air dispersion modeling for sources that emit SO_2, the EPA released its most recent version of a draft document titled, "SO_2 NAAQS Designations Modeling Technical Assistance Document" (Modeling TAD) in August 2016.[4]

Readers of this chapter of this TSD should refer to the additional general information for the EPA's Round 3 area designations in Chapter 1 (Background and History of the Intended Round 3 Area Designations for the 2010 1-Hour SO_2 Primary National Ambient Air Quality Standard) and Chapter 2 (Intended Round 3 Area Designations for the 2010 1-Hour SO_2 Primary National Ambient Air Quality Standard for States with Sources Not Required to be Characterized).
As specified by the March 2, 2015 court order, the EPA is required to designate by December 31, 2017, all "remaining undesignated areas in which by January 1, 2017 states have not installed and begun operating a new SO_2 monitoring network meeting EPA specifications referenced in EPA's" DRR. The EPA will therefore designate by December 31, 2017, areas of the country that are not, pursuant to the DRR, timely operating EPA-approved and valid monitoring networks. The areas to be designated by December 31, 2017, include the areas associated with two sources

[3] https://www.epa.gov/sites/production/files/2016-06/documents/so2modelingtad.pdf. In addition to this TAD on modeling, the EPA also has released a technical assistance document addressing SO_2 monitoring network design, to advise states that have elected to install and begin operation of a new SO_2 monitoring network. See Draft SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document, February 2016, https://www.epa.gov/sites/production/files/2016-06/documents/so2monitoringtad.pdf.

in Maryland meeting DRR emissions criteria that states have chosen to be characterized using air dispersion modeling, and other areas not specifically required to be characterized by the DRR. Because many of the intended designations have been informed by available modeling analyses, this preliminary TSD is structured based on the availability of such modeling information. There is a section for each city/county for which modeling information is available. The remaining to-be-designated cities/counties are then addressed together in section 5.

The EPA does not plan to revise this TSD after consideration of state and public comment on our intended designation. A separate TSD will be prepared as necessary to document how we have addressed such comments in the final designations.

The following are definitions of important terms used in this document:

1) 2010 SO_2 NAAQS – The primary NAAQS for SO_2 promulgated in 2010. This NAAQS is 75 ppb, based on the 3-year average of the 99th percentile of the annual distribution of daily maximum 1-hour average concentrations. See 40 CFR 50.17.
2) Design Value – a statistic computed according to the data handling procedures of the NAAQS (in 40 CFR part 50 Appendix T) that, by comparison to the level of the NAAQS, indicates whether the area is violating the NAAQS.
3) Designated nonattainment area – an area that, based on available information including (but not limited to) appropriate modeling analyses and/or monitoring data, the EPA has determined either: (1) does not meet the 2010 SO_2 NAAQS, or (2) contributes to ambient air quality in a nearby area that does not meet the NAAQS.
4) Designated unclassifiable/attainment area – an area that either: (1) based on available information including (but not limited to) appropriate modeling analyses and/or monitoring data, the EPA has determined (i) meets the 2010 SO_2 NAAQS, and (ii) does not contribute to ambient air quality in a nearby area that does not meet the NAAQS; or (2) was not required to be characterized under 40 CFR 51.1203(c) or (d) and the EPA does not have available information including (but not limited to) appropriate modeling analyses and/or monitoring data that suggests that the area may (i) not be meeting the NAAQS, or (ii) contribute to ambient air quality in a nearby area that does not meet the NAAQS.[5]
5) Designated unclassifiable area – an area that either: (1) was required to be characterized by the state under 40 CFR 51.1203(c) or (d), has not been previously designated, and on the basis of available information cannot be classified as either: (i) meeting or not meeting the 2010 SO_2 NAAQS, or (ii) contributing or not contributing to ambient air quality in a nearby area that does not meet the NAAQS; or (2) was not required to be characterized under 40 CFR 51.1203(c) or (d) and the EPA does have available information including (but not limited to) appropriate modeling analyses and/or monitoring data that suggests that the area may (i) not be meeting the NAAQS, or (ii) contribute to ambient air quality in a nearby area that does not meet the NAAQS.
6) Modeled violation – a violation of the SO_2 NAAQS demonstrated by air dispersion modeling.

[5] The term "designated attainment area" is not used in this document because the EPA uses that term only to refer to a previous nonattainment area that has been redesignated to attainment as a result of the EPA's approval of a state-submitted maintenance plan.

7) Recommended attainment area – an area that a state, territory, or tribe has recommended that the EPA designate as attainment.
8) Recommended nonattainment area – an area that a state, territory, or tribe has recommended that the EPA designate as nonattainment.
9) Recommended unclassifiable area – an area that a state, territory, or tribe has recommended that the EPA designate as unclassifiable.
10) Recommended unclassifiable/attainment area – an area that a state, territory, or tribe has recommended that the EPA designate as unclassifiable/attainment.
11) Violating monitor – an ambient air monitor meeting 40 CFR parts 50, 53, and 58 requirements whose valid design value exceeds 75 ppb, based on data analysis conducted in accordance with Appendix T of 40 CFR part 50.
12) We, our, and us – these refer to the EPA.

3. Technical Analysis for the Charles County Area of Analysis

3.1. Introduction

The EPA must designate the Charles County, Maryland, area by December 31, 2017, because the area has not been previously designated and Maryland 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 Charles County.

3.2. Air Quality Monitoring Data for the Charles County Area of Analysis

There are no air quality monitors in Charles County, MD.

3.3. Air Quality Modeling Analysis for the Charles County Area of Analysis Addressing the Morgantown Power Station

3.3.1. Introduction

This section 3.3 presents all the available air quality modeling information for a portion of Charles County that includes the Morgantown Generating Station. (This portion of Charles County will often be referred to as "the Charles County area" within this section 3.3). This area contains the following SO_2 source around which Maryland is required by the DRR to characterize SO_2 air quality, or alternatively to establish an SO_2 emissions limitation of less than 2,000 tons per year:

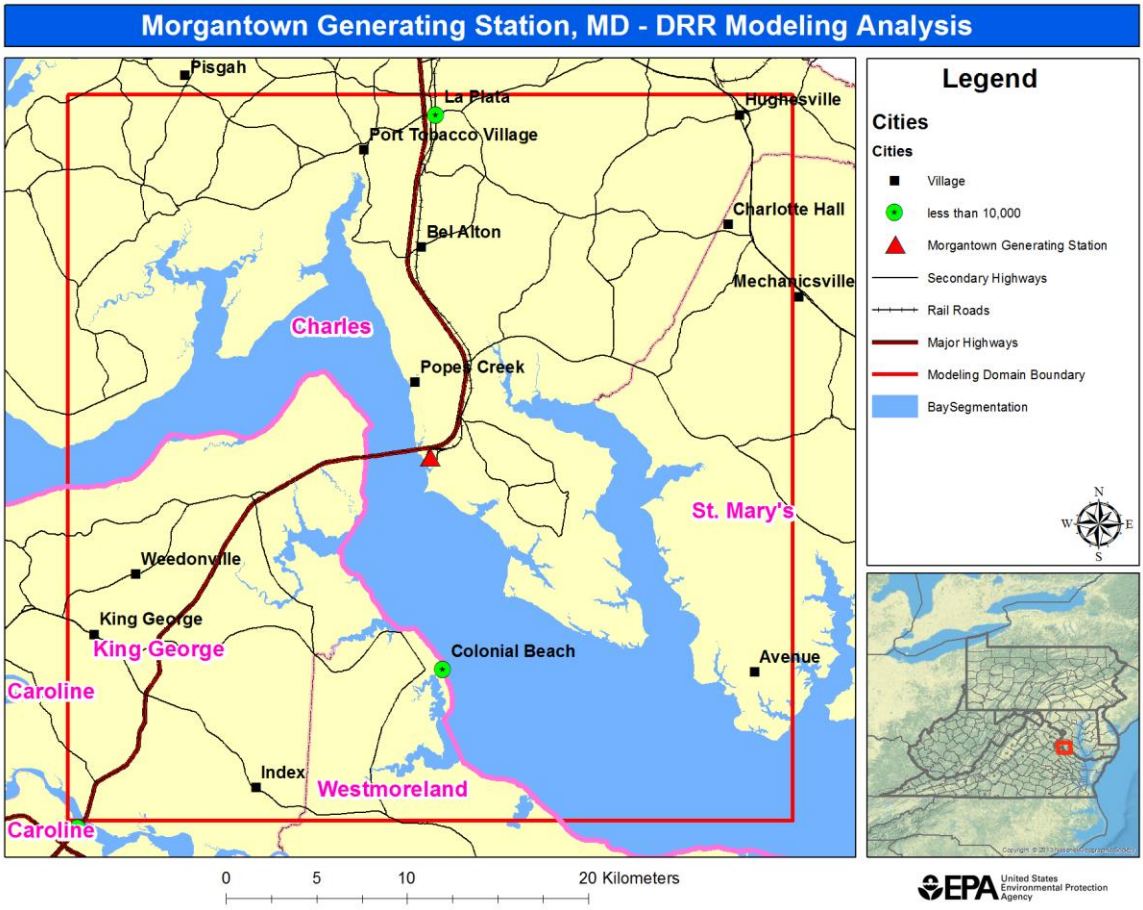
- The Morgantown Generating Station emits 2,000 tons or more annually. According to emissions data for EPA's Clean Air Markets Division (CAMD), the Morgantown Generating Station emitted 2,961.8 tons of SO_2 in 2014. This source meets the DRR criteria and thus is on the SO_2 DRR Source list, and Maryland has chosen to characterize it via modeling.

In its submission, Maryland recommended that the area surrounding the, Morgantown Generating Station, specifically all of Charles County, be designated as attainment, based in part on an assessment and characterization of air quality impacts from this facility. This assessment and characterization was performed using air dispersion modeling software, i.e., AERMOD, analyzing actual emissions. After careful review of the state's assessment, supporting documentation, and all available data, the EPA intends to modify the state's recommendation and designate the area as unclassifiable/attainment. Our reasoning for this conclusion is explained in a later section of this TSD, after all the available information is presented.

As shown in Figure 1, the area that Maryland has assessed via air quality modeling is the southern portion of Charles County, located south of Washington, DC. This area also includes portions of Saint Mary's County, MD, and King George and Westmoreland Counties in Virginia. Figure 1 shows the Morgantown Generating Station is located in southern Charles County, near the Potomac River. The EPA's intended unclassifiable/attainment designation boundary for the

Charles County area is not shown in this figure, but is shown in a figure in the section below that summarizes our intended designation.

Figure 1. Map of the Charles County Area Addressing the Morgantown Generating Station.



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, as appropriate.

For this area, the EPA received and considered one modeling assessment from the state of Maryland. Before the final modeling report was submitted to EPA, a modeling protocol was developed to outline the procedures to follow for the final modeling analysis. The modeling protocol was based on relevant guidance outlined in EPA's Modeling Technical Assistance Document or TAD at the time of preparation. EPA was given the opportunity to review the modeling protocol and provide comments to MDE in March 2016, resulting in a final modeling protocol used in the final modeling analysis.

3.3.2. Modeling Analysis Provided by the State

The State of Maryland submitted a modeling analysis for the region surrounding the Morgantown Generating Station on December 19, 2016, prior to the January 13, 2017, DRR submission date.

3.3.2.1. 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 15181, which was the most up-to-date version at the time of submittal, using all regulatory default options. A discussion of the state's approach to the individual components is provided in the corresponding discussion that follows, as appropriate.

For state, local, and tribal air agencies that submitted SO_2 DRR modeling based on AERMOD version 15181 without any beta options selected (default mode), the SO_2 DRR modeling results would not be affected by the formulation bug found in the beta options of AERMOD version 15181 and, therefore should provide the same modeling results as the current version of AERMOD, version 16216r. However, any future AERMOD modeling performed for the SO_2 Round 3 designations process should use model version 16216r.

3.3.2.2. Modeling Parameter: Rural or Urban Dispersion

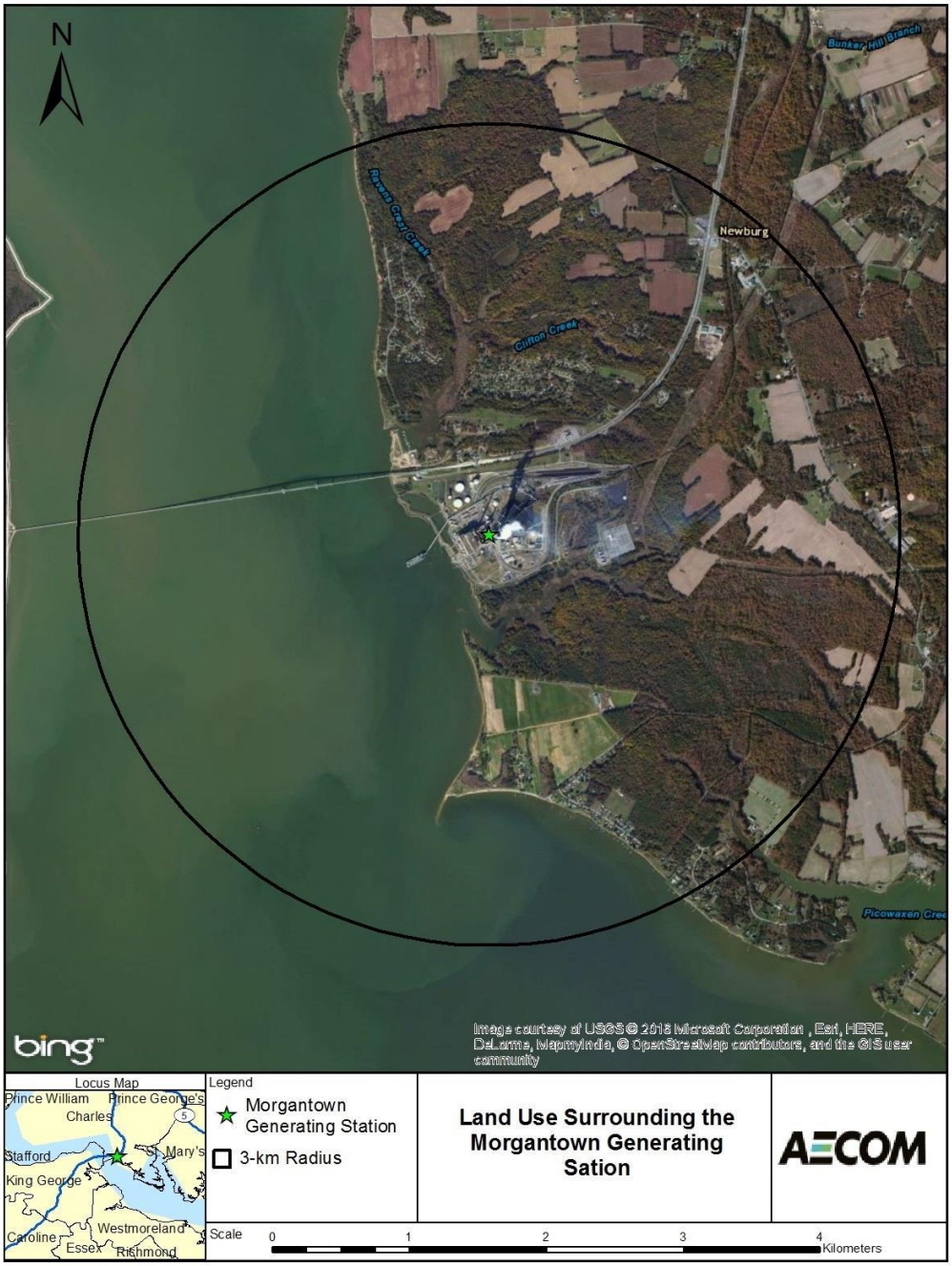
For any dispersion modeling exercise, the "urban" or "rural" determination of a source is important in determining the boundary layer characteristics that affect the model's prediction of downwind concentrations. For SO_2 modeling, the urban/rural determination is important because AERMOD invokes a 4-hour 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.

The application of AERMOD requires characterization of the local (within 3 kilometers) dispersion environment as either urban or rural, based on a USEPA-recommended procedure (commonly referred to as the Auer Method) that characterizes an area by prevalent land use. This land use approach classifies an area according to 12 land use types. In this scheme, areas of

industrial, commercial, and compact residential land use are designated urban. According to USEPA modeling guidelines, if more than 50% of an area within a 3-km radius of the facility is classified as rural, then rural dispersion coefficients are to be used in the dispersion modeling analysis. Conversely, if more than 50% of the area is urban, then the area will be classified as urban. Visual inspection of the 3-km area surrounding the Morgantown Generating Station (see Figure 2) clearly shows the area is rural. Therefore, AERMOD was run in the rural mode. EPA concurs with this assessment.

Figure 2. Land use Surrounding the Morgantown Generating Station



3.3.2.3. 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.

The primary source of SO_2 emissions (Morgantown Generating Station) in this area is described in the introduction to this section. For the Charles County area, the state has determined that there were no other sources emitting greater than 50 tpy of SO_2 within 20 km of the Morgantown Generating Station in any direction. No other sources beyond 20 km were determined by the state to have the potential to cause concentration gradient impacts within the area of analysis. Consequently, the state determined that this was the appropriate distance 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. EPA concurs with this assessment.

The modeling analysis was conducted using the following Cartesian receptor grid design. The receptor grid consisted of receptors spaced 25 meters apart along the fence line of the Morgantown Generating Station. The receptor grid spacing for the remainder of area of analysis chosen by the state is as follows:

Spacing: 100 m Extent: 0-3 km
Spacing: 250 m Extent: 3-5 km
Spacing: 500 m Extent: 5-10 km
Spacing: 1000 m Extent: 10-20 km

The receptor network contained 7,385 receptors. The receptor network covered most of Charles County as well as significant portions of Saint Mary's County and King George's County, VA. The network included a small portion of Westmorland County, VA.

Figures 3 and 4, included in the state's recommendation, show the state's chosen area of analysis surrounding the Morgantown Generating Station, 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 the state asserted would be considered ambient air relative to each modeled facility. Section 4.2 of the TAD states that receptors do not need to be located in areas where it is not feasible to place a monitor (water bodies, etc.). To avoid any risk of underestimating impacts, the grid used in this modeling analysis does not exclude any receptors that may be in such areas. The fence line for the Morgantown facility was visually confirmed with GIS overhead shots, and the EPA notes that the maximum concentration modeled is located outside the facility's potential ambient air boundary, as shown in Figure 7.

Figure 3: Area of Analysis (Receptor Grid) for the Charles County Area

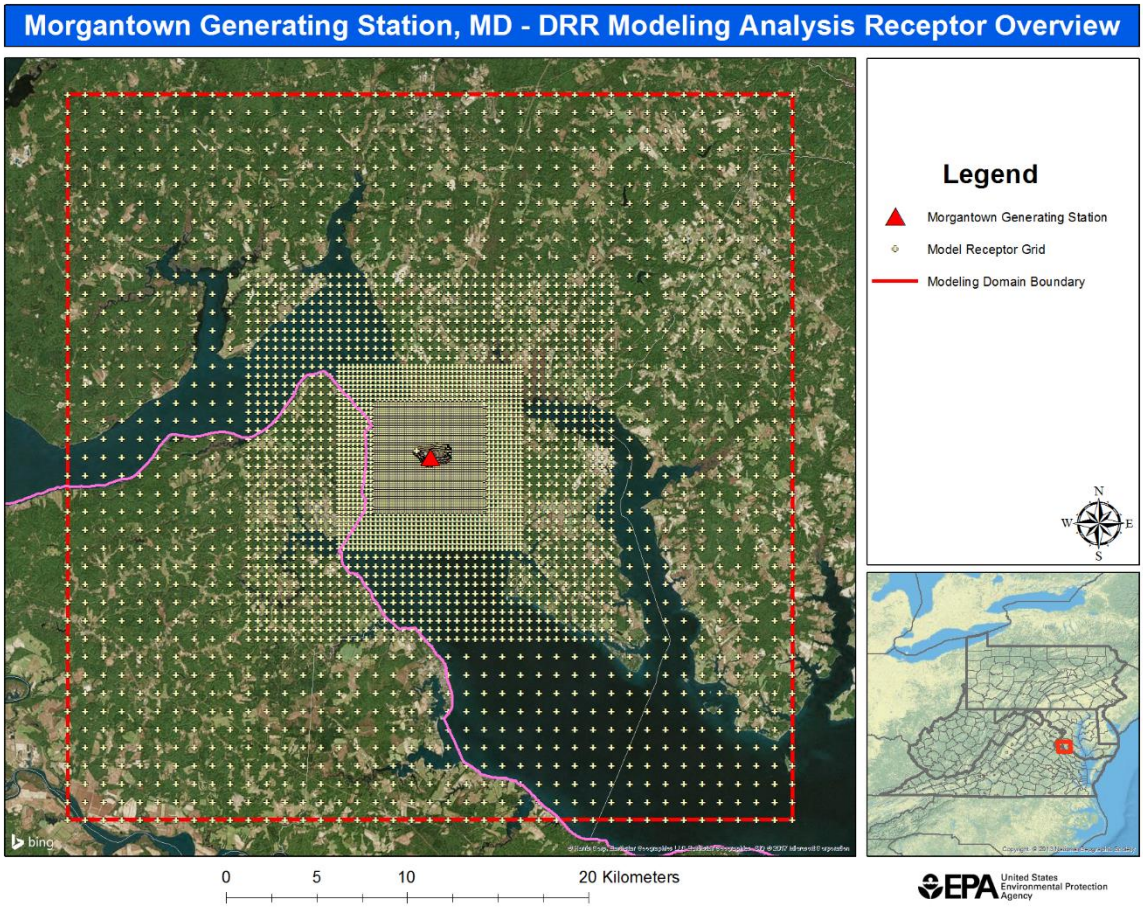
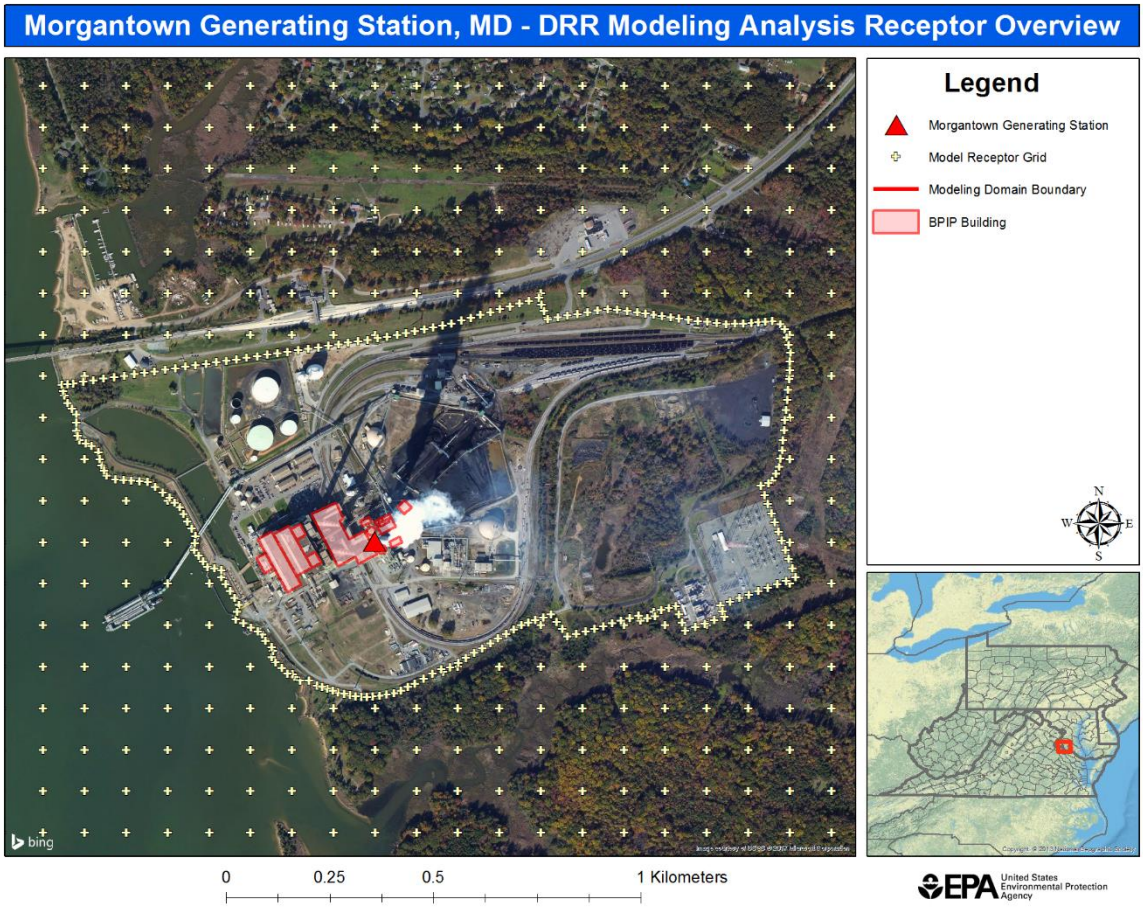


Figure 4. Fence Line Receptors for the Morgantown Generating Station



EPA has determined that the receptor grid used in the AERMOD modeling analysis is adequate to determine maximum ambient air SO_2 impacts in the area.

3.3.2.4. 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.

The state explicitly included the Morgantown Generating Station for modeling because this source is the largest in the area. Based on 2014 National Emissions Inventory(NEI) emissions information, the Morgantown Generating Station accounted for over 90% of the total SO_2 point source emission in Charles County. All other sources in or near the area are either too small or too distant to be explicitly modeled and therefore are adequately characterized by the monitored background levels included in the analysis. See section 3.3.2.8 for more information on background concentrations of SO_2.

The state characterized this source 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 adequately 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.

Based on comparisons between the modeling source characterization, including building and stack parameters, against publicly available information in permits and maps, the EPA concludes that the source characterization is appropriate.

3.3.2.5. 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 PTE or allowable) emissions rate that is federally enforceable and effective.

The EPA believes that continuous emissions monitoring systems (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."

As previously noted, the state included the Morgantown Generating Station in its modeling demonstration for the Charles County Area. The state has chosen to model this facility using actual emissions. This facility's 2012-2014 annual actual SO_2 emissions are summarized in the table below.

Table 3. Actual SO_2 Emissions Between 2012 – 2014 for the Morgantown Generating Station in the Charles County Area

	Modeled SO_2 Emissions (tpy)			CAMD SO_2 Emissions (TPY)		
Facility Name	**2012**	**2013**	**2014**	**2012**	**2013**	**2014**
Morgantown Generating Station	2,674.3	2,260.2	2,876.1	2944.2	2458.3	2961.8
Total Emissions from All Modeled Facilities in the State's Area of Analysis	2,674.3	2,260.2	2,876.1	2944.2	2458.3	2961.8

For the Morgantown Generating Station, the actual hourly emissions data were obtained from the continuous emissions monitor (CEMS) systems. EPA has verified that the hourly emissions used in the modeling, when converted to annual emissions, compare favorably with the annual emissions reported in the CAMD database as can be seen in the table above. Given the modeled concentrations were so far below the SO_2 NAAQS, the somewhat higher CAMD emissions, if modeled, would not be expected to show violations of the SO_2 NAAQS.

3.3.2.6. Modeling Parameter: Meteorology and Surface Characteristics

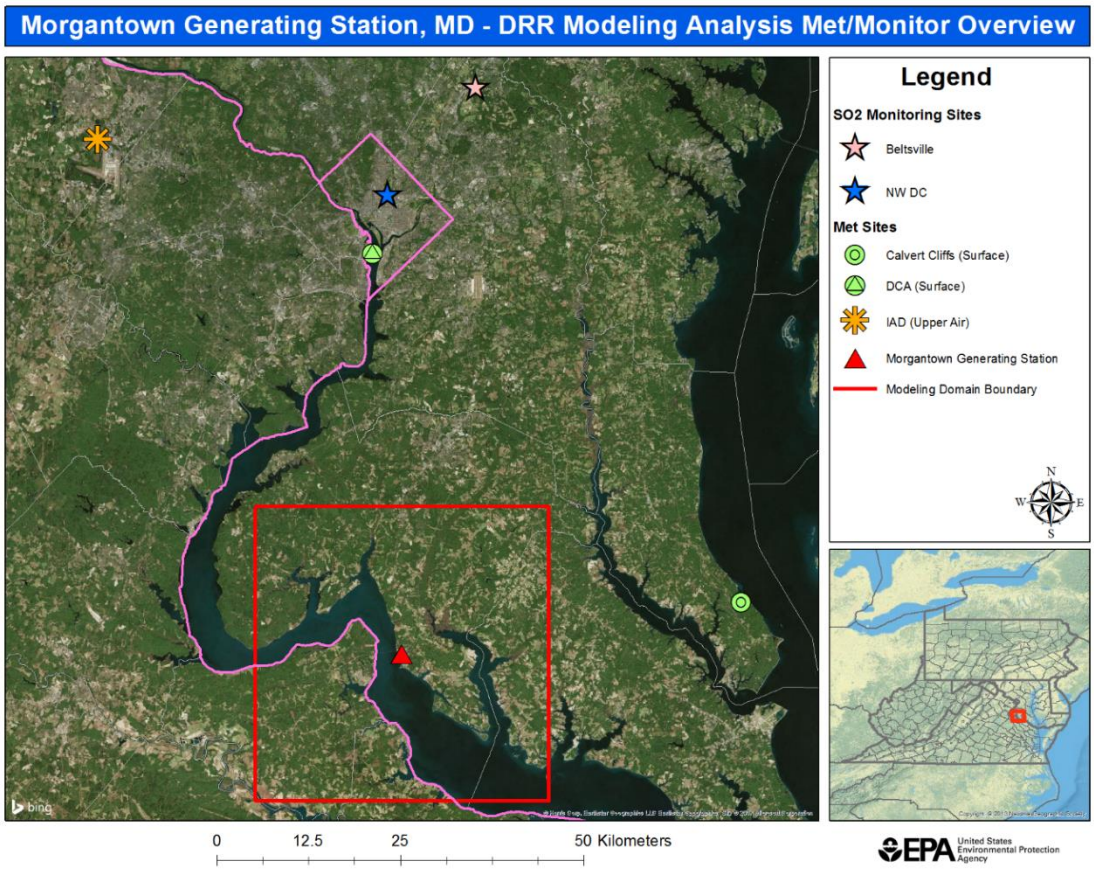
As noted in the Modeling TAD, the most recent 3 years of meteorological data (concurrent with the most recent 3 years of emissions data) should be used in designations efforts. The selection of data should be based on spatial and climatological (temporal) representativeness. The representativeness of 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 Charles County area, the state selected the surface meteorology from the Calvert Cliffs, MD, 60-meter Meteorological Tower which is located just over 45 kilometers east-northeast of the Morgantown Generating Station. Specifically, the Calvert Cliffs meteorological data meets the requirements contained in USEPA's *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (February 2000) by which a minimum one-year data set is to be used in a modeling analysis. In this instance three years (2012-2014) were used to be consistent with the Modeling TAD. The 60-meter tower data was supplemented with NWS night-time cloud cover observations from Washington National Airport and NWS upper air observations from Sterling, VA. A summary of the meteorological data used in the modeling is presented in Table 4. The locations of the meteorological stations used for this analysis in relationship to the Morgantown Generating Station are shown in Figure 5.

Table 4. Meteorological Data Used in Running AERMET

Met Site	Latitude	Longitude	Base Elevation (m)	Data Source	Data Format
Calvert Cliffs Meteorological Tower	38.430N	76.448W	38.0	Excel Spreadsheet	Free Format
Washington National	38.848N	77.034W	20.0	NCDC	ISH
Sterling, VA	38.98N	77.47W	85.0	NOAA/ESRL Radiosonde Database	FSL

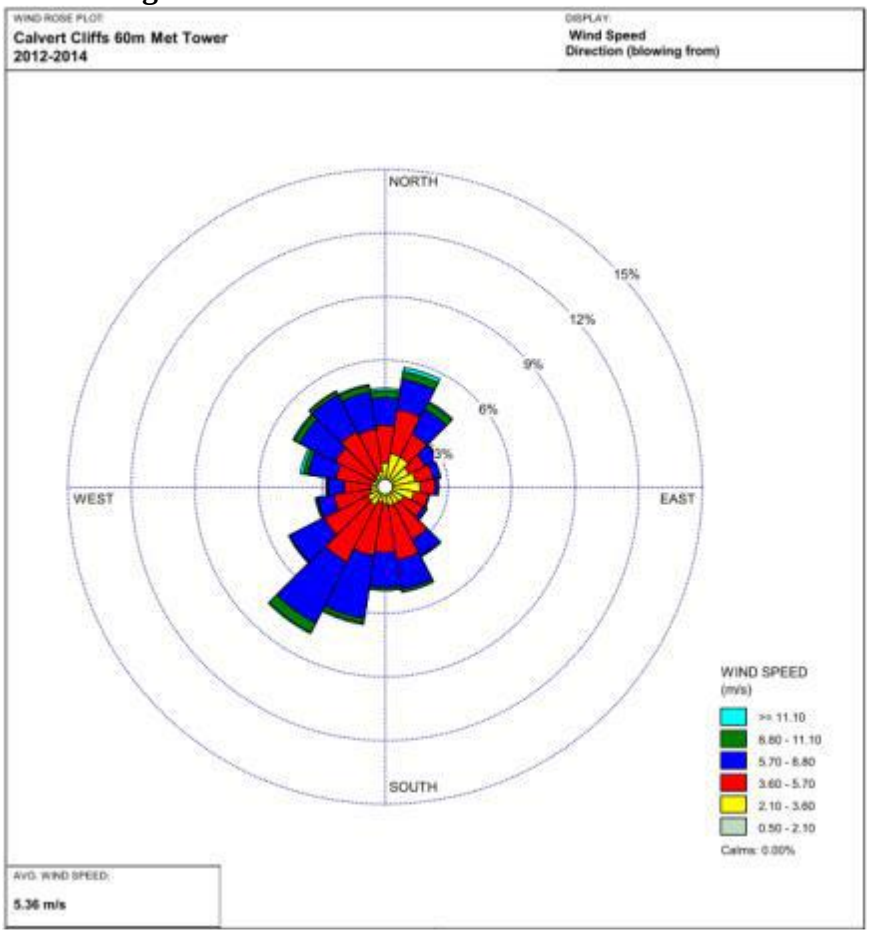
Figure 5. Location of Meteorological Stations Relative to Morgantown Generating Station



The state used AERSURFACE version 13016 using USGS National Land Cover Data 1992 archives1 (NLCD92) to estimate the surface characteristics of the area of analysis. The state estimated values for four spatial sectors out to 1 km at a monthly temporal resolution and included variability in surface moisture conditions (wet, average, dry) based on comparisons with monthly precipitation data compared to a 30-year average. Seasonal categories (for each month) were altered to reflect the site's more southern latitude and no snow cover was present during any of the months processed in the analysis. Maryland also estimated values for albedo (the fraction of solar energy reflected from the earth back into space), the Bowen ratio (the method generally used to calculate heat lost or heat gained in a substance), and the surface roughness (sometimes referred to as "z_o"). Both the Bowen ratio and albedo were determined using a default domain defined by a 10-km by 10-km region centered on the Calvert Cliffs meteorological tower.

As part of its recommendation, the state provided the 3-year surface wind rose for Calvert Cliffs Meteorological Tower. In Figure 6, the frequency and magnitude of wind speed and direction are defined in terms of from where the wind is blowing. As shown in the wind rose, the predominant wind direction for the site is from the southwest, although winds out of the northeast are also common.

Figure 6. Charles County Area Cumulative Annual Wind Rose for the Calvert Cliffs Meteorological Tower 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 is suitable for being applied with AERMOD input files for AERMOD modeling runs. 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. The state followed the methodology and settings presented in the AERMET version 15181 User's Guide and Addendum, as clarified in the March 8, 2013, memorandum from Tyler Fox "Use of ASOS meteorological data in AERMOD dispersion modeling", in the processing raw meteorological data into an AERMOD-ready format, and used AERSURFACE to best represent surface characteristics.

The EPA concludes from the information at hand that the meteorological data was selected and treated appropriately and is suitable for the current assessment. Both NWS stations and the Calvert Cliffs Meteorological Tower used in the development of meteorological inputs to AERMOD are located within the modeling domain, and are suitably representative of the meteorological conditions at the Morgantown Generating Station.

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

The terrain in the area of analysis and surrounding the station is best described as predominantly rural, flat terrain with gently rolling hills, along with some sparsely populated residences, agricultural areas, and waterways. To account for these terrain changes, the AERMAP terrain program within AERMOD was used to specify terrain elevations for all the receptors. The source of the elevation data incorporated into the model is the NAD83 datum, zone18 using National Elevation Data (NED). The dataset was downloaded from the USGS website (http://viewer.nationalmap.gov/viewer/) and consisted of 1/3 arc second (~10 m resolution) NED. As per the AERMAP User's Guide (USEPA, 2004), the domain was sufficient to ensure all significant nodes were included such that all terrain features exceeding a 10% elevation slope from any given receptor was considered.

Based on the submission, the EPA concludes the state's approach in specifying terrain elevations is appropriate.

3.3.2.8. 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 used the tier 1 monitored design value from 2012-2014 for the Prince George's County, MD Beltsville (Howard University) monitor (AQS site number 24-033-0030) and the Washington, DC (2500 1st Street) monitor (AQS site number 11-001-0043) as reported by the EPA at our Air Quality Design Values website, https://www.epa.gov/air-trends/air-quality-design-values. Both of these monitors have the same design value concentration of 11 ppb or 28.8 μg/m^3 for 2012-2014. Therefore, the single value of the background concentration for this area of analysis was determined by the state to be 28.8 μg/m^3 or 11 ppb or when expressed in 2 significant figures,[6] and that value was incorporated into the final AERMOD results.

[6] The SO_2 NAAQS level is expressed in ppb but AERMOD gives results in μg/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 μg/m^3.

These monitors are located in an area that is more populated and industrialized compared to the area surrounding the Morgantown Generating Station and should therefore, provide a conservative estimate of the SO_2 background in the vicinity of the plant, in that they are unlikely to underestimate background concentrations. The EPA believes the background value of 11 ppb or 28.8 $\mu g/m^3$ used for the assessment of Morgantown Generating Station is appropriate, based on the data and reasoning provided by the state.

3.3.2.9. Summary of Modeling Inputs and Results

The AERMOD modeling input parameters for the Charles County area of analysis are summarized below in Table 5.

Table 5. Summary of AERMOD Modeling Input Parameters for the Area of Analysis for the Charles County Area

Input Parameter	Value
AERMOD Version	15181 (regulatory default mode)
Dispersion Characteristics	Rural
Modeled Sources	1
Modeled Stacks	3
Modeled Structures	1
Modeled Fencelines	1
Total receptors	7385
Emissions Type	Actuals
Emissions Years	2012-2014
Meteorology Years	2012-2014
Station for Surface Meteorology	Calvert Cliffs, MD
NWS Station Upper Air Meteorology	Sterling, VA
Station for Calculating Surface Characteristics	Calvert Cliffs, MD
Methodology for Calculating Background SO_2 Concentration	AQS site numbers, 11-001-0043 and 24-033-0030, Tier 1 design value
Calculated Background SO_2 Concentration	11 ppb or 28.8 $\mu g/m^3$

The results presented below in Table 6 show the magnitude and geographic location of the highest predicted modeled concentration based on the input parameters.

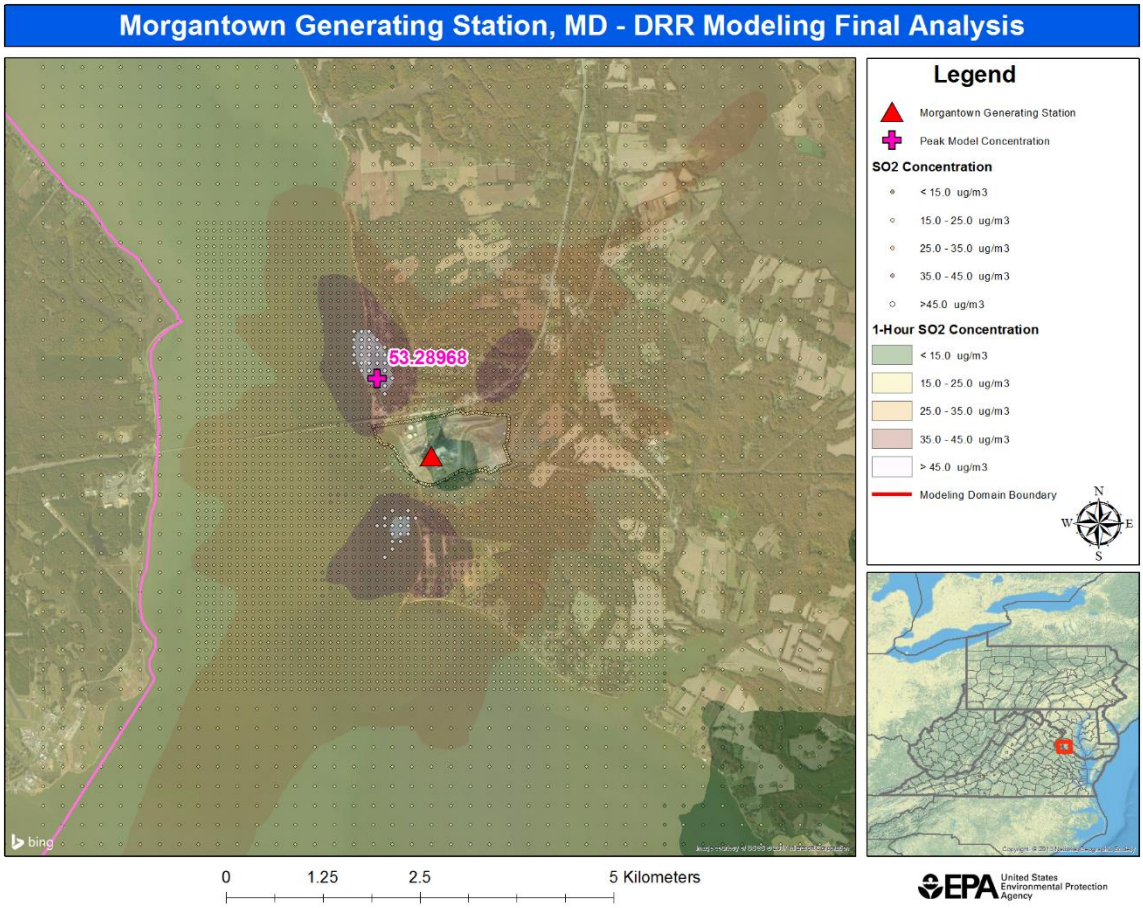
Table 6. Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations Averaged Over Three Years for the Area of Analysis for the Charles County Area

Averaging Period	Data Period	Receptor Location [UTM zone 18]		99th percentile daily maximum 1-hour SO_2 Concentration ($\mu g/m^3$)	
		UTM/Latitude	UTM/Longitude	Modeled concentration (including background)	NAAQS Level
99th Percentile 1-Hour Average	2012-2014	326810/	4248550/	82.11 $\mu g/m^3$	196.4*

*Equivalent to the 2010 SO_2 NAAQS of 75 ppb using a 2.619 $\mu g/m^3$ conversion factor

The state's modeling indicates that the highest predicted 99th percentile daily maximum 1-hour concentration within the chosen modeling domain is 82.11 $\mu g/m^3$, equivalent to 31.35 ppb. This modeled concentration included the background concentration of SO_2, and is based on actual emissions from the facility. Figure 7below was included as part of the state's recommendation, and indicates that the predicted value occurred just to the northwest of the Morgantown Generating Station and within about 1 km of the facility. The state's receptor grid is also shown in the Figure 7.

Figure 7. Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations Averaged Over Three Years for the Area of Analysis for the Charles County Area



The modeling submitted by the state does not indicate that the 1-hour SO_2 NAAQS is violated at the receptor with the highest modeled concentration.

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

The modeling submitted by the state does not contain any significant departures from the Modeling TAD. As explained in the preceding sections, the EPA concurs with the state's selection of modeling components, including: rural operating mode; modeling domain and receptor placement; source characterization, including building and stack parameters; emissions parameters and rates; meteorological data and surface parameters; terrain elevations; and background concentrations.

3.4. Emissions and Emissions-Related Data, Meteorology, Geography, and Topography for the Charles County Area of Analysis

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.

3.5. Jurisdictional Boundaries in the Charles County Area of Analysis

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

A significant portion of Charles County was included in the modeling receptor grid. Maryland recommended that the entire county be designated attainment. In addition to the modeling, the state indicated that SO_2 emissions had trended substantially downward from the Morgantown Generating Plant over the past several years. Maryland also analyzed the location of additional SO_2 emissions sources in the area. In addition to the Chalk Point Generating Station located about 48 km away from the Morgantown facility (Chalk Point was modeled separately and is discussed later in this document), Maryland identified only one other SO_2 source at the Naval Support Facility at Indian Head. This source is also located about 48 km from the Morgantown facility with actual emissions generally ranging between 150-300 tpy. Maryland believes that neither of these sources is expected to have an impact in the Morgantown area. EPA concurs with Maryland's assessment due to the size and distance these sources are from the Morgantown facility.

3.6. Other Information Relevant to the Designations for the Charles County Area

Prince Georges County also has a source being modeled to assess air quality in the area and this county is adjacent to Charles County. The discussion of the Prince George's County area follows this one and EPA has determined that there are no sources in Prince George's County that would be contributing to nonattainment in Charles County or vice versa. The Charles County maximum modeled SO_2 concentration is well below the NAAQS and located within 2 km of the Morgantown facility. Concentrations would even be lower at distances greater than 2 km. There are no designated nonattainment areas or areas intended to be designated as nonattainment directly adjacent to Charles County. Sources in Charles County are not contributing to nonattainment in other areas.

3.7. The EPA's Assessment of the Available Information for the Charles County Area of Analysis

The EPA finds that available emissions information and air dispersion modeling results show that the Charles County Area of analysis is meeting the the 1-hour SO_2 NAAQS.

Except for the source explicitly included in the modeling analysis there are no otheremissions sources located in the county, and no other sources which are likely to impact its attainment and maintenance of the 1-hour NAAQS. In addition, the modeling submitted by Maryland indicates the 1-hour SO_2 NAAQS is not violated at the receptor with the highest modeled concentration. Maryland's modeling indicates that the highest predicted 99^{th} percentile daily maximum concentration within the modeling domain is 82.11 $\mu g/m^3$ equivalent to 31.35 ppb. This concentration includes the background concentration of SO_2 and is based on actual emissions from facilities included in the modeling analyses. The peak modeled concentration is located about 1 km from the source.

There are no areas adjacent to Charles County that are being proposed to be nonattainment. The proposed designations for counties in Virginia and the District of Columbia are discussed in those TSDs.

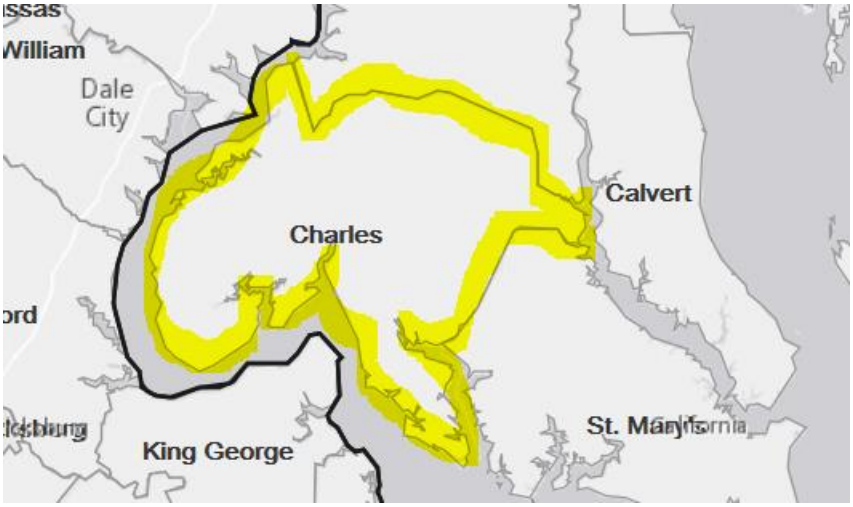
The EPA believes that our intended unclassifiable/attainment area, bounded by the county boundary for Charles County, will have clearly defined legal boundaries, and we intend to find these boundaries to be a suitable basis for defining our intended unclassifiable/attainment area. The EPA finds that available air dispersion modeling results show that the Charles County area of analysis is in attainment of the 1-hour SO_2 NAAQS.

3.8. Summary of Our Intended Designation for the Charles County Area of Analysis

After careful evaluation of Maryland's recommendations and supporting information, as well as all available relevant information, based on available information including (but not limited to) appropriate modeling analyses and/or monitoring data, the EPA has determined the Charles

County area (i) meets the 2010 SO_2 NAAQS, and (ii) does not contribute to ambient air quality in a nearby area that does not meet the NAAQS, and the EPA intends to designate the following as unclassifiable/attainment for the 2010 SO_2 NAAQS: Charles County, Maryland. Specifically, the boundaries are comprised of the county boundary. Figure 8 shows the boundary of this intended designated area.

Figure 8. Boundaries of the Intended Unclassifiable/Attainment Areas in the Charles County Area of Analysis



4. Technical Analysis for the Prince George's County, Maryland Area of Analysis

4.1. Introduction

The EPA must designate the Prince George's County, Maryland, area by December 31, 2017, because the area has not been previously designated and Maryland 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 Prince George's County.

4.2. Air Quality Monitoring Data for the Prince George's County, Maryland Area of Analysis

This factor considers the SO_2 air quality monitoring data in Prince George's County and the counties adjacent to Prince George's County. Two monitors are located in Prince George's County proper and both of these have design values well below the NAAQS. Below is a table with information about the Prince George County monitors and other monitors adjacent to the county. All the valid design values (DVs) show values well below the NAAQS. Note that * is incomplete/invalid design value.

Table 7. Air Quality Monitoring Data for the Prince George Area of Analysis

County/City	AQS Monitor ID	Latitude	Longitude	2011-2013 Design Value	2012-2014 Design Value	2013-2015 Design Value	2014-2016 Design Value
Prince George's County, MD	24-033-0030	39.055277	-76.87833	10	11	10	9
Prince George's County, MD	24-033-9991	39.0284	-76.8171	12*	14*	13	12
Fairfax County, VA	51-059-0030	38.77335	-77.10468	-	11*	10*	8
Alexandria City, VA	51-510-0021	38.8065	-77.0864	8*	8*	9*	-
Dorchester County, MD	24-019-0004	38.587525	-76.14101	5*	6*	7*	6
Washington, DC	11-001-0043	38.921847	-77.01318	8*	11	12	11
Washington, DC	11-001-0041	38.895572	-76.95807	13	10*	10*	8*

Although the state did not provide specific air quality monitoring data, EPA reviewed available data for the Prince George County Area. As indicated in the Table above, two monitors are located inside Prince George's County. Both are located between approximately 55 and 60 km from the Chalk Point Generating Station. The maximum DV from 2014-2016 in Prince George County is 12 pbb which is well below the 75 ppb NAAQS. The closest monitor to the source with a valid DV for 2014-2016 is the Washington, DC, monitor #11-001-0043 located about 50 km away and with a DV of 11 ppb from 2014-2016. These data were available to EPA for consideration in the designations process. However, EPA does not have information indicating

this data is in an area of maximum concentration, so this data cannot be used as the basis for designation.

All the monitors located in Prince George's County and the adjacent counties which have valid data have design values well below the NAAQS and those with only some data have similar values.

The EPA has reviewed all available monitoring data for the Prince George County area of analysis. There are no other air quality monitors located within Prince George County or the surrounding counties/cities. Air quality monitoring data discussed in this section can be found at https://www.epa.gov/air-trends/air-quality-design-values.

4.3. Air Quality Modeling Analysis for the Prince George's County, Maryland Area of Analysis Addressing the Chalk Point Generating Station

4.3.1. Introduction

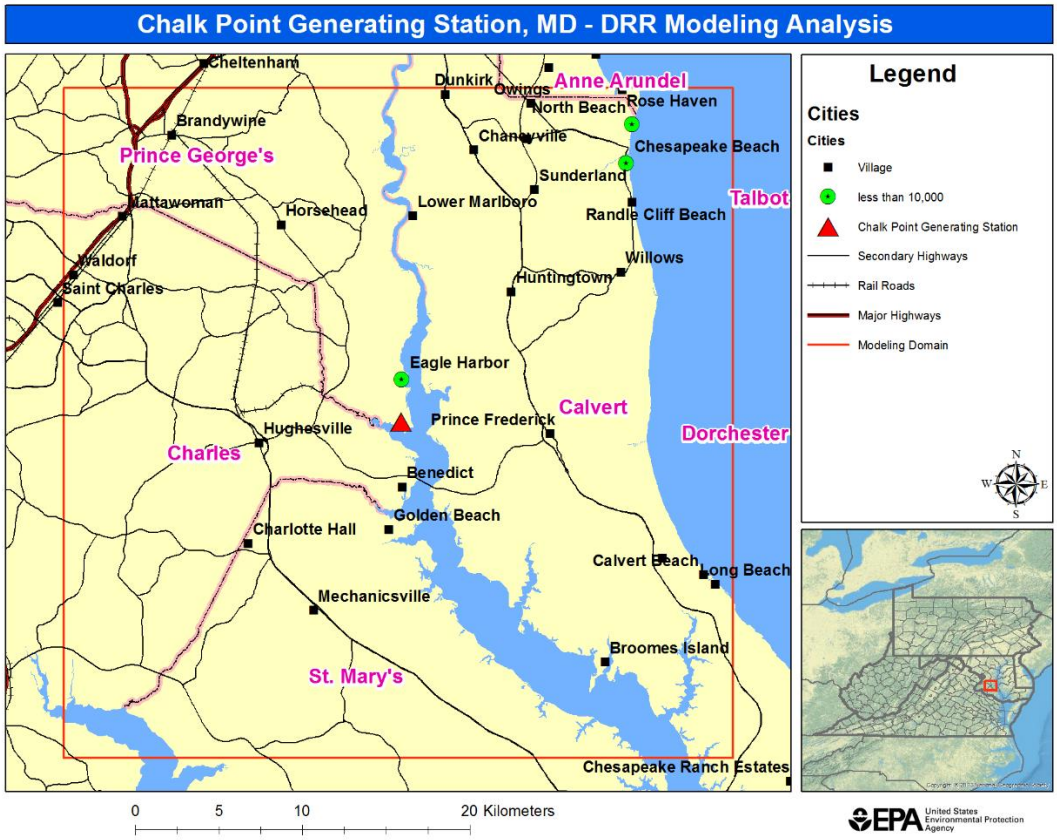
This section 4.3 presents all the available air quality modeling information for a portion of Prince George's County that includes the Chalk Point Generating Station. (This portion of Prince George's County will often be referred to as "the Prince George's County Area" within this section 4.3). This area contains the following SO_2 source, principally the source around which Maryland is required by the DRR to characterize SO_2 air quality, or alternatively to establish an SO_2 emissions limitation of less than 2,000 tons per year:

- The Chalk Point Generating Station emits 2,000 tons or more annually. Specifically, the Chalk Point Generating Station emitted 3,933.2 tons of SO_2 in 2014. This source meets the DRR criteria and thus is on the SO_2 DRR Source list, and Maryland has chosen to characterize it via modeling.

In its submission, Maryland recommended that the area surrounding the Chalk Point Generating Station, specifically the entirety of Prince George's County, be designated as attainment, based in part on an assessment and characterization of air quality impacts from this facility. This assessment and characterization was performed using air dispersion modeling software, i.e., AERMOD, analyzing actual emissions. After careful review of the state's assessment, supporting documentation, and all available data, the EPA intends to designate the area as unclassifiable/attainment. Our reasoning for this conclusion is explained in a later section of this TSD, after all the available information is presented.

As shown in Figure 9, the area that Maryland has assessed via air quality modeling is the southern portion of Prince George's County, located to the southeast of Washington, DC. This area also includes portions of Charles, Saint Mary's, and Calvert Counties in Maryland. Figure 9 shows the Chalk Point Generating Station, located in southeastern Prince George's County. The EPA's intended designation boundary for the Prince George's County Area is not shown in this figure, but is shown in a figure in the section below that summarizes our intended designation.

Figure 9. Map of the Prince George's County Area Addressing the Chalk Point Generating Station.



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, as appropriate.

For this area, the EPA received and considered one modeling assessment from the state of Maryland. Before the final modeling report was submitted to EPA, a modeling protocol was developed to outline the procedures to follow for the final modeling analysis. The modeling protocol was developed based on relevant guidance outlined in EPA's Modeling Technical Assistance Document or TAD at the time of preparation. EPA was given the opportunity to review the modeling protocol and provide comments to MDE in March 2016, resulting in a final modeling protocol used in the final modeling analysis.

4.3.2. Modeling Analysis Provided by the State

The State of Maryland submitted a modeling analysis for the region surrounding the Chalk Point Generating Station on December 19, 2016, prior to the January 13, 2017 DRR submission date.

4.3.2.1. 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 15181, which was the most up-to-date version at the time of submittal, using all regulatory default options. A discussion of the state's approach to the individual components is provided in the corresponding discussion that follows, as appropriate.

For state, local, and tribal air agencies that submitted SO_2 DRR modeling based on AERMOD version 15181 without any beta options selected (default mode), the SO_2 DRR modeling results would not be affected by the formulation bug found in the beta options of AERMOD version 15181 and, therefore should provide the same modeling results as the current version of AERMOD, version 16216r. However, any future AERMOD modeling performed for the SO_2 Round 3 designations process should use model version 16216r.

4.3.2.2. Modeling Parameter: Rural or Urban Dispersion

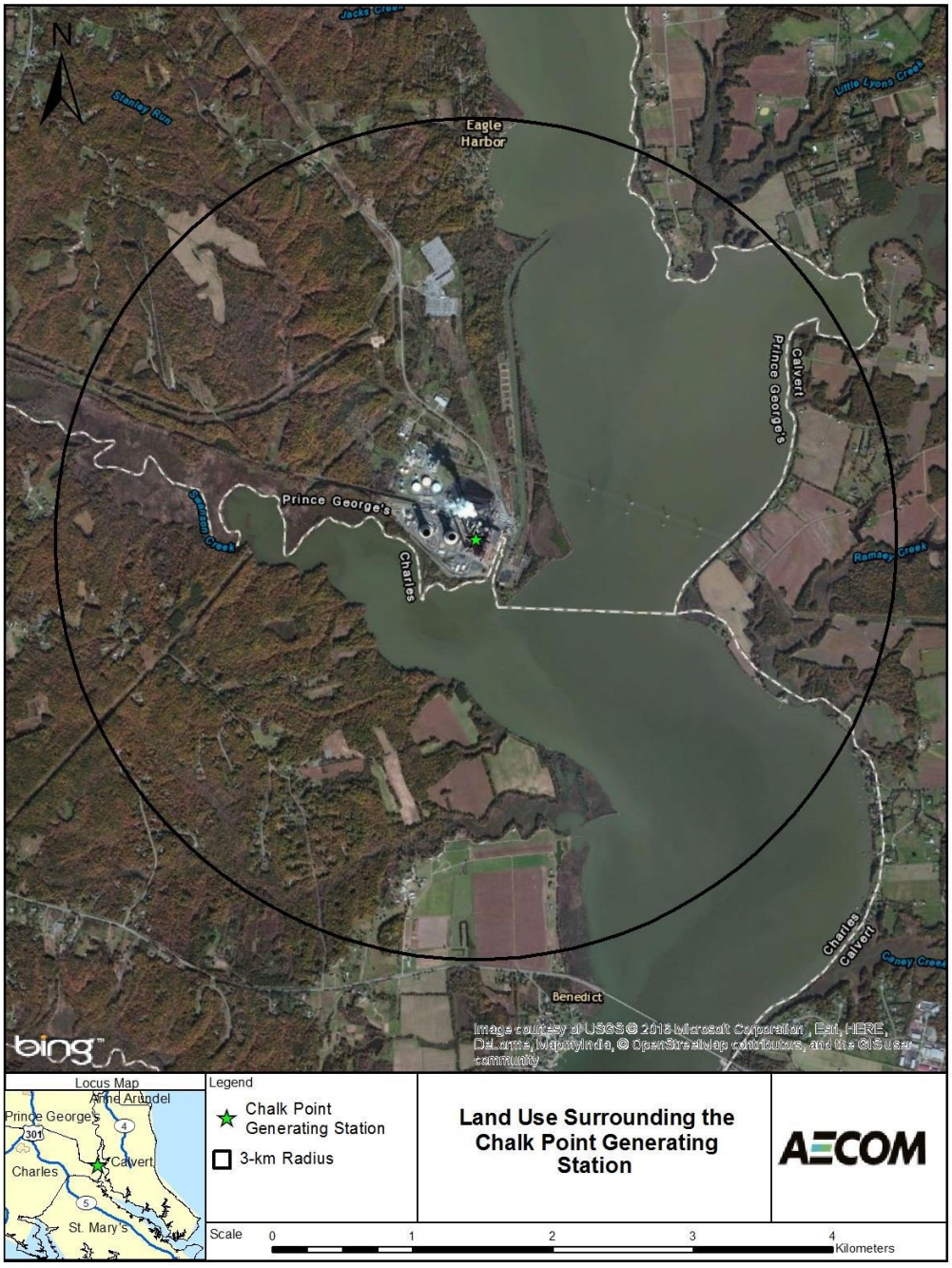
For any dispersion modeling exercise, the "urban" or "rural" determination of a source is important in determining the boundary layer characteristics that affect the model's prediction of downwind concentrations. For SO_2 modeling, the urban/rural determination is important because AERMOD invokes a 4-hour 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.

The application of AERMOD requires characterization of the local (within 3 kilometers) dispersion environment as either urban or rural, based on a USEPA-recommended procedure (commonly referred to as the Auer Method) that characterizes an area by prevalent land use. This land use approach classifies an area according to 12 land use types. In this scheme, areas of industrial, commercial, and compact residential land use are designated urban. According to USEPA modeling guidelines, if more than 50% of an area within a 3-km radius of the facility is classified as rural, then rural dispersion coefficients are to be used in the dispersion modeling analysis. Conversely, if more than 50% of the area is urban, then the area will be classified as urban. Visual inspection of the 3-km area surrounding the Chalk Point Station (see Figure 10)

clearly shows the area is rural. Therefore, AERMOD was run in the rural mode. EPA concurs with this assessment.

Figure 10. Land use Surrounding the Chalk Point Generating Station



4.3.2.3. 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.

The source of SO_2 emissions subject to the DRR (Chalk Point Generating Station) in this area is described in the introduction to this section. For the Prince George's County area, the state has determined that there were no other sources emitting greater than 50 tpy of SO_2 within 20 km of the Chalk Point Generating Station in any direction. No other sources beyond 20 km were determined by the state to have the potential to cause concentration gradient impacts within the area of analysis. The state determined that this was the appropriate distance 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. EPA concurs with this assessment.

The modeling analysis was conducted using the following Cartesian receptor grid design. The receptor grid consisted of receptors spaced 25 meters apart along the fence line of the Chalk Point Generating Station. The receptor grid spacing for the remainder of area of analysis chosen by the state is as follows:

Spacing: 100 m Extent: 0-3 km
Spacing: 250 m Extent: 3-5 km
Spacing: 500 m Extent: 5-10 km
Spacing: 1000 m Extent: 10-20 km

The receptor network contained 7,251 receptors. The receptor network covered the southern portions of Prince George's County and portions of Charles, Saint Mary's, and Calvert Counties.

Figures 11 and 12, included in the state's recommendation, show the state's chosen area of analysis surrounding the Chalk Point Generating Station, 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 the state asserted would be considered ambient air relative to each modeled facility. Section 4.2 of the TAD states that receptors do not need to be located in areas where it is not feasible to place a monitor (water bodies, etc.). To avoid any risk of underestimating impacts, the grid used in this modeling analysis does not exclude any receptors that may be in such areas. The fence line for the Morgantown facility was visually confirmed with GIS overhead shots, and the EPA notes that the maximum concentration modeled does not appear to be located on this potential ambient air boundary.

Figure 11. Area of Analysis Receptor Grid for the Prince George's County Area

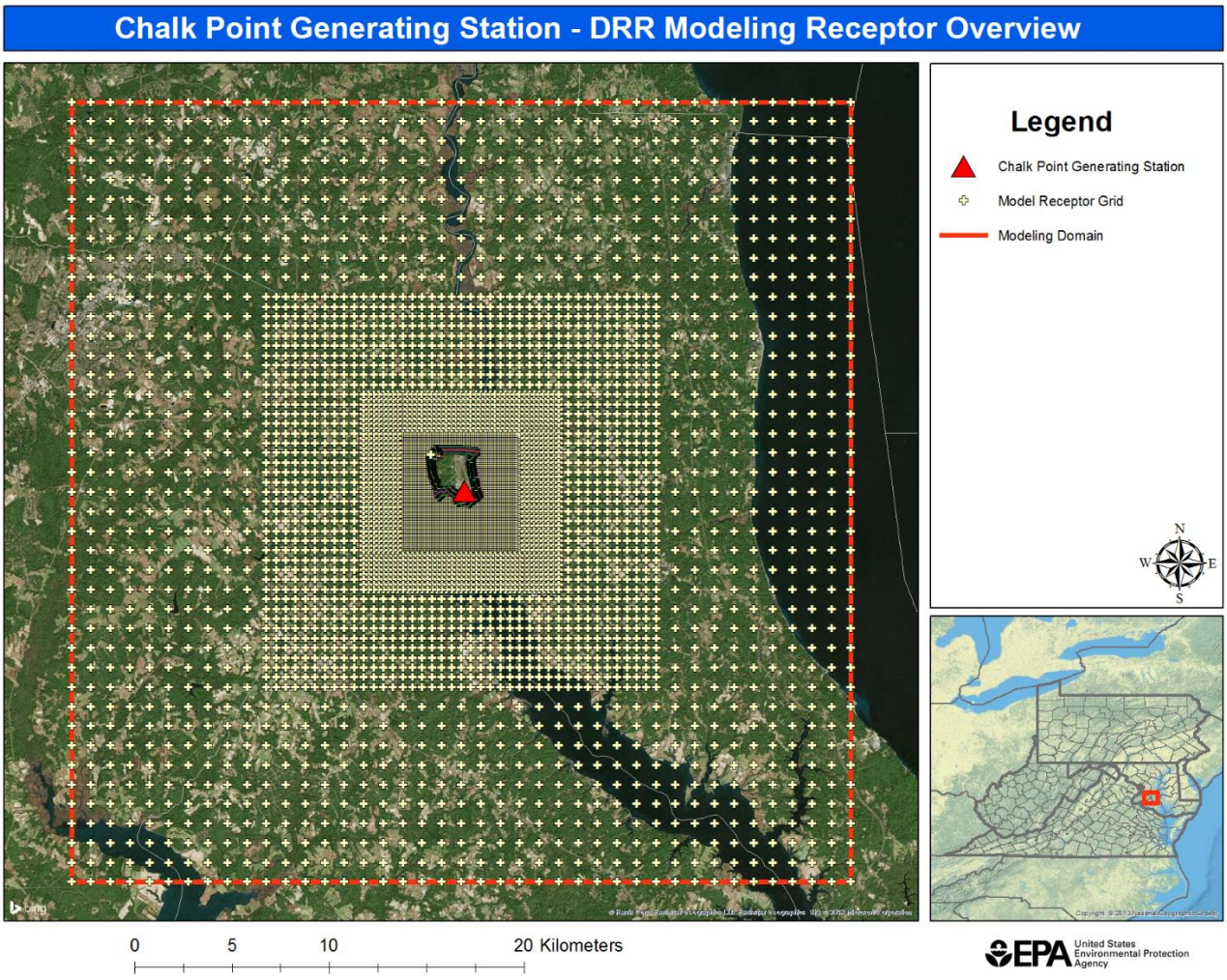
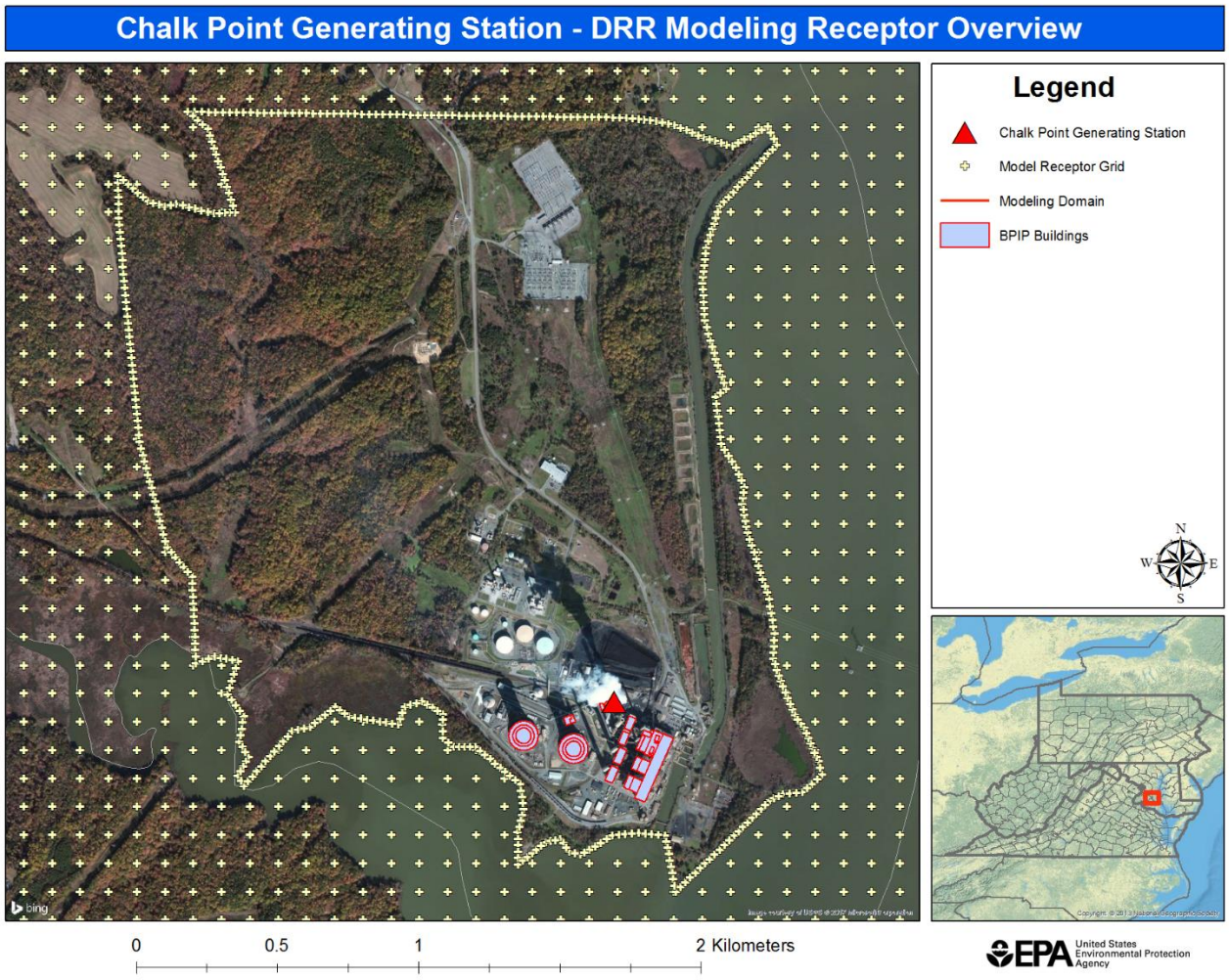


Figure 12: Fence Line Receptors for the Chalk Point Generating Station



EPA has determined that the receptor grid used in the AERMOD modeling analysis is adequate to determine maximum ambient air SO_2 impacts in the area.

4.3.2.4. 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.

The State explicitly included the Chalk Point Generating Station for modeling because this source is the largest in the area. Based on 2014 National Emissions Inventory(NEI) emissions information, the Chalk Point Generating Station accounted for over 90% of the total SO_2 point source emission in Prince George's County. All other sources in or near the area are either too small or too distant to be explicitly modeled and therefore are adequately characterized by the monitored background levels included in the analysis. See section 4.3.2.8 for more information on background concentrations of SO_2.

The state characterized this source within the area of analysis 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 adequately 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.

Based on comparisons between the modeling source characterization, including building and stack parameters, against publicly available information in permits and maps, the EPA concludes that the source characterization is appropriate.

4.3.2.5. 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 PTE or allowable) emissions rate that is federally enforceable and effective.

The EPA believes that continuous emissions monitoring systems (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."

As previously noted, the state included the Chalk Point Generating Station in its modeling demonstration for the Prince George's County area. The state has chosen to model this facility using actual emissions. This facility's 2012-2014 annual actual SO_2 emissions are summarized in the table below.

Table 8. Actual SO_2 Emissions Between 2012 – 2014 for the Chalk Point Generating Station in the Prince George's Area

	Modeled SO_2 Emissions (tpy)			CAMD SO_2 Emissions (tpy)		
Facility Name	**2012**	**2013**	**2014**	**2012**	**2013**	**2014**
Chalk Point Generating Station	3,633.9	4231.1	3756.5	4740.6	4460.5	3861.8
Total Emissions from All Modeled Facilities in the State's Area of Analysis	3,633.9	4231.1	3756.5	4740.6	4460.5	3861.8

For the Chalk Point Generating Station, the actual hourly emissions data were obtained from the continuous emissions monitor (CEMS) systems. EPA has verified that the hourly emissions used in the modeling when converted to annual emissions, generally compare favorably with the annual CAMD emissions reported in the table above Given the modeled concentrations were so far below the SO2 NAAQS and the CAMD emissions seem to be decreasing each year, the higher CAMD emissions, if modeled, would not be expected to show violations of the SO_2 NAAQS.

4.3.2.6. Modeling Parameter: Meteorology and Surface Characteristics

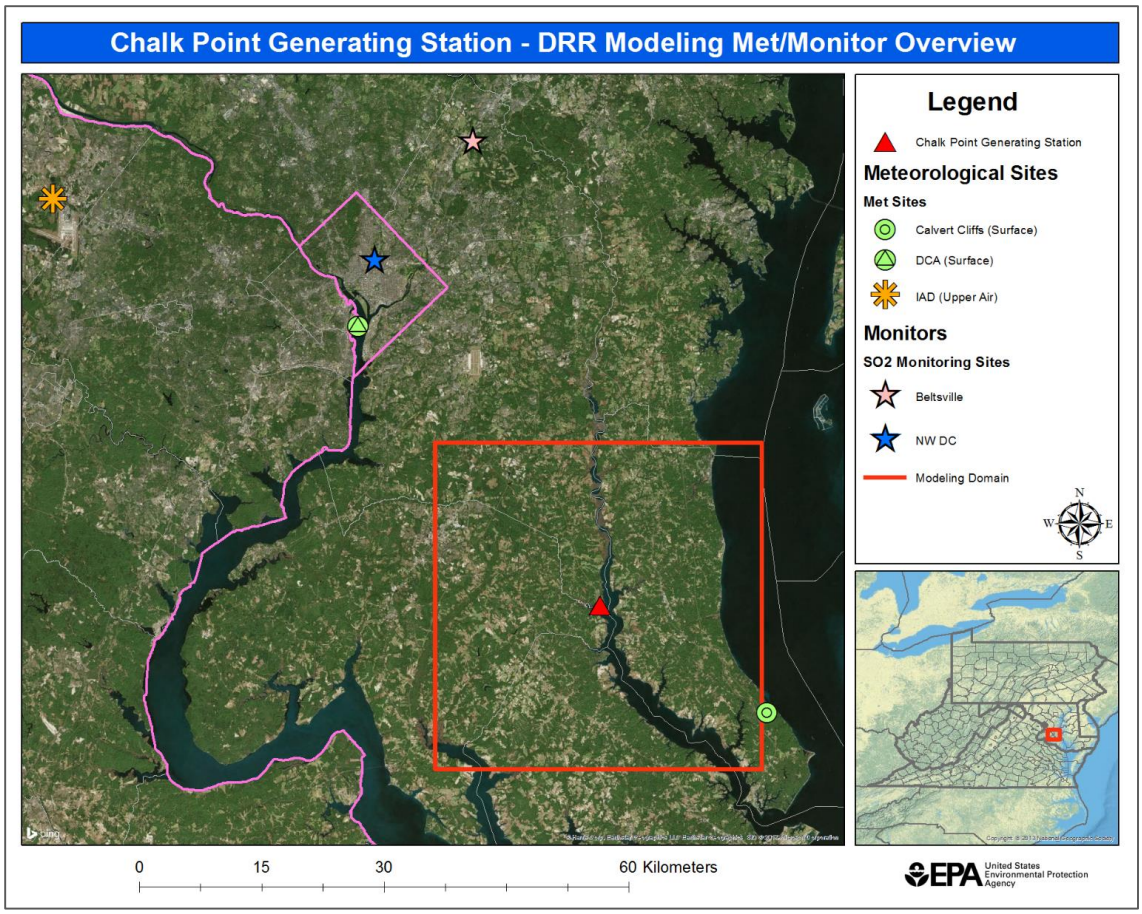
As noted in the Modeling TAD, the most recent 3 years of meteorological data (concurrent with the most recent 3 years of emissions data) should be used in designations efforts. The selection of data should be based on spatial and climatological (temporal) representativeness. The representativeness of 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 Prince George's County area, the state selected the surface meteorology from the Calvert Cliffs, MD, 60-meter Meteorological Tower which is located just over 20 kilometers east-southeast of the Chalk Point Generating Station. Specifically, the Calvert Cliffs meteorological data meets the requirements contained in USEPA's *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (February 2000) by which a minimum one-year data set is to be used in a modeling analysis. In this instance three years (2012-2014) were used to be consistent with the Modeling TAD. The 60-meter tower data was supplemented with NWS night-time cloud cover observations from Washington National Airport and NWS upper air observations from Sterling, VA. A summary of the meteorological data used in the modeling is presented in Table 9. The locations of the meteorological stations used for this analysis in relationship to the Chalk Point Generating Station are shown in Figure 13.

Table 9. Meteorological Data Used in Running AERMET

Met Site	Latitude	Longitude	Base Elevation (m)	Data Source	Data Format
Calvert Cliffs Meteorological Tower	38.430N	76.448W	38.0	Excel Spreadsheet	Free Format
Washington National	38.848N	77.034W	20.0	NCDC	ISH
Sterling, VA	38.98N	77.47W	85.0	NOAA/ESRL Radiosonde Database	FSL

Figure 13. Location of Meteorological Stations Relative to Chalk Point Generating Station

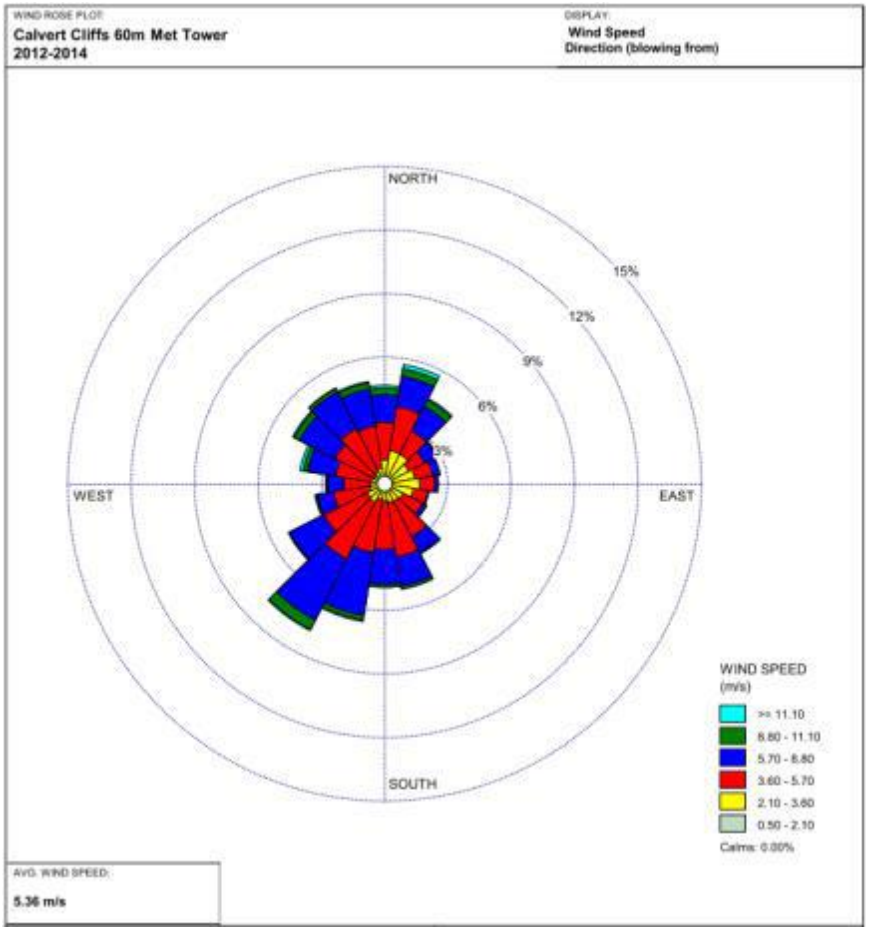


The state used AERSURFACE version 13016 using USGS National Land Cover Data 1992 archives1 (NLCD92) to estimate the surface characteristics of the area of analysis. The state estimated values for four spatial sectors out to 1 km at a monthly temporal resolution and included variability in surface moisture conditions (wet, average, dry) based on comparisons with monthly precipitation data compared to a 30-year average. Seasonal categories (for each

month) were altered to reflect the site's more southern latitude and no snow cover was present during any of the months processed in the analysis. Maryland also estimated values for albedo (the fraction of solar energy reflected from the earth back into space), the Bowen ratio (the method generally used to calculate heat lost or heat gained in a substance), and the surface roughness (sometimes referred to as "z_o"). Both the Bowen ratio and albedo were determined using a default domain defined by a 10-km by 10-km region centered on the Calvert Cliffs meteorological tower.

As part of its recommendation, the state provided the 3-year surface wind rose for Calvert Cliffs Meteorological Tower. In Figure 14, the frequency and magnitude of wind speed and direction are defined in terms of from where the wind is blowing. As shown in the wind rose, the predominant wind direction for the site is from the southwest, although winds out of the northeast are also common.

Figure 14. Prince George's County 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 is suitable for being applied with AERMOD input files for AERMOD modeling runs. 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. The state followed the methodology and settings presented in the AERMET version 15181 User's Guide and Addendum, as clarified in the March 8, 2013, memorandum from Tyler Fox "Use of ASOS meteorological data in AERMOD dispersion modeling", in the processing raw meteorological data into an AERMOD-ready format, and used AERSURFACE to best represent surface characteristics.

The EPA concludes from the information at hand that the meteorological data was selected and treated appropriately and is suitable for the current assessment. Both NWS stations and the Calvert Cliffs Meteorological Tower used in the development of meteorological inputs to AERMOD are located within the modeling domain, and are suitably representative of the meteorological conditions at the Chalk Point Generating Station.

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

The terrain in the area of analysis and surrounding the Station is best described as predominantly rural, flat terrain with gently rolling hills, along with some sparsely populated residences, agricultural areas, and waterways. To account for these terrain changes, the AERMAP terrain program within AERMOD was used to specify terrain elevations for all the receptors. The source of the elevation data incorporated into the model is the NAD83 datum, zone18 using National Elevation Data (NED). The dataset was downloaded from the USGS website (http://viewer.nationalmap.gov/viewer/) and consisted of 1/3 arc second (~10 m resolution) NED. As per the AERMAP User's Guide (USEPA, 2004), the domain was sufficient to ensure all significant nodes were included such that all terrain features exceeding a 10% elevation slope from any given receptor was considered.

Based on the submission, the EPA concludes the state's approach in specifying terrain elevations is appropriate.

4.3.2.8. 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 used the tier 1 monitored design value from 2012-2014 for the Prince George's County, MD Beltsville (Howard University) monitor (AQS site number 24-033-0030) and the Washington, DC (2500 1st Street) monitor (AQS site number 11-001-0043) as reported by the EPA at our Air Quality Design Values website, https://www.epa.gov/air-trends/air-quality-design-values. Both of these monitors have the same design value concentration of 11 ppb or 28.8 μg/m^3 for 2012-2014. Therefore, the single value of the background concentration for this area of analysis was determined by the state to be 28.8 μg/m^3 or 11 ppb when expressed in 2 significant figures,[7] and that value was incorporated into the final AERMOD results.

[7] The SO_2 NAAQS level is expressed in ppb but AERMOD gives results in μg/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 μg/m^3.

These monitors are located in an area that is more populated and industrialized compared to the area surrounding the Chalk Point Generating Station and should therefore, provide a conservative estimate of the SO_2 background in the vicinity of the plant by not underestimating those concentrations. The EPA believes the background value of 11 ppb or 28.8 $\mu g/m^3$ used for the assessment of Chalk Point Generating Station is appropriate, based on the data and reasoning provided by the state

4.3.2.9. Summary of Modeling Inputs and Results

The AERMOD modeling input parameters for the Prince George's County area of analysis are summarized below in Table 10.

Table 10. Summary of AERMOD Modeling Input Parameters for the Area of Analysis for the Prince George's County Area

Input Parameter	Value
AERMOD Version	15181 (regulatory default mode)
Dispersion Characteristics	Rural
Modeled Sources	1
Modeled Stacks	2
Modeled Structures	1
Modeled Fencelines	1
Total receptors	7251
Emissions Type	Actuals
Emissions Years	2012-2014
Meteorology Years	2012-2014
Station for Surface Meteorology	Calvert Cliffs, MD
NWS Station Upper Air Meteorology	Sterling, VA
Station for Calculating Surface Characteristics	Calvert Cliffs, MD
Methodology for Calculating Background SO_2 Concentration	AQS site numbers, 11-001-0043 and 24-033-0030, Tier 1 design value
Calculated Background SO_2 Concentration	11 ppb or 28.8 $\mu g/m^3$

The results presented below in Table 11 show the magnitude and geographic location of the highest predicted modeled concentration based on the input parameters.

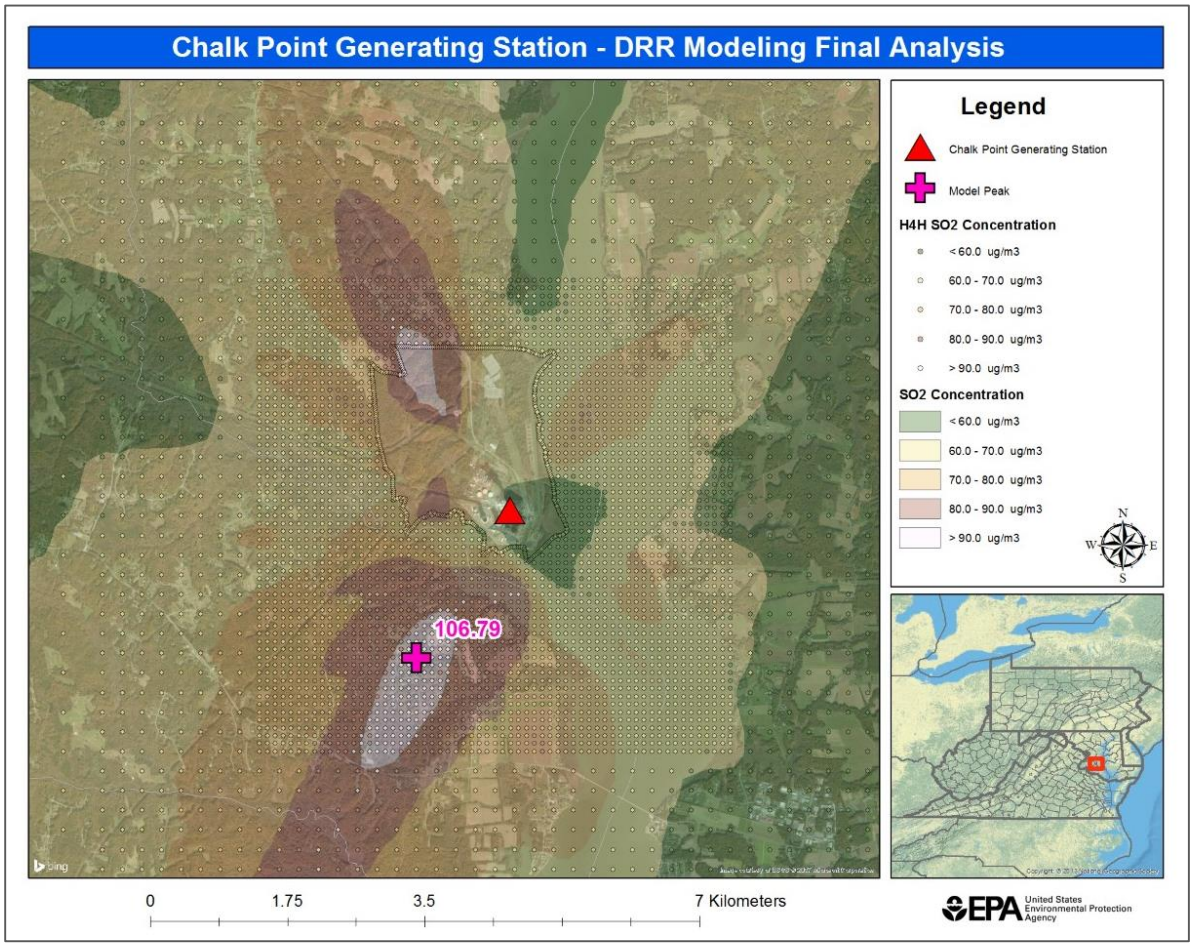
Table 11. Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations Averaged Over Three Years for the Area of Analysis for the Prince George's County Area

Averaging Period	Data Period	Receptor Location [UTM zone 18]		99th percentile daily maximum 1-hour SO_2 Concentration ($\mu g/m^3$)	
		UTM/Latitude	UTM/Longitude	Modeled concentration (including background)	NAAQS Level
99th Percentile 1-Hour Average	2012-2014	351900/38.528284	4265800/-76.69904	106.79 $\mu g/m^3$	196.4*

*Equivalent to the 2010 SO_2 NAAQS of 75 ppb using a 2.619 $\mu g/m^3$ conversion factor

The state's modeling indicates that the highest predicted 99th percentile daily maximum 1-hour concentration within the chosen modeling domain is 106.79 $\mu g/m^3$, equivalent to 40.8 ppb. This modeled concentration included the background concentration of SO_2, and is based on actual emissions from the facility. Figure 15 below was included as part of the state's recommendation, and indicates that the predicted value occurred just to the southwest of the Chalk Point Generating Station and less than 2 km from the facility. The state's receptor grid is also shown in the figure.

Figure 15. Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations Averaged Over Three Years for the Area of Analysis for the Prince George's County Area



The modeling submitted by the state does not indicate that the 1-hour SO_2 NAAQS is violated at the receptor with the highest modeled concentration.

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

The modeling submitted by the state does not contain any significant departures from the Modeling TAD. As explained in the preceding sections, the EPA concurs with the state's selection of modeling components, including: rural operating mode; modeling domain and receptor placement; source characterization, including building and stack parameters; emissions parameters and rates; meteorological data and surface parameters; terrain elevations; and background concentrations.

4.4. Emissions and Emissions-Related Data, Meteorology, Geography, and Topography for the Prince George's County Area of Analysis

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.

4.5. Jurisdictional Boundaries in the Prince George's County Area of Analysis

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

A significant portion of Prince George's County was included in the modeling receptor grid. Maryland recommended that the entire county be designated attainment. In addition to the modeling, the state indicated that SO_2 emissions had trended substantially downward from the Chalk Point Generating Station over the past several years. Maryland also analyzed the location of additional SO_2 emissions sources in the area. In addition to the Morgantown Generating Station located about 48 km away from the Chalk Point facility (Morgantown was modeled separately and was discussed earlier in this document), Maryland identified only one other SO_2 source at the Naval Support Facility at Indian Head. This source is also located about 48 km from the Chalk Point facility with actual emissions generally ranging between 150-300 tpy. Maryland believes that neither of these sources is expected to have an impact in the Chalk Point area. EPA concurs with Maryland's assessment due to the size and distance these sources are from the Chalk Point facility.

4.6. Other Information Relevant to the Designations for the Prince George's County Area of Analysis

Charles County, which is adjacent to Prince George's County also has a source being modeled to assess air quality. The discussion of the Charles County area is found in Section 3 of this document. EPA has determined that there are no sources in Charles County that would be contributing to nonattainment in Prince George's County or vice versa. A portion of Anne Arundel County that was designated nonattainment in Round 2 is adjacent to Prince George's County. The modeling analysis used as the basis for the Round 2 designation did not find that any sources in Prince George's County contributed to nonattainment Anne Arundel County. There are no additional areas intended to be designated as nonattainment directly

adjacent to Prince George's County. Sources in Prince George's County are not contributing to nonattainment in other areas.

4.7. The EPA's Assessment of the Available Information for the Prince George's County Area of Analysis

The EPA finds that available air dispersion modeling results show that the Prince George's area of analysis is meeting the 1-hour SO_2 NAAQS. Design values from both monitors located within this county are well below the standard of 75 ppb (10 and 13 ppb). These data were available to EPA for consideration in the designation process. However, EPA does not have information indicating this data is in an area of maximum concentration, so this data cannot be used as the basis for designation.

Except for the source included in the modeling analysis there are no large emissions sources located in the county which are likely to impact its attainment and maintenance of the 1-hour NAAQS. In addition, the modeling submitted by Maryland indicates the 1-hour SO_2 NAAQS is not violated at the receptor with the highest modeled concentration. Maryland's modeling indicates that the highest predicted 99^{th} percentile daily maximum 1-hour concentration within the chosen modeling domain is 106.79 $\mu g/m^3$, equivalent to 40.8 ppb. This modeled concentration included the background concentration of SO_2, and is based on actual emissions from the facilities. The peak modeled concentration is located southwest of the source and within a distance of 2 km.

There are no areas adjacent to Prince George's County that are being proposed to be nonattainment. The proposed designations for counties in Virginia and the District of Columbia are discussed in those TSDs.

The EPA believes that our intended unclassifiable/attainment area, bounded by the county boundary for Prince George's County, will have clearly defined legal boundaries, and we intend to find these boundaries to be a suitable basis for defining our intended unclassifiable/attainment area.

4.8. Summary of Our Intended Designation for the Prince George's Area of Analysis

After careful evaluation of Maryland's recommendation and supporting information, as well as all available relevant information, based on available information including (but not limited to) appropriate modeling analyses and/or monitoring data, the EPA has determined the Prince George's area (i) meets the 2010 SO_2 NAAQS, and (ii) does not contribute to ambient air quality in a nearby area that does not meet the NAAQS, and the EPA intends to designate the following as unclassifiable/attainment for the 2010 SO_2 NAAQ: Prince George's County, Maryland.

Specifically, the boundaries are comprised of the county boundary for Prince George's County, Maryland. Figure 16 shows the boundary of this intended designated area.

Figure 16. Boundary of the Intended Unclassifiable/Attainment Areas in the Prince George's County Area of Analysis

5. Technical Analysis for Certain Other Counties and Portions Thereof in Maryland

5.1 Introduction

The state has not installed and begun timely operation of a new, approved SO_2 monitoring network meeting EPA specifications referenced in EPA's SO2 DRR for any sources of SO_2 emissions in the counties and portions of counties identified in Table 12. Accordingly, the EPA must designate these counties by December 31, 2017. At this time, there are no air quality modeling results available to the EPA for these counties and there is no air quality monitoring data that indicate any violation of the 1-hour SO_2 NAAQS. The EPA is designating the counties and portions thereof in Table 12 in the state as "unclassifiable/attainment" since these counties were not required to be characterized under 40 CFR 51.1203(c) or (d) and EPA does not have available information including (but not limited to) appropriate modeling analyses and/or

monitoring data that suggests that the area may (i) not be meeting the NAAQS, or (ii) contribute to ambient air quality in a nearby area that does not meet the NAAQS.

Table 12. Counties or Portions Thereof that the EPA Intends to Designate Unclassifiable/Attainment

County [or Partial County (p)]	Maryland Recommended Area Definition	Maryland's Recommended Designation	EPA's Intended Area Definition	EPA's Intended Designation
Anne Arundel County (p)	County	Unclassifiable	All portions of the county not located within 26.8 kms of Herbert A. Wagner's Unit 3 stack, which is located at 39.17765 N. latitude, 76.52752 W.	Unclassifiable/ Attainment
Baltimore County (p)	County	Unclassifiable	All portions of the county not located within 26.8 kms of Herbert A. Wagner's Unit 3 stack, which is located at 39.17765 N. latitude, 76.52752 W.	Unclassifiable/ Attainment
Calvert County	County	Unclassifiable	County	Unclassifiable/ Attainment
Caroline County	County	Unclassifiable	County	Unclassifiable/ Attainment
Carrol County	County	Unclassifiable	County	Unclassifiable/ Attainment
Cecil County	County	Unclassifiable	County	Unclassifiable/ Attainment
Dorchester County	County	Unclassifiable	County	Unclassifiable/ Attainment
Frederick County	County	Unclassifiable	County	Unclassifiable/ Attainment
Garrett County	County	Unclassifiable	County	Unclassifiable/ Attainment
Harford County	County	Unclassifiable	County	Unclassifiable/ Attainment

County [or Partial County (p)]	Maryland Recommended Area Definition	Maryland's Recommended Designation	EPA's Intended Area Definition	EPA's Intended Designation
Howard County	County	Unclassifiable	County	Unclassifiable/ Attainment
Kent County	County	Unclassifiable	County	Unclassifiable/ Attainment
Montgomery County	County	Unclassifiable	County	Unclassifiable/ Attainment
Queen Anne's County	County	Unclassifiable	County	Unclassifiable/ Attainment
Somerset County	County	Unclassifiable	County	Unclassifiable/ Attainment
St. Mary's County	County	Unclassifiable	County	Unclassifiable/ Attainment
Talbot County	County	Unclassifiable	County	Unclassifiable/ Attainment
Washington County	County	Unclassifiable	County	Unclassifiable/ Attainment
Wicomico County	County	Unclassifiable	County	Unclassifiable/ Attainment
Worcester County	County	Unclassifiable	County	Unclassifiable/ Attainment

Table 12 also summarizes Maryland's original recommendations for these areas. Specifically, the state originally recommended that the entirety of the following counties: Anne Arundel, Baltimore, Calvert, Caroline, Carrol, Cecil, Dorchester, Frederick, Garrett, Harford, Howard, Kent, Montgomery, Queen Anne's, Somerset, St. Mary's, Talbot, Washington, Wicomico, and Worcester be designated as unclassifiable based on a lack of information. However, Maryland subsequently performed a variety of modeling for portions of Anne Arundel and Baltimore Counties, since a facility in this area had to be addressed in Round 2.[8] Please refer to the TSD prepared for Round 2 designations, which can be found here: https://www.epa.gov/sites/production/files/2016-06/documents/r3_md_final_designation_tsd_06302016.pdf. After careful review of the state's assessment, supporting documentation, and all available data, the EPA intends to modify the state's original recommendation for these areas and designate the counties in Table 12 as unclassifiable/attainment, except for Anne Arundel and Baltimore Counties, for which EPA intends to designate only the remaining undesignated portions of Anne Arundel and Baltimore Counties as unclassifiable/attainment.

As referenced in the Introduction (see Table 2), the counties associated with sources for which Maryland has installed and begun timely operation of a new, approved SO_2 monitoring network are required to be designated by December 31, 2020, but are not being addressed at this time.

[8] In this Round 3 designations action, EPA is not re-opening any decisions it made in Round 2, and will not respond to comments asking the agency to revisit such decisions.

Counties or portions thereof previously designated unclassifiable in Round 1 (*see* 78 *Federal Register* 4719) and Round 2 (*see* 81 *Federal Register* 45039) will remain unchanged

5.2 Air Quality Monitoring Data for Certain Other Counties and Portions Thereof in Maryland

Table 13. Air Quality Monitoring for Certain Other Counties or Portions Thereof

County/City	AQS Monitor ID	Latitude	Longitude	2011-2013 Design Value	2012-2014 Design Value	2013-2015 Design Value	2014-2016 Design Value
Dorchester County	24-019-0004	38.587525	-76.14101	5*	6*	7*	6
Garrett County	24-023-0002	39.70595	-79.012	19*	20*	20*	15*

These data were available to EPA for consideration in the designations process. However, EPA does not have information indicating this data is in an area of maximum concentration, so this data cannot be used as the basis for designation.

5.5 Jurisdictional Boundaries for Certain Other Counties and Portions Thereof in Maryland

Existing jurisdictional boundaries are considered for the purpose of informing the EPA's designation action for these counties or portions thereof. Our goal is to base designations on clearly defined legal boundaries, and to have these boundaries align with existing administrative boundaries when reasonable. Since the state's original recommendations indicated that insufficient information (generally a lack of modeling/monitoring data) was available to determine if these areas were attainment, it recommended they be unclassifiable.

Maryland's original recommendation, dated April 19, 2011, (https://www.epa.gov/sites/production/files/2016-03/documents/md-rec.pdf) recommended that each county in Maryland be designated as unclassifiable. Both the state and third parties had significant input on the portion of Anne Arundel and Baltimore counties that were designated nonattainment in Round 2. These analyses can be found in the public docket with Docket # EPA-HQ-OAR-2014-0464 at https://www.regulations.gov/docket?D=EPA-HQ-OAR-2014-0464. Also the TSD for Round 2 can be found here: https://www.epa.gov/sites/production/files/2016-06/documents/r3_md_final_designation_tsd_06302016.pdf .

Maryland did not provide an updated recommendation for any remaining counties. With the exception of the county deferred to Round 4 designations, Allegany, and the remaining portions of Anne Arundel and Baltimore that were not addressed in Round 2, Maryland's recommendation for the remaining counties listed in Table 12 continues to be that they be designated unclassifiable. Maryland's recommended boundaries defaulted to the jurisdictional boundary for each county.

5.6 The EPA's Assessment of the Available Information for Certain Other Counties and Portions Thereof in Maryland

These counties were not required to be characterized under 40 CFR 51.1203(c) or (d) and EPA does not have available information including (but not limited to) appropriate modeling analyses and/or monitoring data that suggests that the area may (i) not be meeting the NAAQS, or (ii) contribute to ambient air quality in a nearby area that does not meet the NAAQS. These counties therefore meet the definition of an "unclassifiable/attainment" area for this action. Therefore, the EPA intends to designate the areas in the above Table 12 as unclassifiable/attainment for the 2010 SO_2 NAAQS.

Our intended unclassifiable/attainment areas, bounded by the county or portion thereof boundary, will have clearly defined legal boundaries, and we intend to find these boundaries to be a suitable basis for defining our intended unclassifiable/attainment areas.

As shown in Table 2, EPA is not, at this time, proposing a designation of Allegany County because for the DRR source located in this county the state has placed new monitors and begun operation of the monitor by the required date.

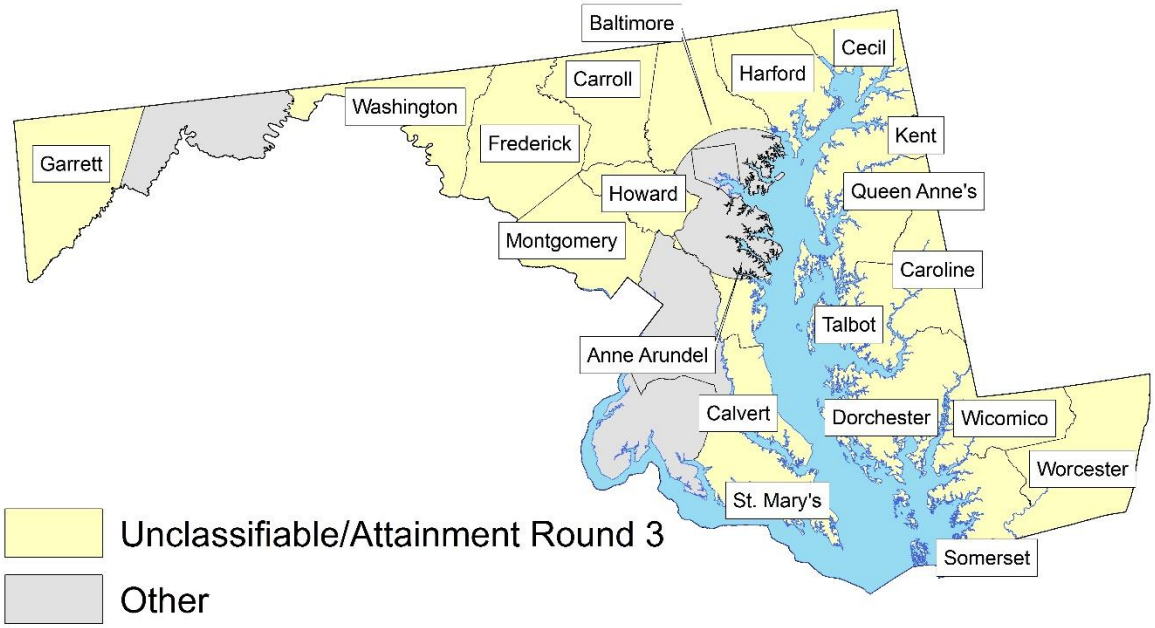
5.7 Summary of Our Intended Designation for Certain Other Counties in Maryland

After careful evaluation of the state's recommendation and supporting information, as well as all available relevant information, the EPA intends to designate the counties or portions thereof in Table 12 as unclassifiable/attainment for the 2010 SO_2 NAAQS. Specifically, the boundaries are generally comprised of county boundaries except for the partial counties of Anne Arundel and

Baltimore. All portions of Anne Arundel county which are not within 26.8 kilometers of Herbert A. Wagner's Unit 3 stack, which is located at 39.17765 N. latitude, 76.52752 W. longitude are being designated as unclassifiable/attainment. All portions of Baltimore county which are not within 26.8 kilometers of Herbert A. Wagner's Unit 3 stack, which is located at 39.17765 N. latitude, 76.52752 W. longitude are being designated as unclassifiable/attainment. For all other counties listed in Table 12, the boundary is the county boundary.

Figure 17 below shows the location of these areas within Maryland.

Figure 17. Boundary of the Intended Unclassifiable/Attainment Areas



At this time, our intended designations for the state only apply to these areas and the other area (Allegany County) presented in this technical support document. The EPA intends to evaluate and designate all remaining undesignated areas in Maryland, i.e., Allegany County, by December 31, 2020.