

submissions in response to this document, see DHS's eRulemaking System of Records notice (85 FR 14226, March 11, 2020).

#### List of Subjects in 33 CFR Part 117

Bridges.

For the reasons discussed in the preamble, the Coast Guard proposes to amend 33 CFR part 117 as follows:

#### Part 117—Drawbridge Operation Regulations

- 1. The authority citation for part 117 continues to read as follows:

**Authority:** 33 U.S.C. 499; 33 CFR 1.05–1; DHS Delegation No. 00170.1, Revision No. 01.3.

- 2. Revise § 117.799(e) to read as follows:

#### § 117.799 Long Island, New York Inland Waterway from East Rockaway Inlet to Shinnecock Canal.

\* \* \* \* \*

(e) The draw of the Atlantic Beach Bridge across Reynolds Channel, mile 0.4, shall operate as follows:

(1) From October 1 through May 14 the draw shall open on signal from 8 a.m. to midnight.

(2) From midnight to 8 a.m. year-round, the draw shall open on signal if at least eight hours notice is given.

(3) From May 15 through September 30, except that it need be opened only on the hour and half-hour from 4 p.m. to 7 p.m. on weekdays and from 11 a.m. to 9 p.m. on Saturdays, Sundays, Memorial Day, Independence Day, and Labor Day.

(4) From May 15 through September 30, from two hours before to one hour after predicted high tide. Predicted high tide occurs 10 minutes earlier than that predicted for Sandy Hook, as given in the tide table published by the National Oceanic and Atmospheric Administration.

\* \* \* \* \*

Dated: August 20, 2023.

**J. W. Mauger,**

Rear Admiral, U.S. Coast Guard, Commander, First Coast Guard District.

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## ENVIRONMENTAL PROTECTION AGENCY

### 40 CFR Part 52

[EPA–R03–OAR–2022–0912; FRL–11269–01–R3]

#### Approval and Promulgation of Air Quality Implementation Plans; Maryland; Regional Haze State Implementation Plan for the Second Implementation Period

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

**SUMMARY:** The Environmental Protection Agency (EPA) is proposing to approve the regional haze state implementation plan (SIP) revision submitted by the State of Maryland on February 8, 2022, as satisfying applicable requirements under the Clean Air Act (CAA) and EPA's Regional Haze Rule for the program's second implementation period. Maryland's SIP submission addresses the requirement that states must periodically revise their long-term strategies for making reasonable progress towards the national goal of preventing any future, and remedying any existing, anthropogenic impairment of visibility, including regional haze, in mandatory Class I Federal areas. The SIP submission also addresses other applicable requirements for the second implementation period of the regional haze program. The EPA is taking this action pursuant to sections 110 and 169A of the Clean Air Act.

**DATES:** Written comments must be received on or before September 25, 2023.

**ADDRESSES:** Submit your comments, identified by Docket ID No. EPA–R03–OAR–2022–0912 at [www.regulations.gov](http://www.regulations.gov). For comments submitted at [Regulations.gov](http://Regulations.gov), follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from [Regulations.gov](http://Regulations.gov). For either manner of submission, the EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be confidential business information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary

submission (*i.e.*, on the web, cloud, or other file sharing system). For additional submission methods, please contact the person identified in the **FOR FURTHER INFORMATION CONTACT** section. For the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit [www.epa.gov/dockets/commenting-epa-dockets](http://www.epa.gov/dockets/commenting-epa-dockets).

#### FOR FURTHER INFORMATION CONTACT:

Adam Yarina, U.S. Environmental Protection Agency, Region 3, 1600 John F. Kennedy Boulevard, Philadelphia, Pennsylvania 19103–2852, at (215) 814–2108, or by email at [yarina.Adam@epa.gov](mailto:yarina.Adam@epa.gov).

#### Table of Contents

- I. What action is the EPA proposing?
- II. Background and Requirements for Regional Haze Plans
  - A. Regional Haze Background
  - B. Roles of Agencies in Addressing Regional Haze
- III. Requirements for Regional Haze Plans for the Second Implementation Period
  - A. Identification of Class I Areas
  - B. Calculations of Baseline, Current, and Natural Visibility Conditions; Progress to Date; and the Uniform Rate of Progress
  - C. Long-Term Strategy for Regional Haze
  - D. Reasonable Progress Goals
  - E. Monitoring Strategy and Other State Implementation Plan Requirements
  - F. Requirements for Periodic Reports Describing Progress Towards the Reasonable Progress Goals
  - G. Requirements for State and Federal Land Manager Coordination
- IV. EPA's Evaluation of Maryland's Regional Haze Submission for the Second Implementation Period
  - A. Background on Maryland's First Implementation Period SIP Submission
  - B. Maryland's Second Implementation Period SIP Submission and the EPA's Evaluation
  - C. Identification of Class I Areas
  - D. Calculations of Baseline, Current, and Natural Visibility Conditions; Progress to Date; and the Uniform Rate of Progress
  - E. Long-Term Strategy for Regional Haze
  - F. Reasonable Progress Goals
  - G. Monitoring Strategy and Other Implementation Plan Requirements
  - H. Requirements for Periodic Reports Describing Progress Towards the Reasonable Progress Goals
- I. Requirements for State and Federal Land Manager Coordination
- V. Proposed Action
- VI. Statutory and Executive Order Reviews

#### I. What action is the EPA proposing?

On February 8, 2022, the Maryland Department of the Environment (MDE) submitted a revision to its SIP to address regional haze for the second implementation period. MDE made this SIP submission to satisfy the requirements of the CAA's regional haze

program pursuant to CAA sections 169A and 169B and 40 CFR 51.308. The EPA is proposing to find that the Maryland regional haze SIP submission for the second implementation period meets the applicable statutory and regulatory requirements and thus proposes to approve Maryland's submission into its SIP.

## II. Background and Requirements for Regional Haze Plans

### A. Regional Haze Background

In the 1977 CAA Amendments, Congress created a program for protecting visibility in the nation's mandatory Class I Federal areas, which include certain national parks and wilderness areas.<sup>1</sup> CAA 169A. The CAA establishes as a national goal the "prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution." CAA 169A(a)(1). The CAA further directs the EPA to promulgate regulations to assure reasonable progress toward meeting this national goal. CAA 169A(a)(4). On December 2, 1980, the EPA promulgated regulations to address visibility impairment in mandatory Class I Federal areas (hereinafter referred to as "Class I areas") that is "reasonably attributable" to a single source or small group of sources. (45 FR 80084, December 2, 1980). These regulations, codified at 40 CFR 51.300 through 51.307, represented the first phase of the EPA's efforts to address visibility impairment. In 1990, Congress added section 169B to the CAA to further address visibility impairment, specifically, impairment from regional haze. CAA 169B. The EPA promulgated the Regional Haze Rule (RHR), codified at 40 CFR 51.308,<sup>2</sup> on July 1, 1999. (64 FR 35714, July 1, 1999). These regional haze regulations are a central component of the EPA's comprehensive visibility protection program for Class I areas.

<sup>1</sup> Areas statutorily designated as mandatory Class I Federal areas consist of national parks exceeding 6,000 acres, wilderness areas and national memorial parks exceeding 5,000 acres, and all international parks that were in existence on August 7, 1977. CAA 162(a). There are 156 mandatory Class I areas. The list of areas to which the requirements of the visibility protection program apply is in 40 CFR part 81, subpart D.

<sup>2</sup> In addition to the generally applicable regional haze provisions at 40 CFR 51.308, the EPA also promulgated regulations specific to addressing regional haze visibility impairment in Class I areas on the Colorado Plateau at 40 CFR 51.309. The latter regulations are applicable only for specific jurisdictions' regional haze plans submitted no later than December 17, 2007, and thus are not relevant here.

Regional haze is visibility impairment that is produced by a multitude of anthropogenic sources and activities which are located across a broad geographic area and that emit pollutants that impair visibility. Visibility impairing pollutants include fine and coarse particulate matter (PM) (e.g., sulfates, nitrates, organic carbon, elemental carbon, and soil dust) and their precursors (e.g., sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and, in some cases, volatile organic compounds (VOC) and ammonia (NH<sub>3</sub>)). Fine particle precursors react in the atmosphere to form fine particulate matter (PM<sub>2.5</sub>), which impairs visibility by scattering and absorbing light. Visibility impairment reduces the perception of clarity and color, as well as visible distance.<sup>3</sup>

To address regional haze visibility impairment, the 1999 RHR established an iterative planning process that requires both states in which Class I areas are located and states "the emissions from which may reasonably be anticipated to cause or contribute to any impairment of visibility" in a Class I area to periodically submit SIP revisions to address such impairment. CAA 169A(b)(2);<sup>4</sup> see also 40 CFR 51.308(b), (f) (establishing submission dates for iterative regional haze SIP revisions); (64 FR 35714 at 35768, July 1, 1999). Under the CAA, each SIP submission must contain "a long-term (ten to fifteen years) strategy for making reasonable progress toward meeting the national goal," CAA 169A(b)(2)(B); the initial round of SIP submissions also

<sup>3</sup> There are several ways to measure the amount of visibility impairment, *i.e.*, haze. One such measurement is the deciview, which is the principal metric used by the RHR. Under many circumstances, a change in one deciview will be perceived by the human eye to be the same on both clear and hazy days. The deciview is unitless. It is proportional to the logarithm of the atmospheric extinction of light, which is the perceived dimming of light due to its being scattered and absorbed as it passes through the atmosphere. Atmospheric light extinction ( $b^{ext}$ ) is a metric used to express visibility and is measured in inverse megameters (Mm<sup>-1</sup>). The EPA's Guidance on Regional Haze State Implementation Plans for the Second Implementation Period ("2019 Guidance") offers the flexibility for the use of light extinction in certain cases. Light extinction can be simpler to use in calculations than deciviews, since it is not a logarithmic function. See, e.g., 2019 Guidance at 16, 19, <https://www.epa.gov/visibility/guidance-regional-haze-state-implementation-plans-second-implementation-period>, The EPA Office of Air Quality Planning and Standards, Research Triangle Park (August 20, 2019). The formula for the deciview is  $10 \ln(b^{ext})/10 \text{ Mm}^{-1}$ . 40 CFR 51.301.

<sup>4</sup> The RHR expresses the statutory requirement for states to submit plans addressing out-of-state class I areas by providing that states must address visibility impairment "in each mandatory Class I Federal area located outside the State that may be affected by emissions from within the State." 40 CFR 51.308(d), (f).

had to address the statutory requirement that certain older, larger sources of visibility impairing pollutants install and operate the best available retrofit technology (BART). CAA 169A(b)(2)(A); 40 CFR 51.308(d), (e). States' first regional haze SIPs were due by December 17, 2007, 40 CFR 51.308(b), with subsequent SIP submissions containing updated long-term strategies originally due July 31, 2018, and every ten years thereafter. (64 FR 35714 at 35768, July 1, 1999). The EPA established in the 1999 RHR that all states either have Class I areas within their borders or "contain sources whose emissions are reasonably anticipated to contribute to regional haze in a Class I area"; therefore, all states must submit regional haze SIPs.<sup>5</sup> *Id.* at 35721.

Much of the focus in the first implementation period of the regional haze program, which ran from 2007 through 2018, was on satisfying states' BART obligations. First implementation period SIPs were additionally required to contain long-term strategies for making reasonable progress toward the national visibility goal, of which BART is one component. The core required elements for the first implementation period SIPs (other than BART) are laid out in 40 CFR 51.308(d). Those provisions required that states containing Class I areas establish reasonable progress goals (RPGs) that are measured in deciviews and reflect the anticipated visibility conditions at the end of the implementation period including from implementation of states' long-term strategies. The first planning period RPGs were required to provide for an improvement in visibility for the most impaired days over the period of the implementation plan and ensure no degradation in visibility for the least impaired days over the same period. In establishing the RPGs for any Class I area in a state, the state was required to consider four statutory factors: the costs of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts of compliance, and the remaining useful life of any potentially affected sources. CAA 169A(g)(1); 40 CFR 51.308(d)(1).

States were also required to calculate baseline (using the five year period of 2000–2004) and natural visibility conditions (*i.e.*, visibility conditions without anthropogenic visibility

<sup>5</sup> In addition to each of the fifty states, the EPA also concluded that the Virgin Islands and District of Columbia must also submit regional haze SIPs because they either contain a Class I area or contain sources whose emissions are reasonably anticipated to contribute regional haze in a Class I area. See 40 CFR 51.300(b) and (d)(3).

impairment) for each Class I area, and to calculate the linear rate of progress needed to attain natural visibility conditions, assuming a starting point of baseline visibility conditions in 2004 and ending with natural conditions in 2064. This linear interpolation is known as the uniform rate of progress (URP) and is used as a tracking metric to help states assess the amount of progress they are making towards the national visibility goal over time in each Class I area.<sup>6</sup> 40 CFR 51.308(d)(1)(i)(B) and (d)(2). The 1999 RHR also provided that States' long-term strategies must include the "enforceable emissions limitations, compliance, schedules, and other measures as necessary to achieve the reasonable progress goals." 40 CFR 51.308(d)(3). In establishing their long-term strategies, states are required to consult with other states that also contribute to visibility impairment in a given Class I area and include all measures necessary to obtain their shares of the emission reductions needed to meet the RPGs. 40 CFR 51.308(d)(3)(i) and (ii). Section 51.308(d) also contains seven additional factors states must consider in formulating their long-term strategies, 40 CFR 51.308(d)(3)(v), as well as provisions governing monitoring and other implementation plan requirements. 40 CFR 51.308(d)(4). Finally, the 1999 RHR required states to submit periodic progress reports—SIP revisions due every five years that contain information on states' implementation of their regional haze plans and an assessment of whether anything additional is needed to make reasonable progress, see 40 CFR 51.308(g) and (h)—and to consult with the Federal Land Manager(s)<sup>7</sup> (FLMs)

<sup>6</sup> EPA established the URP framework in the 1999 RHR to provide "an equitable analytical approach" to assessing the rate of visibility improvement at Class I areas across the country. The start point for the URP analysis is 2004 and the endpoint was calculated based on the amount of visibility improvement that was anticipated to result from implementation of existing CAA programs over the period from the mid-1990s to approximately 2005. Assuming this rate of progress would continue into the future, EPA determined that natural visibility conditions would be reached in 60 years, or 2064 (60 years from the baseline starting point of 2004). However, EPA did not establish 2064 as the year by which the national goal *must* be reached. 64 FR 35714 at 35731–32, July 1, 1999. That is, the URP and the 2064 date are not enforceable targets, but are rather tools that "allow for analytical comparisons between the rate of progress that would be achieved by the state's chosen set of control measures and the URP." (82 FR 3078, 3084, January 10, 2017).

<sup>7</sup> The EPA's regulations define "Federal Land Manager" as "the Secretary of the department with authority over the Federal Class I area (or the Secretary's designee) or, with respect to Roosevelt-Campobello International Park, the Chairman of the

responsible for each Class I area according to the requirements in CAA 169A(d) and 40 CFR 51.308(i).

On January 10, 2017, the EPA promulgated revisions to the RHR, (82 FR 3078, January 10, 2017), that apply for the second and subsequent implementation periods. The 2017 rulemaking made several changes to the requirements for regional haze SIPs to clarify States' obligations and streamline certain regional haze requirements. The revisions to the regional haze program for the second and subsequent implementation periods focused on the requirement that States' SIPs contain long-term strategies for making reasonable progress towards the national visibility goal. The reasonable progress requirements as revised in the 2017 rulemaking (referred to here as the 2017 RHR Revisions) are codified at 40 CFR 51.308(f). Among other changes, the 2017 RHR Revisions adjusted the deadline for States to submit their second implementation period SIPs from July 31, 2018, to July 31, 2021, clarified the order of analysis and the relationship between RPGs and the long-term strategy, and focused on making visibility improvements on the days with the most *anthropogenic* visibility impairment, as opposed to the days with the most visibility impairment overall. The EPA also revised requirements of the visibility protection program related to periodic progress reports and FLM consultation. The specific requirements applicable to second implementation period regional haze SIP submissions are addressed in detail below.

The EPA provided guidance to the states for their second implementation period SIP submissions in the preamble to the 2017 RHR Revisions as well as in subsequent, stand-alone guidance documents. In August 2019, the EPA issued "Guidance on Regional Haze State Implementation Plans for the Second Implementation Period" ("2019 Guidance").<sup>8</sup> On July 8, 2021, the EPA issued a memorandum containing "Clarifications Regarding Regional Haze State Implementation Plans for the Second Implementation Period" ("2021 Clarifications Memo").<sup>9</sup> Additionally,

Roosevelt-Campobello International Park Commission." 40 CFR 51.301.

<sup>8</sup> Guidance on Regional Haze State Implementation Plans for the Second Implementation Period. [www.epa.gov/visibility/guidance-regional-haze-state-implementation-plans-second-implementation-period](http://www.epa.gov/visibility/guidance-regional-haze-state-implementation-plans-second-implementation-period). The EPA Office of Air Quality Planning and Standards, Research Triangle Park (August 20, 2019).

<sup>9</sup> Clarifications Regarding Regional Haze State Implementation Plans for the Second Implementation Period. [www.epa.gov/system/files/documents/2021-07/clarifications-regarding-](http://www.epa.gov/system/files/documents/2021-07/clarifications-regarding-)

the EPA further clarified the recommended procedures for processing ambient visibility data and optionally adjusting the URP to account for international anthropogenic and prescribed fire impacts in two technical guidance documents: the December 2018 "Technical Guidance on Tracking Visibility Progress for the Second Implementation Period of the Regional Haze Program" ("2018 Visibility Tracking Guidance"),<sup>10</sup> and the June 2020 "Recommendation for the Use of Patched and Substituted Data and Clarification of Data Completeness for Tracking Visibility Progress for the Second Implementation Period of the Regional Haze Program" and associated Technical Addendum ("2020 Data Completeness Memo").<sup>11</sup>

As previously explained in the 2021 Clarifications Memo, EPA intends the second implementation period of the regional haze program to secure meaningful reductions in visibility impairing pollutants that build on the significant progress states have achieved to date. The Agency also recognizes that analyses regarding reasonable progress are state-specific and that, based on states' and sources' individual circumstances, what constitutes reasonable reductions in visibility impairing pollutants will vary from state-to-state. While there exist many opportunities for states to leverage both ongoing and upcoming emission reductions under other CAA programs, the Agency expects states to undertake rigorous reasonable progress analyses that identify further opportunities to advance the national visibility goal consistent with the statutory and regulatory requirements. See generally 2021 Clarifications Memo. This is consistent with Congress's determination that a visibility protection program is needed in addition to the CAA's National Ambient Air Quality Standards and Prevention of Significant Deterioration programs, as

*regional-haze-state-implementation-plans-for-the-second-implementation-period.pdf*. The EPA Office of Air Quality Planning and Standards, Research Triangle Park (July 8, 2021).

<sup>10</sup> Technical Guidance on Tracking Visibility Progress for the Second Implementation Period of the Regional Haze Program. [www.epa.gov/visibility/technical-guidance-tracking-visibility-progress-second-implementation-period-regional](http://www.epa.gov/visibility/technical-guidance-tracking-visibility-progress-second-implementation-period-regional). The EPA Office of Air Quality Planning and Standards, Research Triangle Park. (December 20, 2018).

<sup>11</sup> Recommendation for the Use of Patched and Substituted Data and Clarification of Data Completeness for Tracking Visibility Progress for the Second Implementation Period of the Regional Haze Program. [www.epa.gov/visibility/memo-and-technical-addendum-ambient-data-usage-and-completeness-regional-haze-program](http://www.epa.gov/visibility/memo-and-technical-addendum-ambient-data-usage-and-completeness-regional-haze-program). The EPA Office of Air Quality Planning and Standards, Research Triangle Park (June 3, 2020).

further emission reductions may be necessary to adequately protect visibility in Class I areas throughout the country.<sup>12</sup>

### *B. Roles of Agencies in Addressing Regional Haze*

Because the air pollutants and pollution affecting visibility in Class I areas can be transported over long distances, successful implementation of the regional haze program requires long-term, regional coordination among multiple jurisdictions and agencies that have responsibility for Class I areas and the emissions that impact visibility in those areas. In order to address regional haze, states need to develop strategies in coordination with one another, considering the effect of emissions from one jurisdiction on the air quality in another. Five regional planning organizations (RPOs),<sup>13</sup> which include representation from state and tribal governments, the EPA, and FLMs, were developed in the lead-up to the first implementation period to address regional haze. RPOs evaluate technical information to better understand how emissions from State and Tribal land impact Class I areas across the country, pursue the development of regional strategies to reduce emissions of particulate matter and other pollutants leading to regional haze, and help states meet the consultation requirements of the RHR.

The Mid-Atlantic/Northeast Visibility Union (MANE-VU), one of the five RPOs described above, is a collaborative effort of state governments, tribal governments, and various Federal agencies established to initiate and coordinate activities associated with the management of regional haze, visibility, and other air quality issues in the Mid-Atlantic and Northeast corridor of the United States. Member states and tribal governments (listed alphabetically) include: Connecticut, Delaware, the District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Penobscot Indian Nation, Rhode Island, St. Regis Mohawk Tribe, and Vermont. The Federal partner members of MANE-VU are EPA, U.S. National Parks Service

(NPS), U.S. Fish and Wildlife Service (FWS), and U.S. Forest Service (USFS).

### **III. Requirements for Regional Haze Plans for the Second Implementation Period**

Under the CAA and EPA's regulations, all 50 states, the District of Columbia, and the U.S. Virgin Islands are required to submit regional haze SIPs satisfying the applicable requirements for the second implementation period of the regional haze program by July 31, 2021. Each state's SIP must contain a long-term strategy for making reasonable progress toward meeting the national goal of remedying any existing and preventing any future anthropogenic visibility impairment in Class I areas. CAA 169A(b)(2)(B). To this end, 40 CFR 51.308(f) lays out the process by which states determine what constitutes their long-term strategies, with the order of the requirements in 40 CFR 51.308(f)(1) through (3) generally mirroring the order of the steps in the reasonable progress analysis<sup>14</sup> and 40 CFR 51.308(f)(4) through (6) containing additional, related requirements. Broadly speaking, a state first must identify the Class I areas within the state and determine the Class I areas outside the state in which visibility may be affected by emissions from the state. These are the Class I areas that must be addressed in the state's long-term strategy. See 40 CFR 51.308(f) and (f)(2). For each Class I area within its borders, a state must then calculate the baseline, current, and natural visibility conditions for that area, as well as the visibility improvement made to date and the URP. See 40 CFR 51.308(f)(1). Each state having a Class I area and/or emissions that may affect visibility in a Class I area must then develop a long-term strategy that includes the enforceable emission limitations, compliance schedules, and other measures that are necessary to make reasonable progress in such areas. A reasonable progress determination is based on applying the four factors in CAA section 169A(g)(1) to sources of visibility-impairing pollutants that the state has selected to assess for controls for the second implementation period. Additionally, as further explained below, the RHR at 40 CFR 51.3108(f)(2)(iv) separately provides five "additional factors"<sup>15</sup> that states must

consider in developing their long-term strategies. See 40 CFR 51.308(f)(2). A state evaluates potential emission reduction measures for those selected sources and determines which are necessary to make reasonable progress. Those measures are then incorporated into the state's long-term strategy. After a state has developed its long-term strategy, it then establishes RPGs for each Class I area within its borders by modeling the visibility impacts of all reasonable progress controls at the end of the second implementation period, *i.e.*, in 2028, as well as the impacts of other requirements of the CAA. The RPGs include reasonable progress controls not only for sources in the state in which the Class I area is located, but also for sources in other states that contribute to visibility impairment in that area. The RPGs are then compared to the baseline visibility conditions and the URP to ensure that progress is being made towards the statutory goal of preventing any future and remedying any existing anthropogenic visibility impairment in Class I areas. 40 CFR 51.308(f)(2) and (3).

In addition to satisfying the requirements at 40 CFR 51.308(f) related to reasonable progress, the regional haze SIP submissions revisions due by July 31, 2021, for the second implementation period must address the requirements in 40 CFR 51.308(g)(1) through (5) pertaining to periodic reports describing progress towards the RPGs, 40 CFR 51.308(f)(5), as well as requirements for FLM consultation that apply to all visibility protection SIPs and SIP revisions. 40 CFR 51.308(i).

A state must submit its regional haze SIP and subsequent SIP revisions to the EPA according to the requirements applicable to all SIP revisions under the CAA and EPA's regulations. See CAA 169(b)(2); CAA 110(a). Upon EPA approval, a SIP is enforceable by the Agency and the public under the CAA. If EPA finds that a state fails to make a required SIP revision, or if the EPA finds that a state's SIP is incomplete or if disapproves the SIP, the Agency must promulgate a federal implementation plan (FIP) that satisfies the applicable requirements. CAA 110(c)(1).

#### *A. Identification of Class I Areas*

The first step in developing a regional haze SIP is for a state to determine which Class I areas, in addition to those within its borders, "may be affected" by emissions from within the state. In the 1999 RHR, the EPA determined that all

<sup>12</sup> See, *e.g.*, H.R. Rep. No. 95-294 at 205 ("In determining how to best remedy the growing visibility problem in these areas of great scenic importance, the committee realizes that as a matter of equity, the national ambient air quality standards cannot be revised to adequately protect visibility in all areas of the country."), ("the mandatory class I increments of [the PSD program] do not adequately protect visibility in class I areas").

<sup>13</sup> RPOs are sometimes also referred to as "multi-jurisdictional organizations," or MJOs. For the purposes of this document, the terms RPO and MJO are synonymous.

<sup>14</sup> EPA explained in the 2017 RHR Revisions that we were adopting new regulatory language in 40 CFR 51.308(f) that, unlike the structure in 51.308(d), "tracked the actual planning sequence." (82 FR 3091, January 10, 2017).

<sup>15</sup> The five "additional factors" for consideration in section 51.308(f)(2)(iv) are distinct from the four

factors listed in CAA section 169A(g)(1) and 40 CFR 51.308(f)(2)(i) that states must consider and apply to sources in determining reasonable progress.

states contribute to visibility impairment in at least one Class I area, 64 FR 35720–22, July 1, 1999, and explained that the statute and regulations lay out an “extremely low triggering threshold” for determining “whether States should be required to engage in air quality planning and analysis as a prerequisite to determining the need for control of emissions from sources within their State.” *Id.* at 35721.

A state must determine which Class I areas must be addressed by its SIP by evaluating the total emissions of visibility impairing pollutants from all sources within the state. While the RHR does not require this evaluation to be conducted in any particular manner, EPA’s 2019 Guidance provides recommendations for how such an assessment might be accomplished, including by, where appropriate, using the determinations previously made for the first implementation period. 2019 Guidance at 8–9. In addition, the determination of which Class I areas may be affected by a state’s emissions is subject to the requirement in 40 CFR 51.308(f)(2)(iii) to “document the technical basis, including modeling, monitoring, cost, engineering, and emissions information, on which the State is relying to determine the emission reduction measures that are necessary to make reasonable progress in each mandatory Class I Federal area it affects.”

#### *B. Calculations of Baseline, Current, and Natural Visibility Conditions; Progress to Date; and the Uniform Rate of Progress*

As part of assessing whether a SIP submission for the second implementation period is providing for reasonable progress towards the national visibility goal, the RHR contains requirements in 40 CFR 51.308(f)(1) related to tracking visibility improvement over time. The requirements of this subsection apply only to states having Class I areas within their borders; the required calculations must be made for each such Class I area. EPA’s 2018 Visibility Tracking Guidance<sup>16</sup> provides recommendations to assist states in satisfying their obligations under 40 CFR 51.308(f)(1); specifically, in developing information on baseline, current, and natural visibility conditions, and in making optional adjustments to the URP to account for the impacts of international

anthropogenic emissions and prescribed fires. See 82 FR 3078 at 3103–05, January 10, 2017.

The RHR requires tracking of visibility conditions on two sets of days: the clearest and the most impaired days. Visibility conditions for both sets of days are expressed as the average deciview index for the relevant five-year period (the period representing baseline or current visibility conditions). The RHR provides that the relevant sets of days for visibility tracking purposes are the 20% clearest (the 20% of monitored days in a calendar year with the lowest values of the deciview index) and 20% most impaired days (the 20% of monitored days in a calendar year with the highest amounts of anthropogenic visibility impairment).<sup>17</sup> 40 CFR 51.301. A state must calculate visibility conditions for both the 20% clearest and 20% most impaired days for the baseline period of 2000–2004 and the most recent five-year period for which visibility monitoring data are available (representing current visibility conditions). 40 CFR 51.308(f)(1)(i) and (iii). States must also calculate natural visibility conditions for the clearest and most impaired days,<sup>18</sup> by estimating the conditions that would exist on those two sets of days absent anthropogenic visibility impairment. 40 CFR 51.308(f)(1)(ii). Using all these data, states must then calculate, for each Class I area, the amount of progress made since the baseline period (2000–2004) and how much improvement is left to achieve in order to reach natural visibility conditions.

Using the data for the set of most impaired days only, states must plot a line between visibility conditions in the baseline period and natural visibility conditions for each Class I area to determine the URP—the amount of visibility improvement, measured in deciviews, that would need to be achieved during each implementation period in order to achieve natural visibility conditions by the end of 2064. The URP is used in later steps of the

<sup>17</sup> This document also refers to the 20% clearest and 20% most anthropogenically impaired days as the “clearest” and “most impaired” or “most anthropogenically impaired” days, respectively.

<sup>18</sup> The RHR at 40 CFR 51.308(f)(1)(ii) contains an error related to the requirement for calculating two sets of natural conditions values. The rule says “most impaired days or the clearest days” where it should say “most impaired days and clearest days.” This is an error that was intended to be corrected in the 2017 RHR Revisions but did not get corrected in the final rule language. This is supported by the preamble text at 82 FR 3098, January 10, 2017: “In the final version of 40 CFR 51.308(f)(1)(ii), an occurrence of “or” has been corrected to “and” to indicate that natural visibility conditions for both the most impaired days and the clearest days must be based on available monitoring information.”

reasonable progress analysis for informational purposes and to provide a non-enforceable benchmark against which to assess a Class I area’s rate of visibility improvement.<sup>19</sup> Additionally, in the 2017 RHR Revisions, the EPA provided states the option of proposing to adjust the endpoint of the URP to account for impacts of anthropogenic sources outside the United States and/or impacts of certain types of wildland prescribed fires. These adjustments, which must be approved by the EPA, are intended to avoid any perception that states should compensate for impacts from international anthropogenic sources and to give states the flexibility to determine that limiting the use of wildland-prescribed fire is not necessary for reasonable progress. 82 FR 3078 at 3107 footnote 116, January 10, 2017.

EPA’s 2018 Visibility Tracking Guidance can be used to help satisfy the 40 CFR 51.308(f)(1) requirements, including in developing information on baseline, current, and natural visibility conditions, and in making optional adjustments to the URP. In addition, the 2020 Data Completeness Memo provides recommendations on the data completeness language referenced in 40 CFR 51.308(f)(1)(i) and provides updated natural conditions estimates for each Class I area.

#### *C. Long-Term Strategy for Regional Haze*

The core component of a regional haze SIP submission is a long-term strategy that addresses regional haze in each Class I area within a state’s borders and each Class I area that may be affected by emissions from the state. The long-term strategy “must include the enforceable emissions limitations, compliance schedules, and other measures that are necessary to make reasonable progress, as determined pursuant to (f)(2)(i) through (iv).” 40 CFR 51.308(f)(2). The amount of progress that is “reasonable progress” is based on applying the four statutory factors in CAA section 169A(g)(1) in an evaluation of potential control options for sources of visibility impairing pollutants, which is referred to as a “four-factor” analysis. The outcome of that analysis is the emission reduction measures that a particular source or group of sources needs to implement in order to make reasonable progress

<sup>19</sup> Being on or below the URP is not a “safe harbor”; *i.e.*, achieving the URP does not mean that a Class I area is making “reasonable progress” and does not relieve a state from using the four statutory factors to determine what level of control is needed to achieve such progress. *See, e.g.*, 82 FR 3078 at 3093, January 10, 2017.

<sup>16</sup> The 2018 Visibility Tracking Guidance references and relies on parts of the 2003 Tracking Guidance: “Guidance for Tracking Progress Under the Regional Haze Rule,” which can be found at <https://www3.epa.gov/ttnamti1/files/ambient/visible/tracking.pdf>.

towards the national visibility goal. See 40 CFR 51.308(f)(2)(i). Emission reduction measures that are necessary to make reasonable progress may be either new, additional control measures for a source, or they may be the existing emission reduction measures that a source is already implementing. See 2019 Guidance at 43; 2021 Clarifications Memo at 8–10. Such measures must be represented by “enforceable emissions limitations, compliance schedules, and other measures” (*i.e.*, any additional compliance tools) in a state’s long-term strategy in its SIP. 40 CFR 51.308(f)(2).

Section 51.308(f)(2)(i) provides the requirements for the four-factor analysis. The first step of this analysis entails selecting the sources to be evaluated for emission reduction measures; to this end, the RHR requires states to consider “major and minor stationary sources or groups of sources, mobile sources, and area sources” of visibility impairing pollutants for potential four-factor control analysis. 40 CFR 51.308(f)(2)(i). A threshold question at this step is which visibility impairing pollutants will be analyzed. As EPA previously explained, consistent with the first implementation period, EPA generally expects that each state will analyze at least SO<sub>2</sub> and NO<sub>x</sub> in selecting sources and determining control measures. See 2019 Guidance at 12, 2021 Clarifications Memo at 4. A state that chooses not to consider at least these two pollutants should demonstrate why such consideration would be unreasonable. 2021 Clarifications Memo at 4.

While states have the option to analyze *all* sources, the 2019 Guidance explains that “an analysis of control measures is not required for every source in each implementation period,” and that “[s]electing a set of sources for analysis of control measures in each implementation period is . . . consistent with the Regional Haze Rule, which sets up an iterative planning process and anticipates that a state may not need to analyze control measures for all its sources in a given SIP revision.” 2019 Guidance at 9. However, given that source selection is the basis of all subsequent control determinations, a reasonable source selection process “should be designed and conducted to ensure that source selection results in a set of pollutants and sources the evaluation of which has the potential to meaningfully reduce their contributions to visibility impairment.” 2021 Clarifications Memo at 3.

EPA explained in the 2021 Clarifications Memo that each state has an obligation to submit a long-term strategy that addresses the regional haze

visibility impairment that results from emissions from within that state. Thus, source selection should focus on the in-state contribution to visibility impairment and be designed to capture a meaningful portion of the state’s total contribution to visibility impairment in Class I areas. A state should not decline to select its largest in-state sources on the basis that there are even larger out-of-state contributors. 2021 Clarifications Memo at 4.<sup>20</sup>

Thus, while states have discretion to choose any source selection methodology that is reasonable, whatever choices they make should be reasonably explained. To this end, 40 CFR 51.308(f)(2)(i) requires that a state’s SIP submission include “a description of the criteria it used to determine which sources or groups of sources it evaluated.” The technical basis for source selection, which may include methods for quantifying potential visibility impacts such as emissions divided by distance metrics, trajectory analyses, residence time analyses, and/or photochemical modeling, must also be appropriately documented, as required by 40 CFR 51.308(f)(2)(iii).

Once a state has selected the set of sources, the next step is to determine the emissions reduction measures for those sources that are necessary to make reasonable progress for the second implementation period.<sup>21</sup> This is accomplished by considering the four factors—“the costs of compliance, the time necessary for compliance, and the energy and nonair quality environmental impacts of compliance, and the remaining useful life of any existing source subject to such requirements.” CAA 169A(g)(1). The EPA has explained that the four-factor analysis is an assessment of potential emission reduction measures (*i.e.*, control options) for sources; “use of the terms ‘compliance’ and ‘subject to such requirements’ in section 169A(g)(1) strongly indicates that Congress

<sup>20</sup> Similarly, in responding to comments on the 2017 RHR Revisions EPA explained that “[a] state should not fail to address its many relatively low-impact sources merely because it only has such sources and another state has even more low-impact sources and/or some high impact sources.” Responses to Comments on Protection of Visibility: Amendments to Requirements for State Plans; Proposed Rule (81 FR 26942, May 4, 2016) at 87–88.

<sup>21</sup> The CAA provides that, “[i]n determining reasonable progress there shall be taken into consideration” the four statutory factors. CAA 169A(g)(1). However, in addition to four-factor analyses for selected sources, groups of sources, or source categories, a state may also consider additional emission reduction measures for inclusion in its long-term strategy, *e.g.*, from other newly adopted, on-the-books, or on-the-way rules and measures for sources not selected for four-factor analysis for the second planning period.

intended the relevant determination to be the requirements with which sources would have to comply in order to satisfy the CAA’s reasonable progress mandate.” 82 FR 3078 at 3091, January 10, 2017. Thus, for each source it has selected for four-factor analysis,<sup>22</sup> a state must consider a “meaningful set” of technically feasible control options for reducing emissions of visibility impairing pollutants. *Id.* at 3088. The 2019 Guidance provides that “[a] state must reasonably pick and justify the measures that it will consider, recognizing that there is no statutory or regulatory requirement to consider all technically feasible measures or any particular measures. A range of technically feasible measures available to reduce emissions would be one way to justify a reasonable set.” 2019 Guidance at 29.

EPA’s 2021 Clarifications Memo provides further guidance on what constitutes a reasonable set of control options for consideration: “A reasonable four-factor analysis will consider the full range of potentially reasonable options for reducing emissions.” 2021 Clarifications Memo at 7. In addition to add-on controls and other retrofits (*i.e.*, new emission reduction measures for sources), EPA explained that states should generally analyze efficiency improvements for sources’ existing measures as control options in their four-factor analyses, as in many cases such improvements are reasonable given that they typically involve only additional operation and maintenance costs. Additionally, the 2021 Clarifications Memo provides that states that have assumed a higher emission rate than a source has achieved or could potentially achieve using its existing measures should also consider lower emission rates as potential control options. That is, a state should consider a source’s recent actual and projected emission rates to determine if it could

<sup>22</sup> “Each source” or “particular source” is used here as shorthand. While a source-specific analysis is one way of applying the four factors, neither the statute nor the RHR requires states to evaluate individual sources. Rather, states have “the flexibility to conduct four-factor analyses for specific sources, groups of sources or even entire source categories, depending on state policy preferences and the specific circumstances of each state.” 82 FR 3078 at 3088, January 10, 2017. However, not all approaches to grouping sources for four-factor analysis are necessarily reasonable; the reasonableness of grouping sources in any particular instance will depend on the circumstances and the manner in which grouping is conducted. If it is feasible to establish and enforce different requirements for sources or subgroups of sources, and if relevant factors can be quantified for those sources or subgroups, then states should make a separate reasonable progress determination for each source or subgroup. 2021 Clarifications Memo at 7–8.

reasonably attain lower emission rates with its existing measures. If so, the state should analyze the lower emission rate as a control option for reducing emissions. 2021 Clarifications Memo at 7. The EPA's recommendations to analyze potential efficiency improvements and achievable lower emission rates apply to both sources that have been selected for four-factor analysis and those that have forgone a four-factor analysis on the basis of existing "effective controls." See 2021 Clarifications Memo at 5, 10.

After identifying a reasonable set of potential control options for the sources it has selected, a state then collects information on the four factors with regard to each option identified. The EPA has also explained that, in addition to the four statutory factors, states have flexibility under the CAA and RHR to reasonably consider visibility benefits as an additional factor alongside the four statutory factors.<sup>23</sup> The 2019 Guidance provides recommendations for the types of information that can be used to characterize the four factors (with or without visibility), as well as ways in which states might reasonably consider and balance that information to determine which of the potential control options is necessary to make reasonable progress. See 2019 Guidance at 30–36. The 2021 Clarifications Memo contains further guidance on how states can reasonably consider modeled visibility impacts or benefits in the context of a four-factor analysis. 2021 Clarifications Memo at 12–13, 14–15. Specifically, EPA explained that while visibility can reasonably be used when comparing and choosing between multiple reasonable control options, it should not be used to summarily reject controls that are reasonable given the four statutory factors. 2021 Clarifications Memo at 13. Ultimately, while states have discretion to reasonably weigh the factors and to determine what level of control is needed, 40 CFR 51.308(f)(2)(i) provides that a state "must include in its implementation plan a description of . . . how the four factors were taken into consideration in selecting the measure for inclusion in its long-term strategy."

As explained above, 40 CFR 51.308(f)(2)(i) requires states to determine the emission reduction measures for sources that are necessary to make reasonable progress by considering the four factors. Pursuant to

40 CFR 51.308(f)(2), measures that are necessary to make reasonable progress towards the national visibility goal must be included in a state's long-term strategy and in its SIP.<sup>24</sup> If the outcome of a four-factor analysis is a new, additional emission reduction measure for a source, that new measure is necessary to make reasonable progress towards remedying existing anthropogenic visibility impairment and must be included in the SIP. If the outcome of a four-factor analysis is that no new measures are reasonable for a source, continued implementation of the source's existing measures is generally necessary to prevent future emission increases and thus to make reasonable progress towards the second part of the national visibility goal: preventing future anthropogenic visibility impairment. See CAA 169A(a)(1). That is, when the result of a four-factor analysis is that no new measures are necessary to make reasonable progress, the source's existing measures are generally necessary to make reasonable progress and must be included in the SIP. However, there may be circumstances in which a state can demonstrate that a source's existing measures are *not* necessary to make reasonable progress. Specifically, if a state can demonstrate that a source will continue to implement its existing measures and will not increase its emission rate, it may not be necessary to have those measures in the long-term strategy in order to prevent future emission increases and future visibility impairment. EPA's 2021 Clarifications Memo provides further explanation and guidance on how states may demonstrate that a source's existing measures are not necessary to make reasonable progress. See 2021 Clarifications Memo at 8–10. If the state can make such a demonstration, it need not include a source's existing measures in the long-term strategy or its SIP.

As with source selection, the characterization of information on each of the factors is also subject to the documentation requirement in 40 CFR 51.308(f)(2)(iii). The reasonable progress

analysis, including source selection, information gathering, characterization of the four statutory factors (and potentially visibility), balancing of the four factors, and selection of the emission reduction measures that represent reasonable progress, is a technically complex exercise, but also a flexible one that provides states with bounded discretion to design and implement approaches appropriate to their circumstances. Given this flexibility, 40 CFR 51.308(f)(2)(iii) plays an important function in requiring a state to document the technical basis for its decision making so that the public and the EPA can comprehend and evaluate the information and analysis the state relied upon to determine what emission reduction measures must be in place to make reasonable progress. The technical documentation must include the modeling, monitoring, cost, engineering, and emissions information on which the state relied to determine the measures necessary to make reasonable progress. This documentation requirement can be met through the provision of and reliance on technical analyses developed through a regional planning process, so long as that process and its output has been approved by all state participants. In addition to the explicit regulatory requirement to document the technical basis of their reasonable progress determinations, states are also subject to the general principle that those determinations must be reasonably moored to the statute.<sup>25</sup> That is, a state's decisions about the emission reduction measures that are necessary to make reasonable progress must be consistent with the statutory goal of remedying existing and preventing future visibility impairment.

The four statutory factors (and potentially visibility) are used to determine what emission reduction measures for selected sources must be included in a state's long-term strategy for making reasonable progress. Additionally, the RHR at 40 CFR 51.3108(f)(2)(iv) separately provides five "additional factors"<sup>26</sup> that states must consider in developing their long-term

<sup>24</sup> States may choose to, but are not required to, include measures in their long-term strategies beyond just the emission reduction measures that are necessary for reasonable progress. See 2021 Clarifications Memo at 16. For example, states with smoke management programs may choose to submit their smoke management plans to EPA for inclusion in their SIPs but are not required to do so. See, e.g., 82 FR 3078 at 3108–09, January 10, 2017 (requirement to consider smoke management practices and smoke management programs under 40 CFR 51.308(f)(2)(iv) does not require states to adopt such practices or programs into their SIPs, although they may elect to do so).

<sup>25</sup> See *Arizona ex rel. Darwin v. U.S. EPA*, 815 F.3d 519, 531 (9th Cir. 2016); *Nebraska v. U.S. EPA*, 812 F.3d 662, 668 (8th Cir. 2016); *North Dakota v. EPA*, 730 F.3d 750, 761 (8th Cir. 2013); *Oklahoma v. EPA*, 723 F.3d 1201, 1206, 1208–10 (10th Cir. 2013); cf. also *Nat'l Parks Conservation Ass'n v. EPA*, 803 F.3d 151, 165 (3d Cir. 2015); *Alaska Dep't of Envtl. Conservation v. EPA*, 540 U.S. 461, 485, 490 (2004).

<sup>26</sup> The five "additional factors" for consideration in section 51.308(f)(2)(iv) are distinct from the four factors listed in CAA section 169A(g)(1) and 40 CFR 51.308(f)(2)(i) that states must consider and apply to sources in determining reasonable progress.

<sup>23</sup> See, e.g., Responses to Comments on Protection of Visibility: Amendments to Requirements for State Plans; Proposed Rule (81 FR 26942, May 4, 2016), Docket Number EPA–HQ–OAR–2015–0531, U.S. Environmental Protection Agency at 186; 2019 Guidance at 36–37.

strategies: (1) emission reductions due to ongoing air pollution control programs, including measures to address reasonably attributable visibility impairment; (2) measures to reduce the impacts of construction activities; (3) source retirement and replacement schedules; (4) basic smoke management practices for prescribed fire used for agricultural and wildland vegetation management purposes and smoke management programs; and (5) the anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions over the period addressed by the long-term strategy. The 2019 Guidance provides that a state may satisfy this requirement by considering these additional factors in the process of selecting sources for four-factor analysis, when performing that analysis, or both, and that not every one of the additional factors needs to be considered at the same stage of the process. See 2019 Guidance at 21. EPA provided further guidance on the five additional factors in the 2021 Clarifications Memo, explaining that a state should generally not reject cost-effective and otherwise reasonable controls merely because there have been emission reductions since the first planning period owing to other ongoing air pollution control programs or merely because visibility is otherwise projected to improve at Class I areas. Additionally, states generally should not rely on these additional factors to summarily assert that the state has already made sufficient progress and, therefore, no sources need to be selected or no new controls are needed regardless of the outcome of four-factor analyses. 2021 Clarifications Memo at 13.

Because the air pollution that causes regional haze crosses state boundaries, 40 CFR 51.308(f)(2)(ii) requires a state to consult with other states that also have emissions that are reasonably anticipated to contribute to visibility impairment in a given Class I area. Consultation allows for each state that impacts visibility in an area to share whatever technical information, analyses, and control determinations may be necessary to develop coordinated emission management strategies. This coordination may be managed through inter- and intra-RPO consultation and the development of regional emissions strategies; additional consultations between states outside of RPO processes may also occur. If a state, pursuant to consultation, agrees that certain measures (e.g., a certain emission limitation) are necessary to make reasonable progress at a Class I

area, it must include those measures in its SIP. 40 CFR 51.308(f)(2)(ii)(A). Additionally, the RHR requires that states that contribute to visibility impairment at the same Class I area consider the emission reduction measures the other contributing states have identified as being necessary to make reasonable progress for their own sources. 40 CFR 51.308(f)(2)(ii)(B). If a state has been asked to consider or adopt certain emission reduction measures, but ultimately determines those measures are not necessary to make reasonable progress, that state must document in its SIP the actions taken to resolve the disagreement. 40 CFR 51.308(f)(2)(ii)(C). The EPA will consider the technical information and explanations presented by the submitting state and the state with which it disagrees when considering whether to approve the state's SIP. See *id.*; 2019 Guidance at 53. Under all circumstances, a state must document in its SIP submission all substantive consultations with other contributing states. 40 CFR 51.308(f)(2)(ii)(C).

#### D. Reasonable Progress Goals

Reasonable progress goals “measure the progress that is projected to be achieved by the control measures states have determined are necessary to make reasonable progress based on a four-factor analysis.” 82 FR 3078 at 3091, January 10, 2017. Their primary purpose is to assist the public and the EPA in assessing the reasonableness of states' long-term strategies for making reasonable progress towards the national visibility goal. See 40 CFR 51.308(f)(3)(iii) and (iv). States in which Class I areas are located must establish two RPGs, both in deciviews—one representing visibility conditions on the clearest days and one representing visibility on the most anthropogenically impaired days—for each area within their borders. 40 CFR 51.308(f)(3)(i). The two RPGs are intended to reflect the projected impacts, on the two sets of days, of the emission reduction measures the state with the Class I area, as well as all other contributing states, have included in their long-term strategies for the second implementation period.<sup>27</sup> The RPGs also account for the

<sup>27</sup> RPGs are intended to reflect the projected impacts of the measures all contributing states include in their long-term strategies. However, due to the timing of analyses and of control determinations by other states, other on-going emissions changes, a particular state's RPGs may not reflect all control measures and emissions reductions that are expected to occur by the end of the implementation period. The 2019 Guidance provides recommendations for addressing the timing of RPG calculations when states are developing their long-term strategies on disparate

projected impacts of implementing other CAA requirements, including non-SIP based requirements. Because RPGs are the modeled result of the measures in states' long-term strategies (as well as other measures required under the CAA), they cannot be determined before states have conducted their four-factor analyses and determined the control measures that are necessary to make reasonable progress. See 2021 Clarifications Memo at 6.

For the second implementation period, the RPGs are set for 2028. Reasonable progress goals are not enforceable targets, 40 CFR 51.308(f)(3)(iii); rather, they “provide a way for the states to check the projected outcome of the [long-term strategy] against the goals for visibility improvement.” 2019 Guidance at 46. While states are not legally obligated to achieve the visibility conditions described in their RPGs, 40 CFR 51.308(f)(3)(i) requires that “[t]he long-term strategy and the reasonable progress goals must provide for an improvement in visibility for the most impaired days since the baseline period and ensure no degradation in visibility for the clearest days since the baseline period.” Thus, states are required to have emission reduction measures in their long-term strategies that are projected to achieve visibility conditions on the most impaired days that are better than the baseline period and shows no degradation on the clearest days compared to the clearest days from the baseline period. The baseline period for the purpose of this comparison is the baseline visibility condition—the annual average visibility condition for the period 2000–2004. See 40 CFR 51.308(f)(1)(i), 82 FR 3078 at 3097–98, January 10, 2017.

So that RPGs may also serve as a metric for assessing the amount of progress a state is making towards the national visibility goal, the RHR requires states with Class I areas to compare the 2028 RPG for the most impaired days to the corresponding point on the URP line (representing visibility conditions in 2028 if visibility were to improve at a linear rate from conditions in the baseline period of 2000–2004 to natural visibility conditions in 2064). If the most impaired days RPG in 2028 is above the URP (*i.e.*, if visibility conditions are improving more slowly than the rate described by the URP), each state that contributes to visibility impairment in the Class I area must demonstrate, based on the four-factor analysis required

schedules, as well as for adjusting RPGs using a post-modeling approach. 2019 Guidance at 47–48.



under 40 CFR 51.308(f)(2)(i), that no additional emission reduction measures would be reasonable to include in its long-term strategy. 40 CFR 51.308(f)(3)(ii). To this end, 40 CFR 51.308(f)(3)(ii) requires that each state contributing to visibility impairment in a Class I area that is projected to improve more slowly than the URP provide “a robust demonstration, including documenting the criteria used to determine which sources or groups [of] sources were evaluated and how the four factors required by paragraph (f)(2)(i) were taken into consideration in selecting the measures for inclusion in its long-term strategy.” The 2019 Guidance provides suggestions about how such a “robust demonstration” might be conducted. See 2019 Guidance at 50–51.

The 2017 RHR, 2019 Guidance, and 2021 Clarifications Memo also explain that projecting an RPG that is on or below the URP based on only on-the-books and/or on-the-way control measures (*i.e.*, control measures already required or anticipated before the four-factor analysis is conducted) is not a “safe harbor” from the CAA’s and RHR’s requirement that all states must conduct a four-factor analysis to determine what emission reduction measures constitute reasonable progress. The URP is a planning metric used to gauge the amount of progress made thus far and the amount left before reaching natural visibility conditions. However, the URP is not based on consideration of the four statutory factors and therefore cannot answer the question of whether the amount of progress being made in any particular implementation period is “reasonable progress.” See 82 FR 3078 at 3093, 3099–3100, January 10, 2017; 2019 Guidance at 22; 2021 Clarifications Memo at 15–16.

#### *E. Monitoring Strategy and Other State Implementation Plan Requirements*

Section 51.308(f)(6) requires states to have certain strategies and elements in place for assessing and reporting on visibility. Individual requirements under this subsection apply either to states with Class I areas within their borders, states with no Class I areas but that are reasonably anticipated to cause or contribute to visibility impairment in any Class I area, or both. A state with Class I areas within its borders must submit with its SIP revision a monitoring strategy for measuring, characterizing, and reporting regional haze visibility impairment that is representative of all Class I areas within the state. SIP revisions for such states must also provide for the establishment of any additional monitoring sites or

equipment needed to assess visibility conditions in Class I areas, as well as reporting of all visibility monitoring data to the EPA at least annually. Compliance with the monitoring strategy requirement may be met through a state’s participation in the Interagency Monitoring of Protected Visual Environments (IMPROVE) monitoring network, which is used to measure visibility impairment caused by air pollution at the 156 Class I areas covered by the visibility program. 40 CFR 51.308(f)(6), (f)(6)(i) and (iv). The IMPROVE monitoring data is used to determine the 20% most anthropogenically impaired and 20% clearest sets of days every year at each Class I area and tracks visibility impairment over time.

All states’ SIPs must provide for procedures by which monitoring data and other information are used to determine the contribution of emissions from within the state to regional haze visibility impairment in affected Class I areas. 40 CFR 51.308(f)(6)(ii) and (iii). Section 51.308(f)(6)(v) further requires that all states’ SIPs provide for a statewide inventory of emissions of pollutants that are reasonably anticipated to cause or contribute to visibility impairment in any Class I area; the inventory must include emissions for the most recent year for which data are available and estimates of future projected emissions. States must also include commitments to update their inventories periodically. The inventories themselves do not need to be included as elements in the SIP and are not subject to EPA review as part of the Agency’s evaluation of a SIP revision.<sup>28</sup> All states’ SIPs must also provide for any other elements, including reporting, recordkeeping, and other measures, that are necessary for states to assess and report on visibility. 40 CFR 51.308(f)(6)(vi). Per the 2019 Guidance, a state may note in its regional haze SIP that its compliance with the Air Emissions Reporting Rule (AERR) in 40 CFR part 51 Subpart A satisfies the requirement to provide for an emissions inventory for the most recent year for which data are available. To satisfy the requirement to provide estimates of future projected emissions, a state may explain in its SIP how projected emissions were developed for use in establishing RPGs for its own and nearby Class I areas.<sup>29</sup>

Separate from the requirements related to monitoring for regional haze

purposes under 40 CFR 51.308(f)(6), the RHR also contains a requirement at 40 CFR 51.308(f)(4) related to any additional monitoring that may be needed to address visibility impairment in Class I areas from a single source or a small group of sources. This is called “reasonably attributable visibility impairment.”<sup>30</sup> Under this provision, if the EPA or the FLM of an affected Class I area has advised a state that additional monitoring is needed to assess reasonably attributable visibility impairment, the state must include in its SIP revision for the second implementation period an appropriate strategy for evaluating such impairment.

#### *F. Requirements for Periodic Reports Describing Progress Towards the Reasonable Progress Goals*

Section 51.308(f)(5) requires a state’s regional haze SIP revision to address the requirements of paragraphs 40 CFR 51.308(g)(1) through (5) so that the plan revision due in 2021 will serve also as a progress report addressing the period since submission of the progress report for the first implementation period. The regional haze progress report requirement is designed to inform the public and the EPA about a state’s implementation of its existing long-term strategy and whether such implementation is in fact resulting in the expected visibility improvement. See 81 FR 26942, 26950 (May 4, 2016), (82 FR 3078 at 3119, January 10, 2017). To this end, every state’s SIP revision for the second implementation period is required to describe the status of implementation of all measures included in the state’s long-term strategy, including BART and reasonable progress emission reduction measures from the first implementation period, and the resulting emissions reductions. 40 CFR 51.308(g)(1) and (2).

A core component of the progress report requirements is an assessment of changes in visibility conditions on the clearest and most impaired days. For second implementation period progress reports, 40 CFR 51.308(g)(3) requires states with Class I areas within their borders to first determine current visibility conditions for each area on the most impaired and clearest days, 40 CFR 51.308(g)(3)(i)(B), and then to calculate the difference between those current conditions and baseline (2000–2004) visibility conditions in order to assess progress made to date. See 40 CFR 51.308(g)(3)(ii)(B). States must also

<sup>28</sup> See “Step 8: Additional requirements for regional haze SIPs” in 2019 Regional Haze Guidance at 55.

<sup>29</sup> *Id.*

<sup>30</sup> EPA’s visibility protection regulations define “reasonably attributable visibility impairment” as “visibility impairment that is caused by the emission of air pollutants from one, or a small number of sources.” 40 CFR 51.301.

assess the changes in visibility impairment for the most impaired and clearest days since they submitted their first implementation period progress reports. See 40 CFR 51.308(g)(3)(iii)(B) and (f)(5). Since different states submitted their first implementation period progress reports at different times, the starting point for this assessment will vary state by state.

Similarly, states must provide analyses tracking the change in emissions of pollutants contributing to visibility impairment from all sources and activities within the state over the period since they submitted their first implementation period progress reports. See 40 CFR 51.308(g)(4) and (f)(5). Changes in emissions should be identified by the type of source or activity. Section 51.308(g)(5) also addresses changes in emissions since the period addressed by the previous progress report and requires states' SIP revisions to include an assessment of any significant changes in anthropogenic emissions within or outside the state. This assessment must include an explanation of whether these changes in emissions were anticipated and whether they have limited or impeded progress in reducing emissions and improving visibility relative to what the state projected based on its long-term strategy for the first implementation period.

#### *G. Requirements for State and Federal Land Manager Coordination*

Clean Air Act section 169A(d) requires that before a state holds a public hearing on a proposed regional haze SIP revision, it must consult with the appropriate FLM or FLMs; pursuant to that consultation, the state must include a summary of the FLMs' conclusions and recommendations in the notice to the public. Consistent with this statutory requirement, the RHR also requires that states "provide the [FLM] with an opportunity for consultation, in person and at a point early enough in the State's policy analyses of its long-term strategy emission reduction obligation so that information and recommendations provided by the [FLM] can meaningfully inform the State's decisions on the long-term strategy." 40 CFR 51.308(i)(2). Consultation that occurs 120 days prior to any public hearing or public comment opportunity will be deemed "early enough," but the RHR provides that in any event the opportunity for consultation must be provided at least 60 days before a public hearing or comment opportunity. This consultation must include the opportunity for the FLMs to discuss their assessment of

visibility impairment in any Class I area and their recommendations on the development and implementation of strategies to address such impairment. 40 CFR 51.308(i)(2). In order for the EPA to evaluate whether FLM consultation meeting the requirements of the RHR has occurred, the SIP submission should include documentation of the timing and content of such consultation. The SIP revision submitted to the EPA must also describe how the state addressed any comments provided by the FLMs. 40 CFR 51.308(i)(3). Finally, a SIP revision must provide procedures for continuing consultation between the state and FLMs regarding the state's visibility protection program, including development and review of SIP revisions, five-year progress reports, and the implementation of other programs having the potential to contribute to impairment of visibility in Class I areas. 40 CFR 51.308(i)(4).

#### **IV. EPA's Evaluation of Maryland's Regional Haze Submission for the Second Implementation Period**

##### *A. Background on Maryland's First Implementation Period SIP Submission*

MDE submitted its regional haze SIP for the first implementation period to the EPA on February 13, 2012. The EPA approved Maryland's first implementation period regional haze SIP submission on July 6, 2012 (77 FR 39938, July 6, 2012), effective August 6, 2012. EPA's approval included the portions of the plan that addressed the reasonable progress requirements and Maryland's implementation of Best Available Retrofit Technologies (BART) on eligible sources. The requirements for regional haze SIPs for the first implementation period are contained in 40 CFR 51.308(d) and (e). 40 CFR 51.308(b). Pursuant to 40 CFR 51.308(g), Maryland was also responsible for submitting a five-year progress report as a SIP revision for the first implementation period, which it did on August 9, 2017. The EPA approved the progress report on November 26, 2018 (83 FR 60363, November 26, 2018), effective December 26, 2018.

##### *B. Maryland's Second Implementation Period SIP Submission and the EPA's Evaluation*

In accordance with CAA sections 169A and the RHR at 40 CFR 51.308(f), on February 8, 2022, MDE submitted a revision to the Maryland SIP to address its regional haze obligations for the second implementation period, which runs through 2028. Maryland made its 2020 Regional Haze SIP submission available for public comment on

December 1, 2021 through January 4, 2022. MDE received and responded to public comments and included the comments and responses to those comments in their submission.

The following sections describe Maryland's SIP submission, including analyses conducted by MANE-VU and Maryland's determinations based on those analyses, Maryland's assessment of progress made since the first implementation period in reducing emissions of visibility impairing pollutants, and the visibility improvement progress at nearby Class I areas. This document also contains EPA's evaluation of Maryland's submission against the requirements of the CAA and RHR for the second implementation period of the regional haze program.

##### *C. Identification of Class I Areas*

Section 169A(b)(2) of the CAA requires each state in which any Class I area is located or "the emissions from which may reasonably be anticipated to cause or contribute to any impairment of visibility" in a Class I area to have a plan for making reasonable progress toward the national visibility goal. The RHR implements this statutory requirement at 40 CFR 51.308(f), which provides that each state's plan "must address regional haze in each mandatory Class I Federal area located within the State and in each mandatory Class I Federal area located outside the State that may be affected by emissions from within the State," and 40 CFR 51.308(f)(2), which requires each state's plan to include a long-term strategy that addresses regional haze in such Class I areas.

The EPA explained in the 1999 RHR preamble that the CAA section 169A(b)(2) requirement that states submit SIPs to address visibility impairment establishes "an 'extremely low triggering threshold' in determining which States should submit SIPs for regional haze." 64 FR 35714 at 35721, July 1, 1999. In concluding that each of the contiguous 48 states and the District of Columbia meet this threshold,<sup>31</sup> the EPA relied on "a large body of evidence demonstrat[ing] that long-range transport of fine PM contributes to regional haze," *id.*, including modeling studies that "preliminarily

<sup>31</sup> EPA determined that "there is more than sufficient evidence to support our conclusion that emissions from each of the 48 contiguous states and the District of Columbia may reasonably be anticipated to cause or contribute to visibility impairment in a Class I area." 64 FR 35714 at 35721, July 1, 1999. Hawaii, Alaska, and the U.S. Virgin Islands must also submit regional haze SIPs because they contain Class I areas.

demonstrated that each State not having a Class I area had emissions contributing to impairment in at least one downwind Class I area.” *Id.* at 35722. In addition to the technical evidence supporting a conclusion that each state contributes to *existing* visibility impairment, the EPA also explained that the second half of the national visibility goal—preventing *future* visibility impairment—requires having a framework in place to address future growth in visibility-impairing emissions and makes it inappropriate to “establish criteria for excluding States or geographic areas from consideration as potential contributors to regional haze visibility impairment.” *Id.* at 35721. Thus, the EPA concluded that the agency’s “statutory authority and the scientific evidence are sufficient to require all States to develop regional haze SIPs to ensure the prevention of any future impairment of visibility, and to conduct further analyses to determine whether additional control measures are needed to ensure reasonable progress in remedying existing impairment in downwind Class I areas.” *Id.* at 35722. EPA’s 2017 revisions to the RHR did not disturb this conclusion. See 82 FR 3078 at 3094, January 10, 2017.

Maryland has no mandatory Class I Federal area within its borders, but has previously been shown to have sources with emissions that impact visibility at downwind mandatory Class I Federal areas. For the second implementation period, MANE–VU performed technical analyses<sup>32</sup> to help assess source and state-level contributions to visibility impairment and the need for interstate consultation. MANE–VU used the results of these analyses to determine which states’ emissions “have a high likelihood of affecting visibility in MANE–VU’s Class I areas.”<sup>33</sup> Similar to metrics used in the first implementation period,<sup>34</sup> MANE–VU used a greater than 2 percent of sulfate plus nitrate emissions contribution criteria to determine whether emissions from individual jurisdictions within the region affected visibility in any Class I areas. The MANE–VU analyses for the second implementation period used a combination of data analysis techniques, including emissions data, distance from Class I areas, wind trajectories, and CALPUFF dispersion modeling. Although many of the

analyses focused only on SO<sub>2</sub> emissions and resultant particulate sulfate contributions to visibility impairment, some also incorporated NO<sub>x</sub> emissions to estimate particulate nitrate contributions.

One MANE–VU analysis used for contribution assessment was CALPUFF air dispersion modeling. The CALPUFF model was used to estimate sulfate and nitrate formation and transport in MANE–VU and nearby regions originating from large electric generating unit (EGU) point sources and other large industrial and institutional sources in the eastern and central United States. Information from an initial round of CALPUFF modeling was collated for the 444 EGUs that were determined to warrant further scrutiny based on their emissions of SO<sub>2</sub> and NO<sub>x</sub>. The list of EGUs was based on an enhanced “Q/d” analysis<sup>35</sup> that considered recent SO<sub>2</sub> emissions in the eastern United States and an analysis that adjusted previous 2002 MANE–VU CALPUFF modeling by applying a ratio of 2011 to 2002 SO<sub>2</sub> emissions. This list of sources was then enhanced by including the top five SO<sub>2</sub> and NO<sub>x</sub> emission sources for 2011 for each state included in the modeling domain. A total of 311 EGU stacks (as opposed to individual units) were included in the CALPUFF modeling analysis. Initial information was also collected on the 50 industrial and institutional sources that, according to 2011 Q/d analysis, contributed the most to visibility impact in each Class I area. The ultimate CALPUFF modeling run included a total of 311 EGU stacks and 82 industrial facilities. The summary report for the CALPUFF modeling included the top 10 most impacting EGUs and the top 5 most impacting industrial/institutional sources for each Class I area and compiled those results into a ranked list of the most impacting EGUs and industrial sources at MANE–VU Class I areas.<sup>36</sup>

Maryland had ten EGU sources<sup>37</sup> and six industrial/institutional sources<sup>38</sup>

that were included in the MANE–VU CALPUFF modeling analysis.<sup>39</sup> The EGU facilities Brandon Shores, Chalk Point, Herbert Wagner, and Morgantown were identified as among the Top 25 most impactful EGU facilities for Shenandoah National Park Class I area, and EGU facility CP Crane was also identified as among the Top 25 most impactful EGU facilities for Dolly Sods Wilderness Class I area. EGU facilities Brandon Shores, Chalk Point, CP Crane, Herbert Wagner, and Morgantown were also among the EGU facilities identified as having the Top Impacting EGU stacks. The Luke Paper Company and Sparrows Point industrial facilities were identified as among the Top 25 visibility impacting industrial/institutional sources for Acadia National Park, Brigantine National Wilderness Area, Great Gulf Wilderness, Lye Brook Wilderness, Dolly Sods Wilderness, and Shenandoah National Park Class I areas. The Indian Head Naval Support Facility was also identified as among the Top 25 visibility impacting industrial/institutional sources for Dolly Sods Wilderness and Shenandoah National Park.

In its submittal, Maryland indicates that Brandon Shores Generating Station has agreed via legal consent agreement to cease coal combustion at the site by 2026.<sup>40</sup> Maryland indicates that Chalk Point Generation Station ceased coal operations in 2021 and closed, and that Maryland subsequently filed a Retired Unit Exemption form with EPA, specifying that the Chalk Point units identified are permanently shut down and cannot be restarted, and that a new owner would be required to obtain all new permits.<sup>41</sup> Maryland also indicates that Herbert Wagner Generating Station has agreed to cease coal combustion by 2026; MDE and Herbert Wagner owner/operator Raven Power, Fort Smallwood LLC, entered into a legal consent order requiring Raven Power to cease coal combustion at Herbert Wager no later than January 1, 2026.<sup>42</sup> Maryland

Head, and Sparrows Point, LLC (Unit 0939 and Unit 0941).

<sup>39</sup> See docket document, “2016 MANE VU Source Contribution Modeling Report (CALPUFF Modeling of Large EGUs and Industrial Sources) (April 4, 2017)”.

<sup>40</sup> See Section 2.4 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022), and docket documents “MDE SO<sub>2</sub> 2010 NAAQS SIP for Baltimore and Anne Arundel NA (January 31, 2020)”, and “MDE SO<sub>2</sub> 2010 NAAQS SIP for Baltimore and Anne Arundel NA (January 31, 2020)—Appendix B—Consent Orders, Permits, and Plan Approvals”.

<sup>41</sup> See docket document, “MDE EPA Chalk Point Units 1&2 Retired Unit Exemption Forms 6–4–21 (June 4, 2021)”.

<sup>42</sup> See Appendix 19, “Herbert A. Wagner Generating Station Consent Order”.

<sup>32</sup> The contribution assessment methodologies for MANE–VU Class I areas are summarized in Appendix 1 of Maryland’s SIP submittal, which can be found in the docket, “Selection of States for MANE–VU Regional Haze Consultation (2018).”

<sup>33</sup> *Id.*

<sup>34</sup> See docket EPA–R03–OAR–2022–0912 for MANE–VU supporting materials.

<sup>35</sup> “Q/d” is emissions (Q) in tons per year, typically of one or a combination of visibility-impairing pollutants, divided by distance to a class I area (d) in kilometers. The resulting ratio is commonly used as a metric to assess a source’s potential visibility impacts on a particular class I area.

<sup>36</sup> See docket document, “2016 MANE VU Source Contribution Modeling Report (CALPUFF Modeling of Large EGUs and Industrial Sources) (April 4, 2017)”.

<sup>37</sup> Brandon Shores (Unit 1 & Unit 2), CP Crane (Unit 1 & Unit 2), Chalk Point (Units 1 & 2), Dickerson (Units 1–3), Herbert Wager (Unit 3 & Units 1, 2, and 4), and Morgantown (Unit 1 and Unit 2).

<sup>38</sup> Luke Paper Company (Unit 0018, Unit 0019, and Unit 0235), Naval Support Facility Indian

included the consent order as part of its SIP submittal. Maryland also indicates that CP Crane Generating Station has disabled its coal boilers and agreed via legal consent agreement to never again stockpile or burn coal at the facility.<sup>43</sup> Maryland further indicates that the Luke Paper Company industrial facility has ceased operations, closed and relinquished their air permits as of May 29, 2020;<sup>44</sup> that the Sparrows Point industrial facility was retired as of December 31, 2012;<sup>45</sup> and that the primary emissions units at the Indian Head Naval Support Facility, which consisted of three coal- and No. 6 fuel oil-fired boilers at the Goddard Steam Plant, were permanently shut down in 2014.<sup>46</sup>

The second MANE-VU contribution analysis used a meteorologically weighted Q/d calculation to assess states' contributions to visibility impairment at MANE-VU Class I areas.<sup>47</sup> This analysis focused predominantly on SO<sub>2</sub> emissions and used cumulative SO<sub>2</sub> emissions from a source and a state for the variable "Q," and the distance of the source or state to the IMPROVE monitor receptor at a Class I area as "d." The result is then multiplied by a constant (C<sub>i</sub>), which is determined based on the prevailing wind patterns. MANE-VU selected a meteorologically weighted Q/d analysis as an inexpensive initial screening tool that could easily be repeated to determine which states, sectors, or sources have a larger relative impact and warrant further analysis. MANE-VU updated its analysis in 2016 using 2011 emissions and 2018 projected emissions, which Maryland included as part of its submittal. MANE-VU's analysis estimated Maryland's 2018 sulfate contribution at 3.77% at Acadia National Park, 8.89% at Brigantine Wilderness, 3.36% at Great Gulf 3.80% at Lye Brook, and 3.35% at Moosehorn Class I areas based on maximum daily

impact.<sup>48</sup> Although MANE-VU did not originally estimate nitrate impacts, the MANE-VU Q/d analysis was subsequently extended to account for nitrate contributions from NO<sub>x</sub> emissions and to approximate the nitrate impacts from area and mobile sources. MANE-VU therefore developed a ratio of nitrate to sulfate impacts based on the previously described CALPUFF modeling and applied those to the sulfate Q/d results in order to derive nitrate contribution estimates. Several states did not have CALPUFF nitrate to sulfate ratio results, however, because there were no point sources modeled with CALPUFF.

In order to develop a final set of contribution estimates, MANE-VU weighted the results from both the Q/d and CALPUFF analyses. The MANE-VU mass-weighted sulfate and nitrate contribution results were reported for the MANE-VU Class I areas (the Q/d summary report included results for several non-MANE-VU areas as well). If a state's contribution to sulfate and nitrate concentrations at a particular Class I area was 2 percent or greater, MANE-VU regarded that state as contributing to visibility impairment in that area. According to MANE-VU's analyses, sources in Maryland were found to contribute to visibility impairment at all seven downwind MANE-VU Class I areas,<sup>49</sup> as well as VISTA Class I areas including James River Face and Shenandoah National Park in Virginia and Dolly Sods Wilderness and Otter Creek Wilderness in West Virginia.<sup>50</sup> MANE-VU determined that modeled emissions sources that have the potential for 3.0 Mm<sup>-1</sup> or greater visibility impacts at any MANE-VU Class I area should perform a four-factor analysis for reasonable installation or upgrade to emissions controls. Maryland indicated in its submittal that it agrees with MANE-VU's approach and assessment.

As explained above, the EPA concluded in the 1999 RHR that "all [s]tates contain sources whose emissions are reasonably anticipated to contribute to regional haze in a Class I area," 64 FR 35714 at 35721, July 1, 1999, and this determination was not

changed in the 2017 RHR. Critically, the statute and regulation both require that the cause-or-contribute assessment consider all emissions of visibility-impairing pollutants from a state, as opposed to emissions of a particular pollutant or emissions from a certain set of sources. Consistent with these requirements, the 2019 Guidance makes it clear that "all types of anthropogenic sources are to be included in the determination" of whether a state's emissions are reasonably anticipated to result in any visibility impairment. 2019 Guidance at 8.

First, the screening analyses on which MANE-VU relied are useful for certain purposes. MANE-VU used information from its technical analysis to rank the largest contributing states to sulfate and nitrate impairment in five Class I areas within MANE-VU states and three additional, nearby Class I areas.<sup>51</sup> The rankings were used to determine upwind states that were deemed important to include in state-to-state consultation (based on an identified impact screening threshold). Additionally, large individual source impacts were used to target MANE-VU control analysis "Asks"<sup>52</sup> of states and sources both within and upwind of MANE-VU.<sup>53</sup> The EPA finds the nature of the analyses generally appropriate to support decisions on states with which to consult. However, we have cautioned that source selection methodologies that target the largest regional contributors to visibility impairment across multiple states may not be reasonable for a particular state if it results in few or no sources being selected for subsequent analysis. 2021 Clarifications Memo at 3.

With regard to the analysis and determinations regarding Maryland's contribution to visibility impairment at out-of-state Class I areas, the MANE-VU technical work focuses on the magnitude of visibility impacts from certain Maryland emissions on downwind Class I areas. However, the analyses did not account for all

<sup>43</sup> See Section 2.6.1 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022), and docket documents "MDE SO<sub>2</sub> 2010 NAAQS SIP for Baltimore and Anne Arundel NA (January 31, 2020)", and "MDE SO<sub>2</sub> 2010 NAAQS SIP for Baltimore and Anne Arundel NA (January 31, 2020)—Appendix B—Consent Orders, Permits, and Plan Approvals".

<sup>44</sup> See docket documents, "Verso Luke Paper—Luke MD Title V Permit Termination (May 7, 2020)" and "Verso Luke Paper—Verso Luke Close Out Letter (May 8, 2020)".

<sup>45</sup> See docket document, "MDE Sparrows Point Administrative Consent Order (September 12, 2014)".

<sup>46</sup> See docket document, "MDE EPA Indian Head Boiler Decommission letter (January 29, 2016)".

<sup>47</sup> See docket document, "MANE-VU Contributions to Regional Haze in the Northeast and Mid-Atlantic United States (August 2006)".

<sup>48</sup> See "Table 2–2: Q/d results using 2011 and 2018 inventory data for 32 states", of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>49</sup> Acadia National Park, Moosehorn National Wildlife Refuge, and Roosevelt Campobello International Park in Maine; Brigantine Wilderness in New Jersey; Great Gulf Wilderness and Presidential Range-Dry River Wilderness in New Hampshire; and Lye Brook Wilderness in Vermont.

<sup>50</sup> See docket document, "2016 MANE-VU Source Contribution Modeling Report (April 4, 2017)," Tables 1 through 33.

<sup>51</sup> The Class I areas analyzed were Acadia National Park in Maine, Brigantine Wilderness in New Jersey, Great Gulf Wilderness in New Hampshire, Lye Brook Wilderness in Vermont, Moosehorn Wilderness in Maine, Shenandoah National Park in Virginia, James River Face Wilderness in Virginia, and Dolly Sods/Otter Creek Wildernesses in West Virginia.

<sup>52</sup> As explained more fully in Section IV.E.1 of this document, MANE-VU refers to each of the components of its overall strategy as an "Ask" of its member states.

<sup>53</sup> The MANE-VU Consultation Report (Appendix 7) explains that "[t]he objective of this technical work was to identify states and sources from which MANE-VU will pursue further analysis. This screening was intended to identify which states to invite to consultation, not a definitive list of which states are contributing."

emissions and all components of visibility impairment (e.g., primary PM emissions, and impairment from fine PM, elemental carbon, and organic carbon). In addition, Q/d analyses with a relatively simplistic accounting for wind trajectories and CALPUFF applied to a very limited set of EGUs and major industrial sources of SO<sub>2</sub> and NO<sub>x</sub> are not scientifically rigorous tools capable of evaluating contribution to visibility impairment from *all* emissions in a state. While Maryland noted that contributions from other states are larger than its own, we again clarify that each state is obligated under the CAA and RHR to address regional haze visibility impairment resulting from emissions from within the state, irrespective of whether another state's contribution is greater. See 2021 Clarifications Memo at 3. Additionally, we note that the 2 percent or greater sulfate-plus-nitrate threshold used to determine whether Maryland emissions contribute to visibility impairment at a particular Class I area may be higher than what EPA believes is an "extremely low triggering threshold" intended by the statute and regulations. In sum, based on the information provided, it is clear that emissions from Maryland contribute to visibility impairment at out-of-state Class I areas.

Regardless, we note that Maryland did determine that sources and emissions within the state contribute to visibility impairment at out-of-state Class I areas. Furthermore, the state took part in the emission control strategy consultation process as a member of MANE-VU. As part of that process, MANE-VU developed a set of emissions reduction measures identified as being necessary to make reasonable progress in the five MANE-VU Class I areas. This strategy consists of six Asks for states within MANE-VU and five Asks for states outside the region that were found to impact visibility at Class I areas within MANE-VU.<sup>54</sup> Maryland's submittal discusses each of the Asks and explains why or why not each is applicable and how it has complied with the relevant components of the emissions control strategy MANE-VU has laid out for its states. Maryland worked with MANE-VU to determine potential reasonable measures that could be implemented by 2028, considering the cost of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts, and the remaining useful life of any potentially

affected sources. As discussed in further detail below, the EPA is proposing to find that Maryland has submitted a regional haze plan that meets the requirements of 40 CFR 51.308(f)(2) related to the development of a long-term strategy. Although we have concerns regarding some aspects of MANE-VU's technical analyses supporting states' contribution determinations, we propose to find that Maryland has satisfied the applicable requirements for making reasonable progress towards natural visibility conditions in Class I areas that may be affected by emissions from the state.

*D. Calculations of Baseline, Current, and Natural Visibility Conditions; Progress to Date; and the Uniform Rate of Progress*

Section 51.308(f)(1) requires states to determine the following for "each mandatory Class I Federal area located within the State": baseline visibility conditions for the most impaired and clearest days, natural visibility conditions for the most impaired and clearest days, progress to date for the most impaired and clearest days, the differences between current visibility conditions and natural visibility conditions, and the URP. This section also provides the option for states to propose adjustments to the URP line for a Class I area to account for visibility impacts from anthropogenic sources outside the United States and/or the impacts from wildland prescribed fires that were conducted for certain, specified objectives. 40 CFR 51.308(f)(1)(vi)(B).

Maryland does not have any mandatory Class I areas within its borders; therefore, Section 51.308(f)(1) and its requirements do not apply.

*E. Long-Term Strategy for Regional Haze*

1. Maryland's Response to the Six MANE-VU Asks

Each state having a Class I area within its borders or emissions that may affect visibility in a Class I area must develop a long-term strategy for making reasonable progress towards the national visibility goal. CAA 169A(b)(2)(B). As explained in the Background section of this document, reasonable progress is achieved when all states contributing to visibility impairment in a Class I area are implementing the measures determined—through application of the four statutory factors to sources of visibility impairing pollutants—to be necessary to make reasonable progress. 40 CFR 51.308(f)(2)(i). Each state's long-term strategy must include the

enforceable emission limitations, compliance schedules, and other measures that are necessary to make reasonable progress. 40 CFR 51.308(f)(2). All new (i.e., additional) measures that are the outcome of four-factor analyses are necessary to make reasonable progress and must be in the long-term strategy. If the outcome of a four-factor analysis and other measures necessary to make reasonable progress is that no new measures are reasonable for a source, that source's existing measures are necessary to make reasonable progress, unless the state can demonstrate that the source will continue to implement those measures and will not increase its emission rate. Existing measures that are necessary to make reasonable progress must also be in the long-term strategy. In developing its long-term strategies, a state must also consider the five additional factors in 40 CFR 51.308(f)(2)(iv). As part of its reasonable progress determinations, the state must describe the criteria used to determine which sources or group of sources were evaluated (i.e., subjected to four-factor analysis) for the second implementation period and how the four factors were taken into consideration in selecting the emission reduction measures for inclusion in the long-term strategy. 40 CFR 51.308(f)(2)(iii).

The following section summarizes how Maryland's SIP submission addressed the requirements of 40 CFR 51.308(f)(2)(i); specifically, it describes MANE-VU's development of the six Asks and how Maryland addressed each. The EPA's evaluation of Maryland's SIP revision with regard to the same is contained in the following Section IV.E.2 of this document. Maryland's SIP submission describes how it plans to meet the long-term strategy requirements defined by the state and MANE-VU and provides that "[t]hese long-term strategies are referred to as the 'Asks'."<sup>55</sup>

States may rely on technical information developed by the RPOs of which they are members to select sources for four-factor analysis and to conduct that analysis, as well as to satisfy the documentation requirements under 40 CFR 51.308(f). Where an RPO has performed source selection and/or four-factor analyses (or considered the five additional factors in 40 CFR 51.308(f)(2)(iv)) for its member states, those states may rely on the RPO's analyses for the purpose of satisfying the requirements of 40 CFR 51.308(f)(2)(i) so long as the states have

<sup>54</sup> See docket documents, "MANE-VU Intra-Regional Ask Final 8–25–2017 (August 25, 2017)" and "MANE-VU Inter-Regional Ask Final 8–25–2017 (August 25, 2017)."

<sup>55</sup> See MD Regional Haze SIP submission Section 2.3 (Page 8).

a reasonable basis to do so and all state participants in the RPO process have approved the technical analyses. 40 CFR 51.308(f)(3)(iii). States may also satisfy the requirement of 40 CFR 51.308(f)(2)(ii) to engage in interstate consultation with other states that have emissions that are reasonably anticipated to contribute to visibility impairment in a given Class I area under the auspices of intra- and inter-RPO engagement.

Maryland is a member of the MANE-VU RPO and participated in the RPO's regional approach to developing a strategy for making reasonable progress towards the national visibility goal in the MANE-VU Class I areas. MANE-VU's strategy includes a combination of: (1) measures for certain source sectors and groups of sectors that the RPO determined were reasonable for states to pursue, and (2) a request for member states to conduct four-factor analyses for individual sources that it identified as contributing to visibility impairment. MANE-VU refers to each of the components of its overall strategy as an Ask of its member states. On August 25, 2017, the Executive Director of MANE-VU, on behalf of the MANE-VU states and tribal nations, signed a statement that identifies six emission reduction measures that comprise the Asks for the second implementation period.<sup>56</sup> The Asks were "designed to identify reasonable emission reduction strategies that must be addressed by the states and tribal nations of MANE-VU through their regional haze SIP updates."<sup>57</sup> The statement explains that "[i]f any State cannot agree with or complete a Class I State's Asks, the State must describe the actions taken to resolve the disagreement in the Regional Haze SIP."<sup>58</sup>

MANE-VU's recommendations as to the appropriate control measures were based on technical analyses documented in the RPO's reports and included as appendices to or referenced in Maryland's regional haze SIP submission. One of the initial steps of MANE-VU's technical analysis was to determine which visibility-impairing pollutants should be the focus of its efforts for the second implementation period. In the first implementation period, MANE-VU determined that

sulfates were the most significant visibility impairing pollutant at the region's Class I areas. To determine the impact of certain pollutants on visibility at Class I areas for the purpose of second implementation period planning, MANE-VU conducted an analysis comparing the pollutant contribution on the clearest and most impaired days in the baseline period (2000–2004) to the most recent period (2012–2016)<sup>59</sup> at MANE-VU and nearby Class I areas. MANE-VU found that while SO<sub>2</sub> emissions were decreasing and visibility was improving, sulfates still made up the most significant contribution to visibility impairment at MANE-VU and nearby Class I areas. According to the analysis, NO<sub>x</sub> emissions have begun to play a more significant role in visibility impacts in recent years. The technical analyses used by Maryland are included or referenced in their submission, and are as follows:

- Selection of States for MANE-VU Regional Haze Consultation (2018) (MANE-VU, September 2017) (Appendix 1);
- Contributions to Regional Haze in the Northeast and Mid-Atlantic United States: Preliminary Update through 2007 (NESCAUM, March 2012);<sup>60</sup>
- MANE-VU Updated Q/d\*<sup>o</sup>C Contribution Assessment (MANE-VU, April 2016) (Appendix 3);
- 2016 MANE-VU Source Contribution Modeling Report—CALPUFF Modeling of Large Electrical Generating Units and Industrial Sources (MANE-VU, May 2006) (Appendix 4);
- Assessment of Reasonable Progress for Regional Haze in MANE-VU Class I areas (referred to as the MACTEC Report) MACTEC (July 2007);<sup>61</sup>
- Statement of the Mid-Atlantic/Northeast Visibility Union (MANE-VU) Concerning a Course of Action within MANE-VU toward Assuring Reasonable Progress for the Second Regional Haze Implementation Period (2018–2028) (August 2017);<sup>62</sup>
- Statement of the Mid-Atlantic/Northeast Visibility Union (MANE-VU) Concerning a Course of Action In Contributing States Located Upwind of MANE-VU Toward Assuring Reasonable Progress for the Second

Regional Haze Implementation Period (2018–2028) (Appendix 8);

- Technical Support Document for the 2011 Northeastern U.S. Gamma Emission Inventory (January 2018) (Appendix 10);
  - Ozone Transport Commission/Mid-Atlantic Northeastern Visibility Union 2011 Based Modeling Platform Support Document—October 2018 Update (October 2018) (Appendix 11);
  - The Nature of Fine Particle and Regional Haze Air Quality Problems in the MANE-VU Region: A Conceptual Description (NESCAUM, November 2006, Revised August 2010) (Appendix 12);
  - Mid-Atlantic/Northeast U.S. Visibility Data 2004–2017 (2nd RH SIP Metrics) (MANE-VU, December 2018) (Appendix 13);
  - Additional MANE-VU documentation for establishing 3.0 Mm<sup>-1</sup> Threshold (Appendix 17);
  - 20% Most Impaired Days Based on Deciviews, as Detailed in Recommendation on Approaches to Selecting the 20% Most Impaired Days (March 2, 2017) (Appendix 18);
  - Technical Support Document on Measures to Mitigate the Visibility Impacts of Construction Activities in the MANE-VU Region (MANE-VU, September 2006);<sup>63</sup>
  - Baseline and Natural Background Visibility Conditions (NESCAUM, December 2006);<sup>64</sup>
  - 2016 Updates to the Assessment of Reasonable Progress for Regional Haze in MANE-VU Class I Areas, January 31, 2016 (MARAMA, January 31, 2016);<sup>65</sup>
- To support development of the Asks, MANE-VU gathered information on the four statutory factors for six source sectors it determined, based on an examination of annual emission inventories, "had emissions that were reasonabl[y] anticipated to contribute to visibility degradation in MANE-VU:" electric generating units (EGUs), industrial/commercial/institutional boilers (ICI boilers), cement kilns, heating oil, residential wood combustion, and outdoor wood combustion.<sup>66</sup> MANE-VU also collected data on individual sources within the EGU, ICI boiler, and cement kiln

<sup>56</sup> See Appendix 8, "Statement of the Mid-Atlantic/Northeast Visibility Union (MANE-VU) Concerning a Course of Action within MANE-VU toward Assuring Reasonable Progress for the Second Regional Haze Implementation Period (2018–2028), (August 2017); and Appendix 7 "MANE-VU Regional Haze Consultation Report" (July 27, 2018)."

<sup>57</sup> *Id.*

<sup>58</sup> *Id.*

<sup>59</sup> The period of 2012–2016 was the most recent period for which data was available at the time of analysis.

<sup>60</sup> See docket document, NESCAUM—Contributions to Regional Haze Preliminary Update Through 2007 (March 21, 2012)

<sup>61</sup> See docket document, "Assessment of Reasonable Progress for Regional Haze in MANE-VU Class I Areas (July 2007) (MACTEC Reasonable Progress Report)"

<sup>62</sup> See docket document, "MANE-VU Intra-Regional Ask Final (August 25, 2017)".

<sup>63</sup> See docket document, "MANE-VU TSD on Measures to Mitigate the Visibility Impacts of Construction Activities in the MANE-VU Region (September 2006)."

<sup>64</sup> See docket document "NESCAUM—Baseline and Natural Background Visibility Conditions (December 2006)."

<sup>65</sup> See docket document, "2016 Updates to the Assessment of Reasonable Progress for Regional Haze in MANE-VU Class I Areas (January 31, 2016)."

<sup>66</sup> See docket document "MANE-VU Four Factor Data Collection Memo (March 30, 2017)" at 1.

sectors.<sup>67</sup> Information for the six sectors included explanations of technically feasible control options for SO<sub>2</sub> or NO<sub>x</sub>, illustrative cost-effectiveness estimates for a range of model units and control options, sector-wide cost considerations, potential time frames for compliance with control options, potential energy and non-air-quality environmental impacts of certain control options, and how the remaining useful lives of sources might be considered in a control analysis.<sup>68</sup> Source-specific data included SO<sub>2</sub> emissions<sup>69</sup> and existing controls<sup>70</sup> for certain existing EGUs, ICI boilers, and cement kilns. MANE-VU considered this information on the four factors as well as the analyses developed by the RPO's Technical Support Committee when it determined specific emission reduction measures that were found to be reasonable for certain sources within two of the sectors it had examined—EGUs and ICI boilers. The Asks were based on this analysis and looked to either optimize the use of existing controls, have states conduct further analysis on EGU or ICI boilers with considerable visibility impacts, implement low sulfur fuel standards, or lock-in lower emission rates.

MANE-VU Ask 1 requests that states “ensure the most effective use of control technologies on a year-round basis to consistently minimize emissions of haze precursors, or obtain equivalent alternative emission reductions” at EGUs “with a nameplate capacity larger than or equal to 25 MW with already installed NO<sub>x</sub> and/or SO<sub>2</sub> controls”.<sup>71</sup> In its submission, Maryland stated that COMAR 21.11.27—*Emission Limitations for Power Plants (Maryland Healthy Air Act)* “caps NO<sub>x</sub> emissions on an ozone season and annual basis for each coal-fired EGU in Maryland.” In addition, Maryland also stated that COMAR 26.11.40—*NO<sub>x</sub> Ozone Season Emission Caps for Non-trading Large NO<sub>x</sub> Units* “assures optimization of post-combustion (Selective Catalytic Reduction (SCR) and Selective Non-Catalytic Reduction (SNCR)) NO<sub>x</sub> controls on coal-fired EGUs and sets NO<sub>x</sub> Indicator Rates for each unit to

assure optimization.”<sup>72</sup> Maryland credited these regulations with “reducing annual NO<sub>x</sub> mass emissions by almost 95% compared to 2002 levels.”<sup>73</sup> Regarding SO<sub>2</sub> emission controls, Maryland stated that COMAR 21.11.27—*Emission Limitations for Power Plants (Maryland Healthy Air Act)* “caps SO<sub>2</sub> emissions limits on an annual basis for each coal-fired EGU in Maryland. All non-fluidized bed base load coal-fired units are equipped with Flue Gas Desulfurization (FGD) except one. H.A. Wagner Unit 3 is the only coal-fired EGU not equipped with an FGD. H.A. Wagner Unit 3 is named as a unit requiring a four-factor analysis and is analyzed further in Section 2.5.2.” Maryland also stated that permit limits associated with a federally enforceable consent order for the Anne Arundel and Baltimore County SO<sub>2</sub> nonattainment area include SO<sub>2</sub> emission limits. Taken together, Maryland credited these requirements with “reducing the annual SO<sub>2</sub> mass emissions by over 95% compared to 2002 levels”.<sup>74</sup> Maryland therefore concluded it is meeting Ask 1.

MANE-VU Ask 2 requests that states “perform a four-factor analysis for reasonable installation or upgrade to emissions controls” at “emission sources modeled by MANE-VU that have the potential for 3.0 Mm<sup>-1</sup> or greater visibility impacts at any MANE-VU Class I area, as identified by MANE-VU contribution analyses”. MANE-VU developed its Ask 2 list of sources for analysis by performing modeling and identifying facilities with the potential for 3.0 inverse megameters (Mm<sup>-1</sup>) or greater impacts on visibility at any Class I area in the MANE-VU region. MANE-VU identified emission sources at the Herbert A. Wagner Generating Facility in Anne Arundel County, Maryland and at the Verso Luke Paper Company facility in Allegany County, Maryland as having the potential for 3.0 Mm<sup>-1</sup> or greater visibility impacts at any MANE-VU Class I area;<sup>75</sup> specifically, Unit 3 at Herbert A. Wagner Generating Facility and Units 001–0011–3–0018 and 001–0011–3–0019 at Verso Luke Paper Company. Maryland stated that “Luke

Paper Company ceased operations, closed, and relinquished their air permits”, and that this information was shared in a transmittal letter to EPA dated May 29, 2020 and included in an attainment designation request letter.<sup>76</sup> In addition, Maryland also stated that, after requesting a four-factor analysis for Herbert A. Wagner Unit 3 from the facility's owner/operator, “the parent company to the H.A. Wagner Generating Station publicly announced a strategic repositioning of the facility that would eliminate the use of coal. The owners of the H.A. Wagner Generating Station have agreed and signed a legal consent order with [MDE] to cease the combustion of coal by 2026 . . . . Therefore, according to the statutory factor of remaining useful life for this facility, further control is not reasonable . . . . A four-factor analysis of H.A. Wagner Unit 3 similarly concludes that no additional controls would effectively control SO<sub>2</sub> and NO<sub>x</sub> emissions at this facility since the remaining useful life of the coal-fired unit is approximately 4½ years”.<sup>77</sup> Given the remaining useful life of this source, and the closure of Luke Paper Company, Maryland concluded that no further action is necessary to satisfy Ask 2.<sup>78</sup>

MANE-VU Ask 3 requests that, for “each MANE-VU state that has not yet fully adopted an ultra-low fuel oil standard as requested by MANE-VU in 2007”, to “pursue this standard as expeditiously as possible and before 2028, depending on supply availability”. The Ask includes percent by weight standards for #2 distillate oil (0.0015% sulfur by weight or 15 ppm), #4 residual oil (0.25–0.5% sulfur by weight), and #6 residual oil (0.3–0.5% sulfur by weight). On October 3, 2014, Maryland adopted a rule<sup>79</sup> to modify the sulfur-in-fuel limits in accordance with the MANE-VU Ask. This rule lowered the sulfur content of all distillate fuel oils (#2 fuel oil and lighter) to 500 ppm (0.05% by mass) on and after July 1, 2016; this rule was subsequently amended<sup>80</sup> to lower the required sulfur content of all distillate fuel oils (#2 fuel oil and lighter) to 15

<sup>67</sup> See docket document, “2016 Updates to the Assessment of Reasonable Progress for Regional Haze in MANE-VU Class I Areas (January 31, 2016).”

<sup>68</sup> *Id.*

<sup>69</sup> See docket document “MANE-VU Four Factor Data Collection Memo (March 30, 2017).”

<sup>70</sup> See docket document “MANE-VU Status of the Top 167 Stacks from the 2008 MANE-VU Ask (July 2016).”

<sup>71</sup> See Appendix 7, “MANE-VU Regional Haze Consultation Report (July 27, 2018),” of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>72</sup> See Section 2.5.1 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>73</sup> See Table 2–8, Figure 2–3, and Figure 2–4 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>74</sup> See Table 2–7 and Figure 2–3 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>75</sup> See Appendix 4, “2016 MANE VU Source Contribution Modeling Report: CALPUFF Modeling of Large Electrical Generating Units and Industrial Sources (April 4, 2017).”

<sup>76</sup> See docket documents, “Verso Luke Paper—Luke MD Title V Permit Termination (May 7, 2020)” and “Verso Luke Paper—Verso Luke Close Out Letter (May 8, 2020).”

<sup>77</sup> See Appendix 19, Herbert A. Wagner Generating Station Consent Order.

<sup>78</sup> See Section 2.5.2 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>79</sup> 41:20 Md. R. 1111 (Maryland Register, Volume 41, Issue 20, dated October 3, 2014), effective October 13, 2014.

<sup>80</sup> 45:24 Md. R. 1162 (Maryland Register, Volume 45, Issue 24, dated November 26, 2018), effective December 6, 2018.

ppm (0.0015% by mass) on and after July 1, 2019. Maryland therefore concluded that it is meeting Ask 3.

MANE-VU Ask 4 requests that states “pursue updating permits, enforceable agreements, and/or rules to lock-in lower emission rates for SO<sub>2</sub>, NO<sub>x</sub>, and PM” at “EGUs and other large point emission sources larger than 250 MMBTU per hour heat input that have switched to lower emitting fuels”. Ask 4 also states that “the permit, enforceable agreement, and/or rule can allow for suspension of the lower emission rate during natural gas curtailment”. Maryland’s SIP submittal states that “EGUs and other large point emission sources that have switched operations to lower emitting fuels are already locked into the lower emission rates for NO<sub>x</sub>, SO<sub>2</sub>, and PM by permits, enforceable agreements, and/or rules. These units are required to amend their permits through the New Source Review (NSR) process if they plan to switch back to coal or another fuel that will increase emissions. A change in fuel, unless already allowed in the permit, would be a modification.”<sup>81</sup> Maryland’s submittal also states that “COMAR 26.11.02.02 requires that a permit to construct and an approval from MDE is required before construction or modification of a source.” Maryland therefore concluded it is meeting Ask 4.

MANE-VU Ask 5 requests that MANE-VU states, “where emission rules have not been adopted, control NO<sub>x</sub> emissions for peaking combustion turbines that have the potential to operate on high electric demand days” by either: “(a) Striving to meet NO<sub>x</sub> emissions standards of no greater than 22 ppm at 15% O<sub>2</sub> for natural gas and 42 ppm at 15% O<sub>2</sub> for fuel oil but at a minimum meet NO<sub>x</sub> emission standards of no greater than 42 ppm at 15% O<sub>2</sub> for natural gas and 96 ppm at 15% O<sub>2</sub> for fuel oil”, or “(b) Performing a four-factor analysis for reasonable installation or upgrade to emission controls”, or “(c) Obtaining equivalent emission reductions on high electric demand days.”<sup>82</sup> Maryland elected to perform a four-factor analysis for reasonable

installation of or upgrade to emission controls for sources that met the definition of combustion turbines that have the potential to operate on high electric demand days (HEDD),<sup>83</sup> and determined that it would not be technically feasible or cost effective to implement additional controls at this time. Maryland therefore concluded it is meeting Ask 5.

MANE-VU Ask 6, the last Ask, requests that “each State should consider and report in their SIP measures or programs to: a) decrease energy demand through the use of energy efficiency, and b) increase the use within their state of Combined Heat and Power (CHP) and other clean Distributed Generation technologies including fuel cells, wind, and solar”.<sup>84</sup> Maryland stated in its SIP submittal that the electricity generation strategy in the state’s 2030 Greenhouse Gas Reduction Act (GGRA) Plan<sup>85 86</sup> is designed to achieve 100% Clean and Renewable Electricity by 2040 by both deploying energy through the existing Renewable Portfolio Standard (RPS) and the proposed Clean and Renewable Energy Standard (CARES), and by capping and reducing emissions through the Regional Greenhouse Gas Initiative (RGGI).<sup>87 88</sup> Maryland’s RPS requires Maryland electric utilities to purchase increasingly large proportions of Maryland’s electricity from renewable energy sources like solar, wind, hydropower, and qualifying biomass, with a current RPS goal of 50% clean electricity by 2030 and 100% clean electricity by 2040. Maryland states that these goals rely on both renewable energy and additional zero- and low-carbon electricity sources to meet that goal where most cost-effective, including Maryland solar power beyond current RPS requirements, new efficient CHP systems in Maryland buildings, new nuclear power, and natural gas or qualifying biomass power plants with carbon capture and storage. Maryland further states that, although RGGI is designed to reduce carbon dioxide emissions, other benefits in terms of NO<sub>x</sub> and SO<sub>2</sub> are realized through

energy efficiency promotion, CHP deployment, and additional deployment of renewable energy sources, including offshore wind power and community solar generation.<sup>89</sup> Maryland therefore concludes that it is meeting Ask 6.

2. The EPA’s Evaluation of Maryland’s Response to the Six MANE-VU Asks and Compliance With § 51.308(f)(2)(i)

The EPA is proposing to find that Maryland has satisfied the requirements of 40 CFR 51.308(f)(2)(i) related to evaluating sources and determining the emission reduction measures that are necessary to make reasonable progress by considering the four statutory factors. We are proposing to find that Maryland has satisfied the four-factor analysis requirement through its analysis and actions to address MANE-VU Ask 2 and Ask 5. We also propose to find that Maryland reasonably concluded that it satisfied all six Asks.

As explained above, Maryland relied on MANE-VU’s technical analyses and framework (*i.e.*, the Asks) to select sources and form the basis of its long-term strategy. MANE-VU conducted an inventory analysis to identify the source sectors that produced the greatest amount of SO<sub>2</sub> and NO<sub>x</sub> emissions in 2011; inventory data were also projected to 2018. Based on this analysis, MANE-VU identified the top-emitting sectors for each of the two pollutants, which for SO<sub>2</sub> include coal-fired EGUs, industrial boilers, oil-fired EGUs, and oil-fired area sources including residential, commercial, and industrial sources. Major-emitting sources of NO<sub>x</sub> include on-road vehicles, non-road vehicles, and EGUs.<sup>90</sup> The RPO’s documentation explains that “[EGUs] emitting SO<sub>2</sub> and NO<sub>x</sub> and industrial point sources emitting SO<sub>2</sub> were found to be sectors with high emissions that warranted further scrutiny. Mobile sources were not considered in this analysis because any ask concerning mobile sources would be made to EPA and not during the intra-RPO and inter-RPO consultation process among the states and tribes.”<sup>91</sup> EPA proposes to find that Maryland reasonably evaluated the two pollutants—SO<sub>2</sub> and NO<sub>x</sub>—that currently drive visibility impairment within the MANE-VU region and that it adequately explained and supported its decision to focus on these two

<sup>81</sup> See COMAR 26.11.01.01, defining “Modify” or “Modification” to mean “any physical change in, or change in the operation of, a source or installation which causes a change in the quantity, nature or characteristics of emissions from the source or installation. However, this term excludes routine maintenance and routine repair, and increases in the hours of operation or in the production rate, unless these increases would be prohibited under any permit or approval conditions adopted by the Department.”

<sup>82</sup> See Appendix 7, “MANE-VU Regional Haze Consultation Report (July 27, 2018),” of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>83</sup> See Section 2.5.5 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>84</sup> See Appendix 7, “MANE-VU Regional Haze Consultation Report (July 27, 2018),” of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>85</sup> See docket document, “MDE The 2030 Greenhouse Gas Emissions Reduction Act (GGRA) Plan (February 19, 2021)”.

<sup>86</sup> [mde.maryland.gov/programs/air/ClimateChange/Pages/Greenhouse-Gas-Emissions-Reduction-Act-\(GGRA\)-Plan.aspx](https://mde.maryland.gov/programs/air/ClimateChange/Pages/Greenhouse-Gas-Emissions-Reduction-Act-(GGRA)-Plan.aspx).

<sup>87</sup> [www.rggi.org/](https://www.rggi.org/).

<sup>88</sup> [www.rggiprojectseries.org/](https://www.rggiprojectseries.org/).

<sup>89</sup> See Section 2.5.6 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>90</sup> See Appendix 3 “MANE-VU Updated Q/d°C Contribution Assessment (MANE-VU, April 2016).

<sup>91</sup> See docket documents, “MANE-VU Inter-Regional Ask Final 8–25–2017 (August 25, 2017)” and MANE-VU Intra-Regional Ask Final 8–25–2017 (August 25, 2017).



pollutants through its reliance on the MANE-VU technical analyses cited in its submission.

Section 51.308(f)(2)(i) requires states to evaluate and determine the emission reduction measures that are necessary to make reasonable progress by applying the four statutory factors to sources in a control analysis. As explained previously, the MANE-VU Asks are a mix of measures for sectors and groups of sources identified as reasonable for states to address in their regional haze plans. While MANE-VU formulated the Asks to be “reasonable emission reduction strategies” to control emissions of visibility impairing pollutants,<sup>92</sup> EPA believes that Maryland’s responses to two of the Asks, in particular, engage with the requirement that states determine the emission reduction measures that are necessary to make reasonable progress through consideration of the four factors. As laid out in further detail below, the EPA is proposing to find that MANE-VU’s four-factor analysis conducted to support the emission reduction measures in Ask 3 (ultra-low sulfur fuel oil Ask), in conjunction with Maryland’s supplemental analysis and explanation of how it has complied with Ask 2 (perform four-factor analyses for sources with potential for  $\geq 3.0 \text{ Mm}^{-1}$  impacts) satisfy the requirement of 40 CFR 51.308(f)(2)(i). The emission reduction measures that are necessary to make reasonable progress must be included in the long-term strategy, *i.e.*, in Maryland’s SIP. 40 CFR 51.308(f)(2).

Maryland asserted that it satisfies Ask 1 because it has SIP-approved regulations applicable to EGU boilers that include annual emission limits for both  $\text{NO}_x$ <sup>93 94</sup> and  $\text{SO}_2$ ,<sup>95</sup> and require the most effective use of emission control technologies on a year-round basis. Maryland also claimed additional SIP-approved  $\text{SO}_2$  emission reductions as a result of the consent order for the Anne Arundel County and Baltimore County  $\text{SO}_2$  nonattainment area for the 2010  $\text{SO}_2$  NAAQS.<sup>96</sup> As a reminder,

<sup>92</sup> *Id.*

<sup>93</sup> See COMAR 26.11.27, “Emission Limitations for Power Plants”, also at [www.epa.gov/sips-md/maryland-sip-emission-limitations-power-plants](http://www.epa.gov/sips-md/maryland-sip-emission-limitations-power-plants).

<sup>94</sup> See COMAR 26.11.40, “ $\text{NO}_x$  Ozone Season Emission Caps for Non-trading Large  $\text{NO}_x$  Units” also at [www.epa.gov/sips-md/maryland-sip-nox-ozone-season-emission-caps-non-trading-large-nox-units](http://www.epa.gov/sips-md/maryland-sip-nox-ozone-season-emission-caps-non-trading-large-nox-units).

<sup>95</sup> See COMAR 26.11.27, “Emission Limitations for Power Plants”, also at [www.epa.gov/sips-md/maryland-sip-emission-limitations-power-plants](http://www.epa.gov/sips-md/maryland-sip-emission-limitations-power-plants).

<sup>96</sup> See 87 FR 66086, November 2, 2022, and docket documents “MDE  $\text{SO}_2$  2010 NAAQS SIP for Baltimore and Anne Arundel NA (January 31, 2020)”, and “MDE  $\text{SO}_2$  2010 NAAQS SIP for Baltimore and Anne Arundel NA (January 31,

MANE-VU Ask 1 requests that states “ensure the most effective use of control technologies on a year-round basis to consistently minimize emissions of haze precursors, or obtain equivalent alternative emission reductions” at EGUs “with a nameplate capacity larger than or equal to 25 MW with already installed  $\text{NO}_x$  and/or  $\text{SO}_2$  controls”.<sup>97</sup> Therefore, EPA finds it reasonable to conclude that Maryland has satisfied Ask 1.

Ask 2 addresses the sources MANE-VU determined have the potential for larger than, or equal to,  $3.0 \text{ Mm}^{-1}$  visibility impact at any MANE-VU Class I area; the Ask requests MANE-VU states to conduct four-factor analyses for the specified sources within their borders. This Ask explicitly engages with the statutory and regulatory requirement to determine reasonable progress based on the four factors; MANE-VU considered it “reasonable to have the greatest contributors to visibility impairment conduct a four-factor analysis that would determine whether emission control measures should be pursued and what would be reasonable for each source.”<sup>98</sup>

As an initial matter, EPA does not necessarily agree that  $3.0 \text{ Mm}^{-1}$  visibility impact is a reasonable threshold for source selection. The RHR recognizes that, due to the nature of regional haze visibility impairment, numerous and sometimes relatively small sources may need to be selected and evaluated for control measures in order to make reasonable progress. See 2021 Clarifications Memo at 4.<sup>99</sup> As explained in the 2021 Clarifications Memo, while states have discretion to choose any source selection threshold that is reasonable, “[a] state that relies on a visibility (or proxy for visibility impact) threshold to select sources for four-factor analysis should set the threshold at a level that captures a meaningful portion of the state’s total contribution to visibility impairment to Class I areas.” 2021 Memo at 3.<sup>100</sup> In this case, the  $3.0 \text{ Mm}^{-1}$  threshold identified only two sources in Maryland (and only 22 across the entire MANE-VU region), indicating that they may be

2020)—Appendix B—Consent Orders, Permits, and Plan Approvals”.

<sup>97</sup> See Appendix 7, “MANE-VU Regional Haze Consultation Report (July 27, 2018),” of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>98</sup> See Appendix 7, “MANE-VU Regional Haze Consultation Report (July 27, 2018),” of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>99</sup> See docket document, “EPA 2021 Regional Haze Clarifications Memo (July 8, 2021)”.

<sup>100</sup> *Id.*

unreasonably high. Maryland selected all sources identified by MANE-VU as being above MANE-VU’s  $3.0 \text{ Mm}^{-1}$  threshold for four-factor analysis.

MANE-VU identified one unit at the Herbert A. Wagner Generating Facility,<sup>101</sup> a coal-fired EGU, and two units at Verso Luke Paper Company,<sup>102</sup> a large industrial source, as having a greater than  $3.0 \text{ Mm}^{-1}$  visibility impact and thus meeting the threshold for four-factor analyses. Maryland’s SIP submittal indicates that it sent a letter requesting a four-factor analysis to Herbert A. Wagner Facility’s owner/operator,<sup>103</sup> who subsequently announced that it would eliminate the use of coal at the facility. This was codified into a consent order between Maryland and the owner/operator to cease coal combustion at the facility by January 1, 2026.<sup>104</sup> Maryland has requested that the entire consent order be incorporated into Maryland’s SIP and made federally enforceable upon EPA’s approval;<sup>105</sup> EPA intends to incorporate this consent order into the Maryland SIP by reference as a source-specific requirement upon final approval of this proposed rulemaking. Maryland’s subsequent four-factor analysis for the facility concluded that no further control was necessary. Regarding the Verso Luke Paper industrial source, Maryland stated that this facility ceased operations, shut down and surrendered their existing air permits as of May 7, 2020.<sup>106</sup> Informed in part by this development, EPA found that the area was monitoring air quality consistent with achieving the 2010 1-Hour  $\text{SO}_2$  Primary NAAQS. See 87 FR 66086, November 2, 2022. Maryland therefore concluded that no further action was necessary for this facility. Given that no other sources in Maryland met the  $3.0 \text{ Mm}^{-1}$  threshold for visibility impacts in MANE-VU’s analysis,<sup>107</sup> Maryland concluded that it had met the requirements for Ask 2.

The EPA proposes to find that Maryland reasonably determined it has satisfied Ask 2. As explained above, we

<sup>101</sup> H.A. Wagner Unit 3.

<sup>102</sup> Luke Paper Unit 001–0011–3–0018 & Unit 001–0011–3–0019.

<sup>103</sup> Raven Power Fort Smallwood, LLC.

<sup>104</sup> See Appendix 19, “Herbert A. Wagner Generating Station Consent Order”.

<sup>105</sup> See Section 2.5.2 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>106</sup> See docket documents, “Verso Luke Paper—Luke MD Title V Permit Termination (May 7, 2020)” and “Verso Luke Paper—Verso Luke Close Out Letter (May 8, 2020)”.

<sup>107</sup> See Appendix 4, “2016 MANE VU Source Contribution Modeling Report: CALPUFF Modeling of Large Electrical Generating Units and Industrial Sources (April 4, 2017)”.

do not necessarily agree that a 3.0 Mm<sup>-1</sup> threshold for selecting sources for four-factor analysis results in a set of sources the evaluation of which has the potential to meaningfully reduce the state's contribution to visibility impairment. MANE-VU's threshold identified only two sources in Maryland for four-factor analysis. However, in this instance we propose to find that Maryland's additional information and explanation indicates that the state has in fact examined a reasonable set of sources; Maryland chose to address 12 of the 13 sources identified by FLMs, including 10 that went beyond the MANE-VU source selection process, and reasonably concluded that four-factor analyses for its top-impacting sources are not necessary because the outcome would be that no further emission reductions would be reasonable. EPA is basing this proposed finding on the state's examination of its largest operating EGU and ICI sources, at the time of SIP submission, and on the emissions from and controls that apply to those sources, as well as on Maryland's existing SIP-approved NO<sub>x</sub> and SO<sub>2</sub> rules that effectively control emissions from the largest contributing stationary-source sectors. Maryland's submittal includes additional information on and analysis of 13 Maryland facilities, which was provided in response a National Park Service (NPS) analysis that identified these facilities as contributing to "80% of the Q/d total" visibility impact at downwind NPS Class I Federal areas based on 2014 emissions data and requested that states "review and consider these sources for inclusion in their long term strategies".<sup>108 109</sup> Maryland provided the NPS with additional information on these 13 facilities, including facility descriptions, current control devices/technologies for NO<sub>x</sub>, SO<sub>2</sub>, and PM, current monitoring devices, regulations/consent orders/permit conditions that limit emissions, and analysis and documentation of historical emissions to demonstrate control strategy effectiveness.

Maryland also examined the 13 facilities identified by NPS as a percent of their total Q/d contribution. This included Luke Paper Company, which comprised 54.71% of the Q/d total; Maryland stated that this facility ceased operations, shut down and surrendered their existing air permits as of May 7,

2020.<sup>110</sup> When combined with Brandon Shores Generating Station, H.A. Wagner Generating Station, Chalk Point Generating Station, C.P. Crane Generating Station, and Naval Support Facility Indian Head, all of which have closed, will close by 2026, or have switched or will switch fuels, and Morgantown Generating Station, which is considered by Maryland as effectively controlled through SCR, these facilities comprised 75.57% of the Q/d total. When adding the two municipal solid waste combustor facilities identified by the NPS (Wheelabrator and Montgomery County RRF) both of which are considered by Maryland as well-controlled, these facilities comprise 82.22% of the Q/d total. Finally, Maryland also provided additional information on the remaining three sources identified by the NPS (Holcim Cement, Lehigh Cement, and the AES Warrior Run EGU).<sup>111</sup> Therefore, EPA finds it reasonable to conclude that Maryland has satisfied Ask 2.

Ask 3, which addresses the sulfur content of heating oil used in MANE-VU states, is based on a four-factor analysis for the heating oil sulfur reduction regulations contained in that Ask;<sup>112</sup> specifically, for the control strategy of reducing the sulfur content of distillate oil to 15 ppm. The analysis started with an assessment of the costs of retrofitting refineries to produce 15 ppm heating oil in sufficient quantities to support implementation of the standard, as well as the impacts of requiring a reduction in sulfur content on consumer prices. The analysis noted that, as a result of previous EPA rulemakings to reduce the sulfur content of on-road and non-road-fuels to 15 ppm, technologies are currently available to achieve sulfur reductions and many refiners are already meeting this standard, meaning that the capital investments for further reductions in the sulfur content of heating oil are expected to be relatively low compared to costs incurred in the past. The analysis also examined, by way of example, the impacts of New York's existing 15 ppm sulfur requirements on heating oil prices and concluded that the cost associated with reducing sulfur was relatively small in terms of the absolute price of heating oil compared

to the magnitude of volatility in crude oil prices. It also noted that the slight price premium is compensated by cost savings due to the benefits of lower-sulfur fuels in terms of equipment life and maintenance and fuel stability. Consideration of the time necessary for compliance with a 15 ppm sulfur standard was accomplished through a discussion of the amount of time refiners had needed to comply with the EPA's on-road and non-road fuel 15 ppm requirement, and the implications existing refinery capacity and distribution infrastructure may have for compliance times with a 15 ppm heating oil standard. The analysis concluded that with phased-in timing for states that have not yet adopted a 15 ppm heating oil standard there "appears to be sufficient time to allow refiners to add any additional heating oil capacity that may be required."<sup>113</sup> The analysis further noted the beneficial energy and non-air quality environmental impacts of a 15 ppm sulfur heating oil requirement and that reducing sulfur content may also have a salutary impact on the remaining useful life of residential furnaces and boilers.<sup>114</sup>

EPA proposes to find that Maryland reasonably relied on MANE-VU's four-factor analysis for a low-sulfur fuel oil regulation, which engaged with each of the statutory factors and explained how the information supported a conclusion that a 15 ppm sulfur fuel oil standard is reasonable; as a reminder, MANE-VU Ask 3 requests that, for "each MANE-VU state that has not yet fully adopted an ultra-low fuel oil standard as requested by MANE-VU in 2007", to "pursue this standard as expeditiously as possible and before 2028, depending on supply availability". Maryland's ultra-low sulfur fuel oil regulations<sup>115</sup> are consistent with Ask 3. EPA therefore proposes to find that Maryland reasonably determined that it has satisfied Ask 3.

Maryland concluded that no additional updates were needed to meet Ask 4, which requests that MANE-VU states pursue updating permits, enforceable agreements, and/or rules to lock-in lower emission rates for sources larger than 250 MMBtu per hour that have switched to lower emitting fuels. As explained above, Maryland has asserted that EGUs and other large point emission sources that have switched operations to lower emitting fuels are already locked into the lower emission rates for NO<sub>x</sub>, SO<sub>2</sub>, and PM by permits,

<sup>108</sup> See Section 2.6.1 and Table 2–12 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>109</sup> See docket document, "NPS Letter—MANE-VU draft Statement on source screening (April 12, 2018)".

<sup>110</sup> See docket documents, "Verso Luke Paper—Luke MD Title V Permit Termination (May 7, 2020)" and "Verso Luke Paper—Verso Luke Close Out Letter (May 8, 2020)".

<sup>111</sup> See Section 2.6.1 and Table 2–13 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>112</sup> See docket document, "2016 Updates to the Assessment of Reasonable Progress for Regional Haze in MANE-VU Class I Areas (January 31, 2016)" at 8–4.

<sup>113</sup> *Id.* see 8–7.

<sup>114</sup> *Id.* see 8–8.

<sup>115</sup> See COMAR 03.03.05.04, "Specifications for No. 1 and No. 2 Fuel Oil (ASTM D-396)".

enforceable agreements and/or rules. In addition, modified units in Maryland are required to amend their permits through the New Source Review (NSR) process if they plan to switch back to coal or a fuel that will increase emissions. A change in fuel, unless already allowed in the permit, would be a modification,<sup>116</sup> and Maryland's regulations require that an application to modify the permit be submitted prior to a change in fuel.<sup>117</sup> As a reminder, MANE-VU Ask 4 requests that states "pursue updating permits, enforceable agreements, and/or rules to lock-in lower emission rates for SO<sub>2</sub>, NO<sub>x</sub>, and PM" at "EGUs and other large point emission sources larger than 250 MMBTU per hour heat input that have switched to lower emitting fuels". Ask 4 also states that "the permit, enforceable agreement, and/or rule can allow for suspension of the lower emission rate during natural gas curtailment". EPA proposes to find that Maryland reasonably determined it has satisfied Ask 4. This is because the permitting and regulatory requirements outlined above, including the fact that sources that have switched fuel are generally required to revise their permits to reflect the change, and because the state rules make any proposed reversion difficult by requiring permitting and other control analyses, including NSR.

Ask 5 addresses NO<sub>x</sub> emissions from peaking combustion turbines<sup>118</sup> that have the potential to operate on high electric demand days (HEDD).<sup>119</sup> Maryland conducted a four-factor analysis to evaluate potential control

<sup>116</sup> See COMAR 26.11.01.01, defining "Modify" or "Modification" to mean "any physical change in, or change in the operation of, a source or installation which causes a change in the quantity, nature or characteristics of emissions from the source or installation. However, this term excludes routine maintenance and routine repair, and increases in the hours of operation or in the production rate, unless these increases would be prohibited under any permit or approval conditions adopted by the Department."

<sup>117</sup> See COMAR 26.11.02.02., "General Provisions", which states that "A permit to construct and an approval from the Department is required before construction or modification of a source".

<sup>118</sup> Peaking combustion turbine is defined for the purpose of this Ask as a turbine capable of generating 15 megawatts or more, that commenced operation prior to May 1, 2007, is used to generate electricity all or part of which is delivered to electric power distribution grid for commercial sale and that operated less than or equal to an average of 1,752 hours (or 20%) per year during 2014 to 2016.

<sup>119</sup> High electric demand days are days when higher than usual electrical demands bring additional generation units online, many of which are infrequently operated and may have significantly higher emissions rates of the generation fleet.

options for HEDD units. For one potentially technically feasible control option, Selective Catalytic Reduction (SCR), Maryland estimated compliance costs as ranging from \$6 million to \$15.7 million per unit.<sup>120</sup> These cost estimates are similar to those found in EPA's Combustion Turbine NO<sub>x</sub> Control Technology Memo published in January 2022.<sup>121</sup> Due to the relatively low level of reported annual NO<sub>x</sub> emissions from these units within the state (*i.e.*, less than 10 tons of NO<sub>x</sub> emitted per unit per year), Maryland concluded that SCR was not an economically feasible control option due to the high cost of control. Maryland also evaluated the cost of water/steam injection as a potentially technically feasible control option, but found that the cost of control (\$87,906.95 per ton of NO<sub>x</sub> removed) was not economically feasible.<sup>122</sup> As a reminder, MANE-VU Ask 5 requests that MANE-VU states, "where emission rules have not been adopted, control NO<sub>x</sub> emissions for peaking combustion turbines that have the potential to operate on high electric demand days" by either: "(a) Striving to meet NO<sub>x</sub> emissions standards of no greater than 22 ppm at 15% O<sub>2</sub> for natural gas and 42 ppm at 15% O<sub>2</sub> for fuel oil but at a minimum meet NO<sub>x</sub> emission standards of no greater than 42 ppm at 15% O<sub>2</sub> for natural gas and 96 ppm at 15% O<sub>2</sub> for fuel oil", or "(b) Performing a four-factor analysis for reasonable installation of or upgrade to emission controls", or "(c) Obtaining equivalent emission reductions on high electric demand days."<sup>123</sup> Because Maryland evaluated multiple technically feasible controls, the high cost of controls, and the relatively low level of reported annual NO<sub>x</sub> emissions from peaking combustion turbines with the potential to operate on HEDD days, EPA proposes to find that Maryland reasonably concluded that it has satisfied Ask 5.

Finally, regarding Ask 6, Maryland explains the greenhouse gas initiatives and clean energy requirements within the state, including promulgation of the state's 2030 Greenhouse Gas Reduction Act (GGRA) Plan, RPS, and participation in RGGI. As a reminder, MANE-VU Ask 6, the last Ask, requests

<sup>120</sup> See Section 2.5.5 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>121</sup> See docket document, "EPA Combustion Turbine NO<sub>x</sub> Control Technology Memo (January 2022)".

<sup>122</sup> See Section 2.5.5 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>123</sup> See Appendix 7, "MANE-VU Regional Haze Consultation Report (July 27, 2018)," of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

that "each State should consider and report in their SIP measures or programs to: (a) decrease energy demand through the use of energy efficiency, and (b) increase the use within their state of Combined Heat and Power (CHP) and other clean Distributed Generation technologies including fuel cells, wind, and solar".<sup>124</sup> The EPA is therefore proposing to find that Maryland has satisfied Ask 6's request to consider and report in its SIP measures or programs related to energy efficiency, cogeneration, and other clean distributed generation technologies.

In sum, the EPA is proposing to find that—based on Maryland's participation in the MANE-VU planning process, how it has addressed each of the Asks, its supplemental information and explanation regarding NO<sub>x</sub> sources and emissions, and the EPA's additional assessment of Maryland's emissions and point sources—Maryland has complied with the requirements of 40 CFR 51.308(f)(2)(i). Specifically, MANE-VU Asks 2 and 3 engage with the requirement that states evaluate and determine the emission reduction measures that are necessary to make reasonable progress by considering the four statutory factors. EPA is proposing to find Maryland's approach to Ask 2 reasonable because it demonstrated that the sources with the greatest modeled impacts on visibility either have federally-enforceable shut downs, have reduced their emissions so significantly that it is clear a four-factor analysis would not yield further reasonable emission reductions, or are subject to stringent emission control measures. Maryland's SIP-approved control measures, emissions inventory<sup>125</sup> and information provided in response to comments<sup>126</sup> demonstrate that the sources of SO<sub>2</sub> and NO<sub>x</sub> within the state that would be expected to contribute to visibility impairment have small emissions of NO<sub>x</sub> and SO<sub>2</sub>, are well controlled, or both. Maryland's sulfur in fuel limits sets stringent limits for sulfur content and SO<sub>2</sub> emissions for non-solid fuels.<sup>127</sup> Therefore, it is reasonable to assume that selecting additional sources from MANE-VU's or FLMs' lists for four-factor analysis would not have resulted in additional emission

<sup>124</sup> See Appendix 7, "MANE-VU Regional Haze Consultation Report (July 27, 2018)," of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>125</sup> See Appendix 1, "Selection of States for MANE-VU Regional Haze Consultation (2018)—Final".

<sup>126</sup> See Appendix 20, "Public Hearing Notices, Comments, and Responses—Regional Haze Second Implementation Period Plan (2018–2028)".

<sup>127</sup> See COMAR 03.03.05.04, "Specifications for No. 1 and No. 2 Fuel Oil (ASTM D-396)".

reduction measures being determined to be necessary to make reasonable progress for the second implementation period.

Additionally, MANE-VU conducted a four-factor analysis to support Ask 3, which requests that states pursue ultra-low sulfur fuel oil standards to address SO<sub>2</sub> emissions. Maryland has done so. This also contributes to satisfying the requirements that states determine the emission reduction measures that are necessary to make reasonable progress by considering the four factors, and that their long-term strategies include the enforceable emission limitations, compliance schedules, and other measures necessary to make reasonable progress. To the extent that MANE-VU and Maryland regard the measures in Asks 1 and 4 through 6 as being part of the region's strategy for making reasonable progress, we propose to find it reasonable for Maryland to address these Asks by pointing to existing measures that satisfy each.

### 3. Additional Long-Term Strategy Requirements

The consultation requirements of 40 CFR 51.308(f)(2)(ii) provides that states must consult with other states that are reasonably anticipated to contribute to visibility impairment in a Class I area to develop coordinate emission management strategies containing the emission reductions measures that are necessary to make reasonable progress. Section 51.308(f)(2)(ii)(A) and (B) require states to consider the emission reduction measures identified by other states as necessary for reasonable progress and to include agreed upon measures in their SIPs, respectively. Section 51.308(f)(2)(ii)(C) speaks to what happens if states cannot agree on what measures are necessary to make reasonable progress.

Maryland participated in and provided documentation of the MANE-VU intra- and inter-RPO consultation processes and addressed the MANE-VU Asks by providing information on the measures it has in place that satisfy each Ask.<sup>128 129</sup> MANE-VU also documented disagreements that occurred during

consultation. MANE-VU noted in their Consultation Report that upwind states expressed concern regarding the analyses the RPO utilized for the selection of states for the consultation. MANE-VU agreed that these tools, as all models, have their limitations, but nonetheless deemed them appropriate. Additionally, there were several comments regarding the choice of the 2011 modeling base year. MANE-VU agreed that the choice of base year is critical to the outcome of the study. MANE-VU acknowledged that there were newer versions of the emission inventories and the need to use the best available inventory for each analysis. However, MANE-VU disagreed that the choice of these inventories was not appropriate for the analysis. Upwind states also suggested that MANE-VU states adopt the 2021 timeline for regional haze SIP submissions for the second planning period. MANE-VU agreed with the reasons the comments provided, such as collaboration with data and planning efforts. However, MANE-VU disagreed that the 2018 timeline would prohibit collaboration. Additionally, upwind states noted that they would not be able to address the MANE-VU Asks until they finalize their SIPs. MANE-VU believed the assumption of the implementation of the Asks from upwind states in its 2028 control case modeling was reasonable.

In sum, Maryland participated in the MANE-VU intra- and inter-RPO consultation and satisfied the MANE-VU Asks, satisfying 40 CFR 51.308(f)(2)(ii)(A) and (B). Maryland satisfied 40 CFR 51.308(f)(2)(ii)(C) by participating in MANE-VU's consultation process, which documented the disagreements between the upwind states and MANE-VU and explained MANE-VU's reasoning on each of the disputed issues. Based on the entirety of MANE-VU's intra- and inter-RPO consultation and both MANE-VU's and Maryland's responses to states' comments on the SIP submission and various technical analyses therein, we propose to determine that Maryland has satisfied the consultation requirements of 40 CFR 51.308(f)(2)(ii).

The documentation requirement of 40 CFR 51.308(f)(2)(iii) provides that states may meet their obligations to document the technical bases on which they are relying to determine the emission reductions measures that are necessary to make reasonable progress through an RPO, as long as the process has been "approved by all State participants." As explained above, Maryland chose to rely on MANE-VU's technical information, modeling, and analysis to support

development of its long-term strategy. The MANE-VU technical analyses on which Maryland relied are listed in the state's SIP submission and include source contribution assessments, information on each of the four factors and visibility modeling information for certain EGUs, and evaluations of emission reduction strategies for specific source categories. Maryland also provided supplemental information to further demonstrate the technical bases and emission information on which it relied on to determine the emission reductions measures that are necessary to make reasonable progress. Based on the documentation provided by the state, we propose to find Maryland satisfies the documentation requirements of 40 CFR 51.308(f)(2)(iii).

Section 51.308(f)(2)(iii) also requires that the emissions information considered to determine the measures that are necessary to make reasonable progress include information on emissions for the most recent year for which the state has submitted triennial emissions data to the EPA (or a more recent year), with a 12-month exemption period for newly submitted data. Maryland's SIP submission included 2017 NEI emission data for NO<sub>x</sub>, SO<sub>2</sub>, PM, and NH<sub>3</sub> and 2017 Air Markets Program Data (AMPD) emissions for NO<sub>x</sub> and SO<sub>2</sub>. Maryland's SIP submission also included 2019 AMPD for NO<sub>x</sub> and SO<sub>2</sub>.<sup>130</sup> Based on Maryland's consideration and analysis of the 2017 and 2019 emission data in their SIP submittal and supplemental documentation, the EPA proposes to find that Maryland has satisfied the emissions information requirement in 40 CFR 51.308(f)(2)(iii).

We also propose to find that Maryland reasonably considered the five additional factors in 40 CFR 51.308(f)(2)(iv) in developing its long-term strategy. Pursuant to 40 CFR 51.308(f)(2)(iv)(A), Maryland noted that existing and ongoing state and Federal emission control programs that contribute to emission reductions through 2028 would impact emissions of visibility impairing pollutants from point and nonpoint sources in the second implementation period. Maryland included in their SIP comprehensive lists of control measures with their effective dates, pollutants addressed, and corresponding Code of Maryland Regulations provisions.<sup>131</sup>

<sup>130</sup> See Section 2.21 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>131</sup> See Section 2.8.1 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>128</sup> See Appendix 5, "Inter-RPO Consultation Briefing Book"; Appendix 7, "MANE-VU Regional Haze Consultation Report"; Appendix 9, "National Park Service Letter to MANE-VU (April 2018)"; and Appendix 17, "Additional MANE-VU documentation for establishing 3.0 Mm-1 Threshold".

<sup>129</sup> See Appendix 14, "FLM Consultation Initiation Letter (April 2019)"; Appendix 15, "National Park Service Correspondence with Maryland"; Appendix 16, "US Forest Service Consultation Response Letter"; and Appendix 20, "Public Hearing Notices, Comments, and Responses—Regional Haze Second Implementation Period Plan (2018–2028)".

Maryland's consideration of measures to mitigate the impacts of construction activities as required by 40 CFR 51.308(f)(2)(iv)(B) includes, in section 2.8.2 of its SIP submission, a list of measures that Maryland has implemented to mitigate the impacts from such activities. Maryland has implemented standards that reduce fugitive dust emissions from construction,<sup>132</sup> rules to address exhaust emissions,<sup>133</sup> including rules to limit the idling of vehicles and equipment and rules to reduce allowable smoke from on-road diesel engines,<sup>136</sup> and general conformity rules.<sup>137</sup> <sup>138</sup>

Pursuant to 40 CFR 51.308(f)(2)(iv)(C), source retirements and replacement schedules are addressed in section 2.8.3 of Maryland's submission. Source retirements and replacements were considered in developing the 2028 emission projections, with on the books/ on the way retirements and replacements included in the 2028 projections. The EGU point sources included in the inventories used in the MANE-VU contribution assessment and that were subsequently retired are identified in Table 2–14.<sup>139</sup> No non-EGU point source retirements in Maryland were considered when developing the 2028 emissions projections.

In considering smoke management as required in 40 CFR 51.308(f)(2)(iv)(D), Maryland explained, in section 2.8.4 of its submission, that emissions from agricultural and prescribed burning for forestry smoke management within the state are low; PM<sub>2.5</sub> statewide emissions from prescribed fires were 1,349.18 tons (4.13% of Maryland's overall PM<sub>2.5</sub> emissions inventory) and emissions from agricultural burning were 1.5 tons (<1% of Maryland's overall PM<sub>2.5</sub> emissions inventory). Maryland

<sup>132</sup> COMAR 26.11.06.03. "Particulate Matter", subsection D; State Effective Date November 11, 2002 (29:22 Md. R. 1724) (68 FR 46487).

<sup>133</sup> COMAR 11.14. "MOTOR VEHICLE ADMINISTRATION—VEHICLE INSPECTIONS", .01, .06, and .08.

<sup>134</sup> COMAR. 11.21.02. "Diesel Vehicle Emissions Control Program"; State Effective Date July 10, 2000 (27:13 Md. R. 1212).

<sup>135</sup> Md. Code, Transp. § 23–401 through 23–404.

<sup>136</sup> Md. Code, Transp. § 21–1101.

<sup>137</sup> The authority to address General Conformity is set forth in Section 176(c) of the Clean Air Act and the requirements to demonstrate conformity are found in the EPA's implementing regulation (40 CFR part 93, subpart B—Determining Conformity of General Federal Actions to State or Federal Implementation Plans).

<sup>138</sup> COMAR 26.11.26. "Conformity"; State Effective Date June 5, 1995 (22:11 Md. R. 825).

<sup>139</sup> See "Table 2–14: Units Retired in the Regional Haze Inventories" of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

therefore concludes that it is unlikely that fires in Maryland for agricultural or forestry management cause impacts on visibility in the MANE-VU and nearby Class I areas, including Shenandoah, Dolly Sods, Otter Creek, and James River Face. Maryland states that Smoke Management Plans is a required element of a SIP only if it is required to make reasonable progress, and that although Maryland does not need an official Smoke Management Plan, it has the legal authority to manage burning through a formal permitting system if necessary.

Maryland considered the anticipated net effect of projected changes in emissions as required by 40 CFR 51.308(f)(2)(iv)(E) by discussing, in section 2.8.5 of its submission, the photochemical modeling for the 2018–2028 period it conducted in collaboration with MANE-VU. The two modeling cases run were a 2028 base case, which considered only on-the-books controls, and a 2028 control case that considered implementation of the MANE-VU Ask. Maryland presented the differences between the base and control cases on the 20% most impaired and 20% clearest days for each MANE-VU Class I area.<sup>140</sup>

Because Maryland has reasonably considered each of the five additional factors the EPA proposes to find that Maryland has satisfied the requirements of 40 CFR 51.308(f)(2)(iv).

#### F. Reasonable Progress Goals

Section 51.308(f)(3) contains the requirements pertaining to RPGs for each Class I area. Section 51.308(f)(3)(i) requires a state in which a Class I area is located to establish RPGs—one each for the most impaired and clearest days—reflecting the visibility conditions that will be achieved at the end of the implementation period as a result of the emission limitations, compliance schedules and other measures required under paragraph (f)(2) to be in states' long-term strategies, as well as implementation of other CAA requirements. The long-term strategies as reflected by the RPGs must provide for an improvement in visibility on the most impaired days relative to the baseline period and ensure no degradation on the clearest days relative to the baseline period. Section 51.308(f)(3)(ii) applies in circumstances in which a Class I area's RPG for the most impaired days represents a slower rate of visibility improvement than the uniform rate of progress calculated

<sup>140</sup> See Figures 2–7 through 2–10 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

under 40 CFR 51.308(f)(1)(vi). Under 40 CFR 51.308(f)(3)(ii)(A), if the state in which a mandatory Class I area is located establishes an RPG for the most impaired days that provides for a slower rate of visibility improvement than the URP, the state must demonstrate that there are no additional emission reduction measures for anthropogenic sources or groups of sources in the state that would be reasonable to include in its long-term strategy. Section 51.308(f)(3)(ii)(B) requires that if a state contains sources that are reasonably anticipated to contribute to visibility impairment in a Class I area in another state, and the RPG for the most impaired days in that Class I area is above the URP, the upwind state must provide the same demonstration. Because Maryland has no Class I areas within its borders, it is subject only to 40 CFR 51.308(f)(3)(ii)(B).

Under 40 CFR 51.308(f)(3)(ii)(B), a state that contains sources that are reasonably anticipated to contribute to visibility impairment in a Class I area in another state for which a demonstration by the other state is required under 40 CFR 51.308(f)(3)(ii)(B) must demonstrate that there are no additional emission reduction measures that would be reasonable to include in its long-term strategy. Maryland's SIP submittal included MANE-VU's glidepath checks for nearby downwind Class I areas,<sup>141</sup> <sup>142</sup> which show that the RPG for the 20 percent most anthropogenically impaired days for the affected downwind Class I areas (Acadia, Brigantine, Great Gulf, Lye Brook, Moosehorn, Dolly Sods and Shenandoah) are not above the URP glidepath, and that the RPG for the 20 percent clearest days shows no degradation. In addition, the modeled MANE-VU 2028 visibility projections at nearby Class I areas<sup>143</sup> show that the base case 2028 projections for the most impaired days at these areas are below the respective 2028 points on the URPs. Therefore, we propose it is reasonable to assume that the demonstration requirement under 40 CFR 51.308(f)(3)(ii)(B) as it pertains to these areas will not be triggered.

The EPA proposes to determine that Maryland has satisfied the applicable requirements of 40 CFR 51.308(f)(3) relating to RPGs.

<sup>141</sup> See docket document, "TD MANE-VU 2000–19 RH METRICS COMPARISON PLOTS 12–19–20.xlsx".

<sup>142</sup> See docket document, "TD MANE-VU 2000–19 RHII & III Metrics Trends Plots 12–19–20.xlsx".

<sup>143</sup> See docket document, "MANE-VU Trends 2004–17 Report 2nd SIP Metrics—December 2018 Update—Final".

### *G. Monitoring Strategy and Other Implementation Plan Requirements*

Section 51.308(f)(6) specifies that each comprehensive revision of a state's regional haze SIP must contain or provide for certain elements, including monitoring strategies, emissions inventories, and any reporting, recordkeeping and other measures needed to assess and report on visibility. A main requirement of this subsection is for states with Class I areas to submit monitoring strategies for measuring, characterizing, and reporting on visibility impairment. Compliance with this requirement may be met through participation in the Interagency Monitoring of Protected Visual Environments (IMPROVE) network.

Section 51.308(f)(6)(i) requires SIPs to provide for the establishment of any additional monitoring sites or equipment needed to assess whether reasonable progress goals to address regional haze for all mandatory Class I Federal areas within the state are being achieved. Section 51.308(f)(6)(ii) requires SIPs to provide for procedures by which monitoring data and other information are used in determining the contribution of emissions from within the state to regional haze visibility impairment at mandatory Class I Federal areas both within and outside the state. Because Maryland does not have any Class I Federal areas located within its borders, Section 51.308(f)(6)(i) and (ii) do not apply.

Section 51.308(f)(6)(iii) requires states with no Class I areas to include procedures by which monitoring data and other information are used in determining the contribution of emissions from within the State to regional haze visibility impairment at Class I areas in other states. States with Class I areas must establish a monitoring program and report data to EPA that is representative of visibility at the Class I Federal areas. The IMPROVE network meets this requirement. Maryland stated that, as a participant in MANE-VU, it reviewed information about the chemical composition of baseline monitoring data at Class I Federal areas in and near MANE-VU in order to understand the sources of haze causing pollutants. Maryland commits to continuing support of ongoing visibility monitoring in Class I Federal areas, agrees that the IMPROVE network is an appropriate monitoring network to track regional haze progress, and commits to working with neighboring states and FLMs to meet the goals of the IMPROVE program. Maryland also commits to using monitoring data and procedures consistent with US EPA guidance to

review progress and trends in visibility at Class I Federal areas that may be affected by emissions from Maryland, both for comprehensive periodic revisions of this implementation plan and for periodic reports describing progress towards the reasonable progress goals for those areas.<sup>144</sup>

Section 51.308(f)(6)(iv) requires the SIP to provide for the reporting of all visibility monitoring data to the Administrator at least annually for each Class I area in the state. As noted above, Maryland does not have any Class I Federal areas located within its borders, therefore this requirement does not apply.

Section 51.308(f)(6)(v) requires SIPs to provide for a statewide inventory of emissions of pollutants that are reasonably anticipated to cause or contribute to visibility impairment, including emissions for the most recent year for which data are available and estimates of future projected emissions. It also requires a commitment to update the inventory periodically. Maryland provides for emissions inventories and estimates for future projected emissions by participating in the MANE-VU RPO and complying with EPA's Air Emissions Reporting Rule (AERR). In 40 CFR part 51, subpart A, the AERR requires states to submit updated emissions inventories for criteria pollutants to EPA's Emissions Inventory System (EIS) every three years. The emission inventory data is used to develop the NEI, which provides for, among other things, a triennial state-wide inventory of pollutants that are reasonably anticipated to cause or contribute to visibility impairment.

Section 2.21 of Maryland's submission includes tables of NEI data. The source categories of the emissions inventories included are: (1) point sources, (2) nonpoint sources, (3) non-road mobile sources, and (4) on-road mobile sources. The point source category is further divided into AMPD point sources and non-AMPD point sources.<sup>145</sup> Maryland included NEI emissions inventories for the following years: 2002 (one of the regional haze program baseline years), 2008, 2011, 2014, and 2017; and for the following pollutants: SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, VOCs, and NH<sub>3</sub>. Maryland also provided a summary of SO<sub>2</sub> and NO<sub>x</sub> emissions for AMPD sources for the years of 2016, 2017, 2018, and 2019.

<sup>144</sup> See Section 2.16 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>145</sup> AMPD sources are facilities that participate in EPA's emission trading programs. The majority of AMPD sources are electric generating units (EGUs).

Section 51.308(f)(6)(v) also requires states to include estimates of future projected emissions and include a commitment to update the inventory periodically. Maryland relied on the MANE-VU 2028 emissions projections for MANE-VU states. MANE-VU completed two 2028 projected emissions modeling cases—a 2028 base case that considers only on-the-books controls and a 2028 control case that considers implementation of the MANE-VU Asks.<sup>146</sup>

EPA proposes to find that Maryland has met the requirements of 40 CFR 51.308(f)(6) as described above, including through its continued participation in the IMPROVE network and the MANE-VU RPO and its ongoing compliance with the AERR, and that no further elements are necessary at this time for Maryland to assess and report on visibility pursuant to 40 CFR 51.308(f)(6)(vi).

### *H. Requirements for Periodic Reports Describing Progress Towards the Reasonable Progress Goals*

Section 51.308(f)(5) requires that periodic comprehensive revisions of states' regional haze plans also address the progress report requirements of 40 CFR 51.308(g)(1) through (5). The purpose of these requirements is to evaluate progress towards the applicable RPGs for each Class I area within the state and each Class I area outside the state that may be affected by emissions from within that state. Section 51.308(g)(1) and (2) apply to all states and require a description of the status of implementation of all measures included in a state's first implementation period regional haze plan and a summary of the emission reductions achieved through implementation of those measures. Section 51.308(g)(3) applies only to states with Class I areas within their borders and requires such states to assess current visibility conditions, changes in visibility relative to baseline (2000–2004) visibility conditions, and changes in visibility conditions relative to the period addressed in the first implementation period progress report. Section 51.308(g)(4) applies to all states and requires an analysis tracking changes in emissions of pollutants contributing to visibility impairment from all sources and sectors since the period addressed by the first implementation period progress report. This provision further specifies the year

<sup>146</sup> See Appendix 11 "Ozone Transport Commission/Mid-Atlantic Northeastern Visibility Union 2011 Based Modeling Platform Support Document—October 2018 Update (October 2018)".

or years through which the analysis must extend depending on the type of source and the platform through which its emission information is reported. Finally, 40 CFR 51.308(g)(5), which also applies to all states, requires an assessment of any significant changes in anthropogenic emissions within or outside the state have occurred since the period addressed by the first implementation period progress report, including whether such changes were anticipated and whether they have limited or impeded expected progress towards reducing emissions and improving visibility.

Maryland's submission describes the status of measures of the long-term strategy from the first implementation period. As a member of MANE-VU, Maryland considered the MANE-VU Asks and adopted corresponding measures into its long-term strategy for the first implementation period. The MANE-VU Asks were: (1) Timely implementation of Best Available Retrofit Technology (BART) requirements; (2) EGU controls including Controls at 167 Key Sources that most affect MANE-VU Class I areas; (3) Low sulfur fuel oil strategy; and (4) Continued evaluation of other control measures. Maryland met all the identified reasonable measures requested during the first implementation period. During the first planning period for regional haze, programs that were put in place focused on reducing sulfur dioxide (SO<sub>2</sub>) emissions. The reductions achieved led to vast improvements in visibility at the MANE-VU Federal Class I Areas due to reduced sulfates formed from SO<sub>2</sub> emissions. Maryland describes in Section 2.18 of its submittal control measures put in place during the first implementation period to help reduce the emissions of visibility-impairing pollutants, including NO<sub>x</sub> and SO<sub>2</sub>. This includes the Maryland Healthy Air Act (HAA), which covered Maryland emission sources named in MANE-VU's "167 Stacks"; the HAA was implemented in 2010 and further tightened SO<sub>2</sub> emission control requirements in 2013, resulting in significant reductions in visibility-impairing pollutants throughout the state that exceeded MANE-VU target goals. Maryland also described its implementation of low sulfur fuel oil standards for the state, and the status of the remaining emissions sources in the state subject to BART requirements, which included emission reductions for Portland cement plants to satisfy Reasonably Available Control

Technology (RACT) requirements for ozone.<sup>147</sup>

EPA proposes to find that Maryland has met the requirements of 40 CFR 51.308(g)(1) and (2) because its SIP submission describes the measures included in the long-term strategy from the first implementation period, as well as the status of their implementation and the emission reductions achieved through such implementation.

Section 51.308(g)(3) requires states to assess Reasonable Progress Goals, including current visibility conditions and changes, for any Class I areas within the state. As described above, Maryland does not have any Class I areas within its borders, therefore 40 CFR 51.308(g)(3) does not apply.

Pursuant to 40 CFR 51.308(g)(4), in Section 2.21 of their submittal, Maryland provided a summary of emissions of NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, VOCs, and NH<sub>3</sub> from all sources and activities, including from point, nonpoint, non-road mobile, and on-road mobile sources, for the time period from 2002 to 2017. Maryland also included AMPD data for SO<sub>2</sub> and NO<sub>x</sub> emissions for 2016, 2017, 2018, and 2019 in their submission.

The reductions achieved through Maryland emission control measures are seen in the emissions inventory. Based on Maryland's SIP submittal, NO<sub>x</sub> emissions have continuously declined in Maryland from 2002 through 2017, especially in the point, nonroad and onroad mobile sectors. During that period, onroad sources contributed almost half of the emissions at 47%, followed by point sources at 27%. Nonroad sources contributed 13% and area sources contributed 13%. Table 2–20 of Maryland's SIP submittal also shows additional NO<sub>x</sub> emissions data from 2016 to 2019 for Maryland's point sources that report to EPA's AMPD. NO<sub>x</sub> emissions are expected to continue to decrease as fleet turnover occurs and the older more polluting vehicles and equipment are replaced by newer, cleaner ones.<sup>148</sup>

Emissions of SO<sub>2</sub> have shown a significant decline in Maryland from 2002 to 2017 across multiple sectors; see Section 2.21.3 and Table 2–28 of Maryland's SIP submittal.<sup>149</sup> Reductions in point emissions are primarily due to

<sup>147</sup> COMAR 26.11.30—Control of Portland Cement Manufacturing Plants. Effective date: July 20, 2015 (42:Md. R. 884). [www.dsd.state.md.us/comar/SubtitleSearch.aspx?search=26.11.30](http://www.dsd.state.md.us/comar/SubtitleSearch.aspx?search=26.11.30). \* Approved by EPA March 28, 2018, 83 FR 13192

<sup>148</sup> See Section 2.21.1 and Table 2–20 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022)

<sup>149</sup> See Section 2.21.3 and Table 2–28 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

the acid rain program, Maryland power plant consent decrees and regulations including the Maryland Health Air Act, and Federal and State low sulfur fuel regulations. Additionally, some of these decreases may be attributable to the MANE-VU low sulfur fuel strategy and the 90% or greater reduction in SO<sub>2</sub> emissions at 167 EGU stacks, both inside and outside of MANE-VU, requested in the "Non-MANE-VU Ask" for states within MANE-VU for the first regional haze planning period.<sup>150</sup>

Emissions of PM<sub>10</sub> have steadily decreased in Maryland from 2002 to 2017, particularly in the point and nonroad sectors; see Section 2.21.2 and Table 2–25 of Maryland's SIP submittal.<sup>151</sup> The variations in the onroad sector are likely due to changes in emission inventory calculation methodologies, which resulted in higher particulate matter estimates in the other years than in 2002. The large variation in emissions in the nonpoint category is likely due to changes in calculation methodologies for residential wood burning and fugitive dust categories, which have varied significantly.

Emissions of ammonia (NH<sub>3</sub>) have shown declines in Maryland from 2002 to 2017; see Section 2.21.4 and Table 2–33 of Maryland's SIP submittal.<sup>152</sup> Ammonia decreases were achieved in the onroad sector due to Federal new engine standards for vehicles and equipment. Nonpoint increases and decreases from 2002 to 2014 are due to reporting, grouping and methodology changes. While ammonia emissions grew slightly between the 2002 and 2008 emission inventories, ammonia emissions have decreased from 2011 to 2017.

The EPA is proposing to find that Maryland has satisfied the requirements of 40 CFR 51.308(g)(4) by providing emissions information for NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, VOCs, and NH<sub>3</sub> broken down by type of source.

Maryland uses the emissions trend data in the SIP submission<sup>153</sup> and supporting MANE-VU information<sup>154</sup> provided to support the assessment that

<sup>150</sup> See "Statement of the Mid-Atlantic/Northeast Visibility Union (MANE-VU) Concerning a Course of Action within MANE-VU Toward Assuring Reasonable Progress" in the docket.

<sup>151</sup> See Section 2.21.2 and Table 2–25 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>152</sup> See Section 2.21.4 and Table 2–33 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>153</sup> See Section 2.21 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>154</sup> See docket document, "MANE-VU Trends 2004–17 Report 2nd SIP Metrics - December 2018 Update—Final".

anthropogenic haze-causing pollutant emissions in Maryland have decreased during the reporting period and that changes in emissions have not limited or impeded progress in reducing pollutant emissions and improving visibility, Maryland 2017 emission inventories for NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, VOCs, and NH<sub>3</sub> were lower than their 2014 emission inventories for those same pollutants emissions.<sup>155</sup> The EPA is proposing to find that Maryland has met the requirements of 40 CFR 51.308(g)(5).

### *I. Requirements for State and Federal Land Manager Coordination*

Section 169A(d) of the Clean Air Act requires states to consult with FLMs before holding the public hearing on a proposed regional haze SIP, and to include a summary of the FLMs' conclusions and recommendations in the notice to the public. In addition, 40 CFR 51.308(i)(2)'s FLM consultation provision requires a state to provide FLMs with an opportunity for consultation that is early enough in the state's policy analyses of its emission reduction obligation so that information and recommendations provided by the FLMs' can meaningfully inform the state's decisions on its long-term strategy. If the consultation has taken place at least 120 days before a public hearing or public comment period, the opportunity for consultation will be deemed early enough. Regardless, the opportunity for consultation must be provided at least sixty days before a public hearing or public comment period at the state level. Section 51.308(i)(2) also provides two substantive topics on which FLMs must be provided an opportunity to discuss with states: assessment of visibility impairment in any Class I area and recommendations on the development and implementation of strategies to address visibility impairment. Section 51.308(i)(3) requires states, in developing their implementation plans, to include a description of how they addressed FLMs' comments.

The states in the MANE-VU RPO conducted FLM consultation early in the planning process concurrent with the state-to-state consultation that formed the basis of the RPO's decision making process. As part of the consultation, the FLMs were given the opportunity to review and comment on the technical documents developed by MANE-VU. The FLMs were invited to attend the intra- and inter-RPO

consultations calls among states and at least one FLM representative was documented to have attended seven intra-RPO meetings and all inter-RPO meetings. Maryland participated in these consultation meetings and calls.<sup>156</sup>

As part of this early engagement with the FLMs, on April 12, 2018, the NPS sent letters to the MANE-VU states requesting that they consider specific individual sources in their long-term strategies.<sup>157</sup> NPS used an analysis of emissions divided by distance (Q/d) to estimate the impact of MANE-VU facilities. To select the facilities, NPS first summed 2014 NEI NO<sub>x</sub>, PM<sub>10</sub>, SO<sub>2</sub>, and SO<sub>4</sub> emissions and divided by the distance to a specified NPS mandatory Class I Federal area. NPS summed the Q/d values across all MANE-VU states relative to Acadia, Mammoth Cave and Shenandoah National Parks, ranked the Q/d values relative to each Class I area, created a running total, and identified those facilities contributing to 80% of the total impact at each NPS Class I area. NPS applied a similar process to facilities in Maine relative to Acadia National Park. NPS merged the resulting lists of facilities and sorted them by their states. NPS suggested that a state consider those facilities comprising 80% of the Q/d total, not to exceed the 25 top ranked facilities. The NPS identified 12 facilities in Maryland in this letter.<sup>158</sup> Maryland included the NPS initial letter in their proposed SIP. In a subsequent letter dated October 22, 2018, NPS identified 13 facilities for which more control information was desired.<sup>159</sup> Maryland detailed the emission controls and updates to these facilities in its SIP submittal to address the NPS's request for more information.<sup>160</sup>

On September 2, 2021, Maryland submitted a draft Regional Haze SIP to the U.S. Forest Service, the U.S. Fish and Wildlife Service, and the National

<sup>156</sup> See Appendix 7, "MANE-VU Regional Haze Consultation Report (July 27, 2018)," of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>157</sup> See Appendix 7, "MANE-VU Regional Haze Consultation Report (July 27, 2018)," and Appendix 9, "National Park Service Letter to MANE-VU (April 2018)" of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>158</sup> See Appendix 7, "MANE-VU Regional Haze Consultation Report (July 27, 2018)," of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>159</sup> See Appendix 15, "National Park Service Correspondence with Maryland", of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>160</sup> See Section 2.6 and Appendix 20 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

Park Service for a 60-day review and comment period pursuant to 40 CFR 51.308(i)(2).<sup>161</sup> Maryland received comments from the Forest Service on October 28, 2021, and from the National Park Service on October 29, 2021. Maryland responded to the FLM comments and included the responses in Appendix 20 of their submission to EPA, in accordance with 40 CFR 51.308(i)(3). Notices of the proposed SIP, availability and the public hearing were published on MDE's website and in the Maryland Register, and interested parties were emailed the notice, along with air quality contacts from other states, air quality regional organizations and the EPA. A public hearing on the proposed SIP revision was held on January 4, 2022. Written comments relevant to the proposal were accepted until the close of business January 4, 2022.

For the reasons stated above, the EPA proposes to find that Maryland has satisfied the requirements under 40 CFR 51.308(i) to consult with the FLMs on its regional haze SIP for the second implementation period.

Maryland's February 8, 2022 SIP submission includes a commitment to revise and submit a regional haze SIP by July 31, 2028, and every ten years thereafter. The state's commitment includes submitting periodic progress reports in accordance with 40 CFR 51.308(f) and a commitment to evaluate progress towards the reasonable progress goal for each mandatory Class I Federal area located within the state and in each mandatory Class I Federal area located outside the state that may be affected by emissions from within the state in accordance with 40 CFR 51.308(g).<sup>162</sup>

### **V. Proposed Action**

EPA is proposing to approve Maryland's February 8, 2022 SIP submission, as satisfying the regional haze requirements for the second implementation period contained in 40 CFR 51.308(f).

### **VI. Statutory and Executive Order Reviews**

Under the CAA, the Administrator is required to approve a SIP submission

<sup>161</sup> See Appendix 14, Appendix 15, Appendix 16, and Appendix 20 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022), and docket documents, "National Park Service Comments"; "State of Maryland Mail—Forest Service"; "USFS MD RH SIP Comment Letter"; "USFS MD RH SIP Comment Enclosure"

<sup>162</sup> See Section 2.17, "Progress Report Requirements", of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).

<sup>155</sup> See Section 2.16 of the MD Regional Haze SIP for the Second Implementation Period 2018–2028 (February 8, 2022).



that complies with the provisions of the CAA and applicable Federal regulations. 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, EPA's role is to approve state choices, provided that they meet the criteria of the CAA. Accordingly, this action merely proposes to approve state law as meeting Federal requirements and does not impose additional requirements beyond those imposed by state law. For that reason, this proposed action:

- Is not a "significant regulatory action" subject to review by the Office of Management and Budget under Executive Orders 12866 (58 FR 51735, October 4, 1993) and 13563 (76 FR 3821, January 21, 2011);

- Does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*);

- Is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*);

- Does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4);

- Does not have Federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);

- Is not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997);

- Is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001);

- Is not subject to requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the CAA; and

Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629, February 16, 1994) directs Federal agencies to identify and address "disproportionately high and adverse human health or environmental effects" of their actions on minority populations and low-income populations to the greatest extent practicable and permitted by law. EPA defines environmental justice (EJ) as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." EPA further defines the term fair treatment to mean

that "no group of people should bear a disproportionate burden of environmental harms and risks, including those resulting from the negative environmental consequences of industrial, governmental, and commercial operations or programs and policies." The Maryland Department of the Environment did not evaluate environmental justice considerations as part of its SIP submittal; the CAA and applicable implementing regulations neither prohibit nor require such an evaluation. EPA did not perform an EJ analysis and did not consider EJ in this action. Due to the nature of the action being taken here, this action is expected to have a neutral to positive impact on the air quality of the affected area. Consideration of EJ is not required as part of this action, and there is no information in the record inconsistent with the stated goal of E.O. 12898 of achieving environmental justice for people of color, low-income populations, and Indigenous peoples.

In addition, this proposed rulemaking action, pertaining to Maryland regional haze SIP submission for the second planning period, is not approved to apply on any Indian reservation land or in any other area where the EPA or an Indian tribe has demonstrated that a tribe has jurisdiction. In those areas of Indian country, the rule does not have tribal implications and will not impose substantial direct costs on tribal governments or preempt tribal law as specified by Executive Order 13175 (65 FR 67249, November 9, 2000).

#### List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by Reference, Nitrogen dioxide, Ozone, Particulate matter, Sulfur oxides.

Adam Ortiz,

Regional Administrator, Region III.

[FR Doc. 2023-18278 Filed 8-24-23; 8:45 am]

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## ENVIRONMENTAL PROTECTION AGENCY

### 40 CFR Part 52

[EPA-R02-OAR-2022-0648, FRL-11358-01-R2]

### Approval and Promulgation of Implementation Plans; New York; Elements of the 2008 and 2015 Ozone National Air Quality Standards

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

**SUMMARY:** The Environmental Protection Agency (EPA) is proposing to approve a State Implementation Plan (SIP) revision submitted by the State of New York for purposes of certifying and meeting the requirements for Reasonably Available Control Technology (RACT) for the Serious classification of the 2008 and Moderate classification of the 2015 8-hour Ozone National Ambient Air Quality Standards (NAAQS). The EPA is also proposing to approve that this SIP revision fulfills SIP requirements pertaining to the Ozone Transport Region (OTR) for the 2015 Ozone NAAQS. The EPA is proposing to approve the demonstration portion of the comprehensive SIP revision submitted by New York that certify that the State has satisfied the requirements for an Ozone nonattainment new source review program, certify that the State has satisfied the requirements for a nonattainment emission inventory, and certify that the State has satisfied the requirements for clean fuels for fleets. The EPA is also proposing to approve New York's reasonable further progress plans and motor vehicle emissions budgets for both the Moderate and Serious classifications of the 2008 Ozone NAAQS.

**DATES:** Written comments must be received on or before September 25, 2023.

**ADDRESSES:** Submit your comments, identified by Docket ID Number EPA-R02-OAR-2022-0648 at <https://www.regulations.gov>. Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from *Regulations.gov*. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (*i.e.*, on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit <https://www2.epa.gov/dockets/commenting-epa-dockets>.