

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA–R07–OAR–2024–0313; FRL–12096–01–R7]

Air Plan Approval; IA; 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 Iowa on August 15, 2023, as satisfying applicable requirements under the Clean Air Act (CAA) and EPA's Regional Haze Rule (RHR) for the program's second implementation period. Iowa'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 the CAA.

DATES: Written comments must be received on or before September 3, 2024.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA–R07–OAR–2024–0313 at <https://www.regulations.gov>. For comments submitted at *Regulations.gov*, follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from *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 <https://www.epa.gov/dockets/commenting-epa-dockets>.

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SUPPLEMENTARY INFORMATION: Throughout this document “we,” “us,” and “our” refer to the EPA.

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I. Written Comments

Submit your comments, identified by Docket ID No. EPA–R07–OAR–2024–0313, at <https://www.regulations.gov>. 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 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://www.epa.gov/dockets/commenting-epa-dockets>.

II. What is being addressed in this document?

On August 15, 2023, the Iowa Department of Natural Resources (IDNR) submitted a plan to satisfy the regional haze program requirements pursuant to CAA sections 169A and 40 CFR 51.308. The EPA is proposing to approve Iowa's Regional Haze plan for the second planning period. As required by section 169A of the CAA, the Federal RHR calls for state and Federal agencies to work together to improve visibility in 156 national parks and wilderness areas. The rule requires the states, in coordination with the EPA, the National Parks Service (NPS), the U.S. Fish and Wildlife Service (FWS), the U.S. Forest Service (USFS), and other interested parties, to develop and implement air quality protection plans to reduce the pollution that causes visibility impairment. 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 (SO₂), nitrogen oxides (NO_x), and, in some cases, volatile organic compounds (VOC) and ammonia (NH₃)). As discussed in further detail below and in the technical support document (TSD) included in this docket, the EPA is proposing to find that Iowa has submitted a Regional Haze plan that

meets the Regional Haze requirements for the second planning period. The State's submission can be found in the docket for this action.

III. 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.¹ CAA section 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 section 169A(a)(1). The CAA further directs the EPA to promulgate regulations to assure reasonable progress toward meeting this national goal. CAA section 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 section 169B. The EPA promulgated the Regional Haze Rule (RHR), codified at 40 CFR 51.308,² 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.

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 (SO₂), nitrogen oxides (NO_x), and, in some cases, volatile organic compounds (VOC) and ammonia (NH₃)). Fine particle precursors react in the atmosphere to form fine particulate matter (PM_{2.5}), which impairs visibility by scattering and absorbing light. Visibility impairment reduces the perception of clarity and color, as well as visible distance.³

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 section 169A(b)(2);⁴ see also 40 CFR 51.308(b), (f) (establishing submission dates for iterative regional haze SIP revisions) (64 FR 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 section 169A(b)(2)(B); the initial round of SIP submissions also 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 section 169A(b)(2)(A); 40 CFR

³ 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 for expressing visibility and is measured in inverse megameters (Mm^{-1}). 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 $10 \ln(b^{ext}/10 Mm^{-1})$. 40 CFR 51.301.

⁴ 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).

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 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.⁵ *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 section 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 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

⁵ 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), (d)(3).

¹ 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 section 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.

² 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.

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.⁶ 40 CFR 51.308(d)(1)(i)(B), (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), (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), (h)—and to consult with the Federal Land Manager(s)⁷ (FLMs) responsible for each Class I area according to the requirements in CAA section 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

⁶ The 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, the EPA determined that natural visibility conditions would be reached in 60 years, or 2064 (60 years from the baseline starting point of 2004). However, the EPA did not establish 2064 as the year by which the national goal *must* be reached. 64 FR 35731–32. 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).

⁷ 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 Roosevelt-Campobello International Park Commission." 40 CFR 51.301.

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").⁸ 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").⁹ Additionally, the EPA further clarified the recommended procedures for processing ambient visibility data and optionally adjusting the URP to account for

⁸ Guidance on Regional Haze State Implementation Plans for the Second Implementation Period. <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).

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

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"),¹⁰ 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").¹¹

As explained in the 2021 Clarifications Memo, the 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 further emission reductions may be necessary to adequately protect visibility in Class I areas throughout the country.¹²

¹⁰ Technical Guidance on Tracking Visibility Progress for the Second Implementation Period of the Regional Haze Program. <https://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).

¹¹ 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. <https://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).

¹² 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

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. 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),¹³ 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 Central Regional Air Planning Association (CenRAP), one of the five RPOs described above, that Iowa was a member of during the first planning period, was a collaborative effort of State governments, Tribal governments, and Federal agencies established to initiate and coordinate activities associated with the management of Regional Haze, visibility, and other air quality issues in parts of Great Plains, Midwest, Southwest, and South Regions of the United States.

After the first planning period SIPs were submitted, the CenRAP was disbanded, and the relevant regulatory entities reorganized as the Central States Air Resources Agencies (CenSARA). CenSARA is a collaborative effort of State governments established to initiate and coordinate activities associated with the management of Regional Haze and other air quality issues in parts of the Great Plains, Midwest, Southwest, and South Regions of the United States. Member States include: Arkansas, Iowa, Kansas, Louisiana, Missouri, Nebraska,

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”).

¹³ 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.

Oklahoma, and Texas. Unlike CenRAP, CenSARA’s voting members are only comprised of state agency representatives. However, CenSARA continues to include interested Tribal and Federal partners on communications and regular meetings. The Federal partners of CenSARA are the EPA, NPS, FWS, and USFS.

Iowa also benefited from planning activities of the Lake Michigan Air Directors Consortium (LADCO). Like CenSARA, LADCO is a collaborative effort to improve air quality in the Great Lakes Region of the United States. Though Iowa is not a member State of LADCO, Iowa does impact LADCO State Class I Areas in Minnesota and Michigan, and utilized resources available through LADCO for the second planning period, as referenced throughout the submission.

IV. 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 section 169A(b)(2)(B). To this end, § 51.308(f) lays out the process by which states determine what constitutes their long-term strategies, with the order of the requirements in § 51.308(f)(1) through (3) generally mirroring the order of the steps in the reasonable progress analysis¹⁴ and (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) introductory text, (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).

¹⁴ The 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).

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”¹⁵ 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 revisions for the second implementation period must address the requirements in § 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

¹⁵ The five “additional factors” for consideration in § 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.

section 169A(b)(2); CAA section 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 disapproves the SIP, the Agency must promulgate a Federal implementation plan (FIP) that satisfies the applicable requirements. CAA section 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 states contribute to visibility impairment in at least one Class I area, 64 FR 35720–22, 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 § 51.308(f)(1) related to tracking visibility improvement over time. The

requirements of this section 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 Guidance¹⁶ provides recommendations to assist states in satisfying their obligations under § 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 3103–05.

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).¹⁷ 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), (iii). States must also calculate natural visibility conditions for the clearest and most impaired days,¹⁸ 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

¹⁶ 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://www.epa.gov/sites/default/files/2021-03/documents/tracking.pdf>.

¹⁷ 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.

¹⁸ 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: "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."

Class I area, the amount of progress made since the baseline period (2000–2004) and how much improvement is left to achieve 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 to achieve natural visibility conditions by the end of 2064. The URP is used in later steps of the 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.¹⁹ 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 3107 footnote 116.

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 § 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

¹⁹ 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 3093.

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 to make reasonable progress 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 SO₂ and NO_x 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 4.²⁰

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.²¹ This is

²⁰ Similarly, in responding to comments on the 2017 RHR Revisions the 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.

²¹ The CAA provides that, “[i]n determining reasonable progress there shall be taken into consideration” the four statutory factors. CAA section 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.

accomplished by considering the four factors—“the costs of compliance, the time necessary for compliance, and the energy and non-air quality environmental impacts of compliance, and the remaining useful life of any existing source subject to such requirements.” CAA section 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 intended the relevant determination to be the requirements with which sources would have to comply to satisfy the CAA’s reasonable progress mandate.” 82 FR 3091. Thus, for each source it has selected for four-factor analysis,²² 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 emissions 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

²² “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 3088. 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.

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 emissions rate than a source has achieved or could potentially achieve using its existing measures should also consider lower emissions 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 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.²³ 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, the 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, § 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, § 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 § 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.²⁴ 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 section 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 emissions rate, it may not be necessary to have those measures in the long-term strategy to prevent future emissions increases and future visibility impairment. The EPA's 2021 Clarifications Memo provides further explanation and guidance on how states may demonstrate that a

²⁴ 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 the EPA for inclusion in their SIPs but are not required to do so. See, e.g., 82 FR 3108–09 (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).

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 § 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, § 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.²⁵ 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

²⁵ 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).

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

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"²⁶ that states must consider in developing their long-term 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. The 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, § 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 3091. 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.²⁷ The RPGs also account for the 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, § 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 3097–98.

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

²⁷ 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, control determinations by other states, and 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 schedules, as well as for adjusting RPGs using a post-modeling approach. 2019 Guidance at 47–48.

²⁶ The five "additional factors" for consideration in § 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.

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 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 3093, 3099–3100; 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 section 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) introductory text and (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), (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.²⁸ 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.

²⁸ See “Step 8: Additional requirements for regional haze SIPs” in 2019 Guidance at 55.

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.²⁹

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 § 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.”³⁰ 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 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, § 51.308(g)(3) requires states with Class I areas within their borders

²⁹ *Id.*

³⁰ The 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.

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 to assess progress made to date. See 40 CFR 51.308(g)(3)(ii)(B). States must also 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), (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), (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 explain 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

CAA 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). 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).

V. The EPA's Evaluation of Iowa's Regional Haze Submission for the Second Implementation Period

A. Background on Iowa's First Implementation Period SIP Submission

IDNR submitted its regional haze SIP for the first implementation period to the EPA on March 25, 2008. Iowa relied on the Clean Air Interstate Rule (CAIR) to satisfy BART requirements. In July 2008, the CAIR rule was vacated by the District of Columbia Circuit Court.³¹ In response on August 8, 2011, the EPA replaced CAIR with the Cross-State Air Pollution Rule (CSAPR). On June 7, 2012, the EPA promulgated the CSAPR better than BART rule, allowing states to rely on CSAPR to satisfy BART requirements. In that same action, the EPA finalized the limited disapproval of Iowa's regional haze SIP and imposed a Federal Implementation Plan (FIP) for Iowa to replace reliance on CAIR for BART with reliance on CSAPR to satisfy BART requirements (77 FR 33642, June 7, 2012). On June 26, 2012, the EPA finalized a limited approval for certain elements of Iowa's first implementation period regional haze SIP submission (77 FR 38006, June 26, 2012). On May 14, 2019, Iowa submitted a SIP revision to change their reliance on CAIR for BART to relying on CSAPR for BART. The EPA

fully approved Iowa's regional haze SIP for the first implementation period on December 3, 2019 (84 FR 66075, December 3, 2019). The requirements for regional haze SIPs for the first implementation period are contained in 40 CFR 51.308(d) and (e). Pursuant to 40 CFR 51.308(g), Iowa was also responsible for submitting a five-year progress report as a SIP revision for the first implementation period, which it did on July 19, 2013. The EPA approved the progress report into the Iowa SIP on August 15, 2016 (81 FR 53924, August 15, 2016).

B. Iowa's Second Implementation Period SIP Submission and the EPA's Evaluation

In accordance with CAA section 169A and the RHR at 40 CFR 51.308(f), (g), and (i), on August 15, 2023, IDNR submitted a revision to the Iowa SIP to address its regional haze obligations for the second implementation period, which runs through 2028. Iowa made its 2023 Regional Haze SIP submission available for public comment from February 13, 2023, through March 16, 2023. The State held a public hearing for the plan on March 16, 2023. IDNR received and responded to public comments and included the comments and responses to those comments in its submission.

The following sections describe Iowa's SIP submission. This document also contains the EPA's evaluation of Iowa'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) introductory text, 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 (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

³¹ *North Carolina v. EPA*, 531 F.3d 896 (D.C. Cir. 2008), modified on rehearing, *North Carolina v. EPA*, 550 F.3d 1176, 1178 (D.C. Cir. 2008).

impairment establishes “an ‘extremely low triggering threshold’ in determining which States should submit SIPs for regional haze.” 64 FR 35721. In concluding that each of the contiguous 48 states and the District of Columbia meet this threshold,³² 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 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. The EPA’s 2017 revisions to the RHR did not disturb this conclusion. *See* 82 FR 3094.

Iowa contains no Class I Areas. In Iowa’s Regional Haze plan for the first planning period, Iowa analyzed ten Class I areas: Boundary Waters Canoe Area, Minnesota; Voyageurs National Park, Minnesota; Seney Wilderness Area, Michigan; Isle Royale National Park, Michigan; Hercules Glades Wilderness Area, Missouri; Mingo Wilderness Area, Missouri; Caney Creek Wilderness, Arkansas; Upper Buffalo Wilderness, Arkansas; Badlands National Park, South Dakota; and Wind Cave National Park, South Dakota.³³ In Iowa’s Regional Haze plan for the second planning period, Iowa analyzed potential contributions to visibility impairment in twelve Class I areas: the ten Class I areas analyzed in the first planning period, plus Mammoth Cave, Kentucky and Wichita Mountains Wilderness Area, Oklahoma. To make this determination, Iowa used photochemical source apportionment modeling completed by LADCO and contained in appendix A–1 and appendix A–2 of the state submission. The 2021 LADCO analysis used Particulate Matter Source Apportionment Technology (PSAT) results from the Comprehensive Air Quality Model with extensions (CAMx) to track state contributions to downwind Class I areas for the 2018 to 2028 Regional Haze planning period. Based on LADCO’s analysis using 2028 projected emissions, the State compiled Iowa’s modeled anthropogenic sulfate, nitrate, and primary particulate (elemental carbon, primary organic aerosols, fine soil and coarse mass) source contributions to visibility impairment in inverse megameters (Mm^{-1}) on the 20% most impaired days

at each of the twelve Class I areas in table 2–2 of the State submission. Iowa also included the results as a percentage of the total modeled impact (excluding Rayleigh and sea salt contributions) in table 2–3 of the State’s plan.

In Iowa’s regional haze plan for the first planning period, Iowa determined State emissions could contribute to visibility impairment in four Class I areas: Isle Royale, Michigan; Seney, Michigan; Boundary Waters Canoe Area, Minnesota; and Voyageurs, Minnesota. Based on the LADCO CAMx PSAT results provided in table 2–3 of the State submission, Iowa’s projected 2028 anthropogenic contributions to visibility impairment for each of those Class I areas ranges from 3 percent (Voyageurs, Minnesota) to 3.9 percent (Isle Royale, Michigan). For consistency with the SIP-approved regional haze plan from the first period, Iowa determined it was reasonable to retain the same linkages in the second planning period and to include any additional Class I areas where State contributions were 3 percent or greater. Based on that approach, the State added one additional linkage for the second planning period to Hercules-Glades Wilderness Area, Missouri because Iowa’s contribution was 3.9 percent. The State contributions did not exceed the 3 percent threshold for any of the other Class I areas modeled by LADCO. Table 1 summarizes Iowa’s modeled contributions to the twelve Class I areas based on LADCO’s 2028 CAMx PSAT analysis and identifies the five Class I areas linked to Iowa’s emissions in the State’s regional haze plan for the second implementation period using the State’s chosen 3% contribution threshold.

TABLE 1—SUMMARY OF MODELED CONTRIBUTIONS ON 20% MOST IMPAIRED DAYS FROM LADCO’S 2028 CAMx PSAT ANALYSIS AND DETERMINATION OF CLASS I AREAS LINKED TO IOWA’S EMISSIONS IN 2ND PLANNING PERIOD

State	Class I area	Total modeled extinction excluding Rayleigh & Sea Salt (Mm^{-1})	Iowa’s modeled anthropogenic contributions*		Class I areas linked to Iowa’s emissions in 2nd planning period
			Mm^{-1}	%	
Arkansas	Caney Creek	42.95	0.59	1.4	
Arkansas	Upper Buffalo	42.96	0.90	2.1	
Kentucky	Mammoth Cave	62.89	1.81	2.9	
Michigan	Isle Royale	36.36	1.42	3.9	X
Michigan	Seney	45.12	1.49	3.3	X
Minnesota	Boundary Waters	29.31	0.94	3.2	X
Minnesota	Voyageurs	28.74	0.87	3.0	X
Missouri	Hercules-Glades	48.13	1.86	3.9	X
Missouri	Mingo	57.35	1.34	2.3	
Oklahoma	Wichita Mountains	44.82	0.56	1.2	
South Dakota	Badlands	22.47	0.25	1.1	
South Dakota	Wind Cave	18.10	0.18	1.0	

* The anthropogenic contributions account for sulfates, nitrates, and primary particulates.

³² The 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 35721. Hawaii, Alaska, and the U.S. Virgin Islands must also

submit regional haze SIPs because they contain Class I areas.

³³ Iowa State Implementation Plan for Regional Haze—Final March 2008.

We acknowledge that the 3 percent or greater State contribution threshold used to determine whether Iowa 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. However, we note that although Iowa did not establish formal linkages to Class I areas other than Isle Royale, Seney, Boundary Waters, Voyageurs, and Hercules-Glades, the State evaluated source impacts on all twelve of the Class I areas listed in table 1 in the source-selection process as discussed in section V.E.a. of this document. Furthermore, Iowa consulted with other states and FLMs regarding their long-term strategy for regional haze through regional calls organized by CenSARA and LADCO. At the time of submission, no other states requested additional emission reduction measures or evaluation of other Class I areas. As discussed in further detail below, the EPA is proposing to find that Iowa 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. Thus, although the 3 percent contribution threshold used in this analysis may be higher than intended by the statute and regulation, we propose to find that Iowa appropriately evaluated its visibility impact at twelve out of State Class I areas and 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).

These requirements only apply to states with Class I areas. These statutory requirements do not apply because Iowa does not have any Class I areas.

E. Long-Term Strategy for Regional Haze

a. Iowa’s Source Selection and Four Factor Analysis

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 section 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 § 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 paragraphs summarize how Iowa’s SIP submission addressed the requirements of § 51.308(f)(2)(i). The EPA’s evaluation of Iowa’s SIP revision with regard to the same is contained in the following section V.E.b. and in the

technical support document (TSD) in the docket for this action.

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 § 51.308(f). Where an RPO has performed source selection and/or four-factor analyses (or considered the five additional factors in § 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 § 51.308(f)(2)(i) so long as the states have a reasonable basis to do so and all state participants in the RPO process have approved the technical analyses. 40 CFR 51.308(f)(2)(iii). States may also satisfy the requirement of § 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.

Iowa is a member of the CenSARA RPO. CenSARA and its contractor provided member States with an area of influence (AOI) study for Class I areas throughout and near the CenSARA region. The AOI study provided by CenSARA is a technical analysis product to help assess source and State-level contributions to visibility impairment and the need for interstate consultation. Iowa relied upon the AOI study to conduct an analysis of emission sources and select sources for a four-factor analysis.

The cumulative sulfate and nitrate extinction weighted residence time (EWRT) multiplied by Q/d (emissions divided by distance) analysis was performed by a CenSARA contractor using 2016 actual emissions data and 2028 emissions projections. It relied on a back-trajectory model combined with air quality measurement data and emission inventories to identify the geographic areas and emission sources with a high probability of contributing to anthropogenically impaired visibility at Class I areas within CenSARA and nearby states. For the EWRT multiplied by Q/d analysis, back trajectory residence times were first calculated by summing the amount of time trajectories reside in a specific geographic area (*e.g.*, modeling grid cell). The trajectory residence times were then weighted by sulfate and nitrate extinction coefficients to account for the varying contributions of sulfates and nitrates to total light extinction. To determine the potential impact from sources of SO₂ and NO_x emissions (precursors of SO₄

and NO₃, respectively), the EWRT values for SO₄ and NO₃ were combined with emissions (Q) from sources of SO₂ and NO_x, respectively. CenSARA States chose to focus on electric generating units (EGU) and non-EGU point sources since these sources comprise major fractions of the NO_x and SO₂ emissions inventory. To incorporate the effects of dispersion, deposition, and chemical transformation along the path of the trajectories, emissions were inversely weighted by the distance (d) between the centers of the grid cell emitting the emissions and the grid cell containing the IMPROVE site. The AOI study and analysis tool are included in appendix B and appendix C–1 of the State submission.

For its own analysis, IDNR decided to sum the sulfate and nitrate contributions for each facility based on 2016 emissions. Rather than evaluating all sources with an individual impact greater than a given percentage, such as 1 percent, Iowa used the per-facility percentage contributions (ranked from largest to smallest) for Iowa facilities, as well as sources in other states, to compute a cumulative (rolling total) percentage of the total visibility impairment for a Class I area. The cumulative rankings for each of the 12 Class I areas evaluated by IDNR is provided in appendix C–2 of the State submission.

Based on that analysis, Iowa decided to select sources for a four-factor analysis based upon a cumulative percentage threshold of 50 percent, or all sources contributing to a majority of the combined (sulfate plus nitrate) impacts in any Class I area. This

approach of focusing on cumulative sulfate and nitrate impacts among all sources at each Class I area resulted in the selection of sources with fairly low individual contributions to those Class I areas. This analysis resulted in Iowa selecting two sources for four-factor analysis: Louisa Generating Station (LGS) and Walter Scott Jr. Energy Center (WSEC). The LGS and WSEC each contributed to a majority of the combined visibility impacts at Isle Royale, even though their individual sulfate plus nitrate impacts were 0.86% and 0.55%, respectively. No other Iowa source contributed above the 50 percent threshold chosen by IDNR in any other Class I area.

To support the development of emissions reduction measures, Iowa gathered information on each of the four statutory factors for the two sources identified. Both sources are coal-fired EGUs operated by MidAmerican Energy Company. Source-specific data included explanations of source characteristics, existing controls for SO₂ and NO_x, unit-level emissions, projected boiler operations, and the identification of technically feasible control options for SO₂ and NO_x. In section 5 of Iowa’s submittal, the State explains the four-factor analyses performed by the MidAmerican Energy Company for the two facilities. The analyses evaluated the costs of control options, 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. The state also considered the visibility

impacts of control options as an additional factor. Iowa’s emission reduction measures were based on these analyses and looked to either optimize the use of existing controls or require the addition of new controls.

LGS has one boiler that is currently equipped with dry lime flue gas desulfurization (FGD) system to reduce SO₂ emissions and low NO_x burners (LNB) with overfire air (OFA) to reduce NO_x emissions. WSEC has two boilers, identified as Unit 3 (WSEC–3) and Unit 4 (WSEC–4). Both units are equipped with dry lime FGD to reduce SO₂ emissions and LNB with OFA to reduce NO_x. Unit 4 additionally includes a selective catalytic reduction (SCR) system to further control NO_x emissions. Based on the analysis of technically feasible control options, Iowa determined that WSEC–4 is currently equipped with all feasible control options.

Four potential control options were identified for LGS and WSEC–3. The two evaluated SO₂ controls were operational improvements to the existing dry FGD systems or replacement with new wet FGDs. The two evaluated NO_x controls included the addition of either selective noncatalytic reduction (SNCR) or SCR systems.

The source evaluated the cost of each identified control option for LGC and WSEC. The results for the SO₂ control options are shown in table 2 and the results of the NO_x control options are shown in table 3. The full cost control analysis was provided in appendix D–1 of the State submission and is included in the docket for this action.

TABLE 2—COST OF EVALUATED SO₂ CONTROL OPTIONS

Facility	Control technology	Total annualized cost (\$)	Emission reduction (tons/year)	Effective cost (\$/ton)
LGS (Unit 101)	Improve Existing Dry FGD	\$1,102,000	3,903	\$282
	Wet FGD	42,122,000	4,722	8,920
WSEC–3	Improve Existing Dry FGD	1,248,000	5,785	216
	Wet FGD	41,163,000	6,687	6,160

TABLE 3—COST OF EVALUATED NO_x CONTROL OPTIONS

Facility	Control technology	Total annualized cost (\$)	Emission reduction (tons/year)	Effective cost (\$/ton)
LGS (Unit 101)	SNCR	\$3,621,000	566	\$6,398
	SCR	24,271,942	2,739	8,862
WSEC–3	SNCR	4,240,300	755	5,616
	SCR	24,771,688	3,849	6,436

MidAmerican evaluated the time necessary for compliance for each potential control option for the two sources. MidAmerican estimated that improvements to the existing dry FGD systems at both LGS and WSEC-3 could be implemented within approximately six months. The company estimated that the time needed to install and implement new wet FGD systems would be approximately five years. The company estimated SNCR could be implemented within three years and SCR could be implemented within five years. Iowa determined these timeframes were appropriate for considering the time necessary for compliance, but this factor was not used to eliminate any potential control options.

In the State submission, Iowa characterized the information provided by MidAmerican on the statutory factors of energy and non-air quality environmental impacts and the remaining useful life of the sources consistent with 2019 Guidance. MidAmerican evaluated energy and non-air quality environmental impacts for each technically feasible control option but this factor was not used to eliminate any potential control options. The remaining useful life of the two sources was also evaluated but was not a determining factor in selecting control measures because operation of these units is not limited. In completing the control cost analysis, the company

considered the useful life of the control systems.

Iowa also evaluated the visibility impacts of control measures as a fifth factor and presented this analysis in section 5.8 of the State's submission. As explained in section IV.C. of this proposed rule, states have flexibility under the CAA and RHR to reasonably consider visibility benefits as an optional additional factor alongside the four statutory factors. The 2019 Guidance and the 2021 Clarification Memo provide recommendations and guidance on how states can consider modeled visibility impacts or benefits in the context of a four-factor analysis. For its analysis, Iowa calculated a ratio of sulfate impacts relative to nitrate impacts from LGS and WSEC on the 20% most impaired days at the five linked Class I areas. Iowa first quantified the State's predicted anthropogenic sulfate and nitrate contributions to the 20% most impaired days at each of the Class I areas based on LADCO's 2028 CAMx PSAT modeling results. The results are presented as extinction values in Mm-1 and percent of total modeled visibility impairment in tables 5-7 and 5-8 of the State's submission. Iowa then chose the maximum predicted sulfate and nitrate contributions attributed to the State's anthropogenic emissions among the five linked Class I areas (Isle Royale, Seney, Boundary Waters, Voyageurs, and Hercules-Glades). The maximum sulfate

impact is 1.000 Mm-1 at Hercules-Glades, and the maximum nitrate impact is 0.798 Mm-1 at Seney. The maximum sulfate and nitrate extinction values were then apportioned to LGS and WSEC based on the 2028 projected anthropogenic emissions inventory for Iowa, which is summarized in table 5-9 and Figure 5-4 of the State's submission. EGUs are projected to emit 78.8% and 22.2% of Iowa's 2028 SO₂ and NO_x emissions, respectively.³⁴ To calculate factors for apportioning sulfate and nitrate contributions to LGS and WSEC, Iowa assumed that LGS and WSEC emit the entirety of the State's projected 2028 EGU SO₂ and NO_x emissions totals. For each pollutant, the percentage of statewide EGU emissions was multiplied by the ratio of each facility's emissions to the sum of LGS and WSEC emissions.³⁵ The resulting factors were then multiplied by the statewide maximum sulfate and nitrate impact values. LGS's estimated sulfate contribution is 0.285 Mm-1 and its nitrate contribution is 0.064 Mm-1. The corresponding sulfate and nitrate impacts for WSEC are 0.503 Mm-1 and 0.133 Mm-1, respectively. For both LGS and WSEC, Iowa's analysis indicates that sulfate impacts are estimated to be 4.4 times the nitrate impacts. Table 4 summarizes Iowa's calculations and the resulting estimated sulfate and nitrate impacts from LGS and WSEC.

TABLE 4—ESTIMATED SULFATE AND NITRATE IMPACTS ATTRIBUTED TO LGS AND WSEC ON THE 20% MOST IMPAIRED DAYS AT IOWA'S FIVE LINKED CLASS I AREAS

Facility	2028 Projected emissions		Apportionment factor		Sulfate impact (Mm-1)	Nitrate impact (Mm-1)	Ratio (sulfate/nitrate impact)
	SO ₂ (tpy)	NO _x (tpy)	SO ₂ (%)	NO _x (%)			
LGS	5,605	3,403	28.5	8.0	0.285	0.064	4.4
WSEC	9,897	6,025	50.3	14.2	0.503	0.113	4.4

Based upon the four-factor analysis for LGS and WSEC, Iowa determined that implementing operational improvements to the existing dry FGD systems at LGS and WSEC-3 were necessary to make reasonable progress. The cost effectiveness of this control option at LGS is less than \$300 per ton and results in an estimated reduction of actual SO₂ emissions by 3,903 tons per year from this source. The cost effectiveness of this control option at

WSEC is less than \$300 per ton and results in an estimated reduction of actual SO₂ emissions by 5,785 tons per year from this source. The state determined the new wet FGD systems were not considered reasonable due to the cost and estimated incremental decrease in SO₂ emissions being relatively small compared to improvements to the existing dry FGD systems (less than 14 percent versus baseline emissions at LGS and less than

11 percent versus baseline emissions at WSEC-3).³⁶ Iowa decided not to require the addition of SNCR or SCR control systems to further control NO_x emissions at either facility at this time due to the estimated cost effectiveness of both options exceeding \$5,000 per ton and the lower visibility benefits than compared to SO₂ controls.

Based on the conclusions from the four-factor analysis, Iowa modified the air construction permits for the main

³⁴ Based on LADCO's 2028 emissions projections as summarized in table 5-9 of Iowa's regional haze plan submission, Iowa EGUs are projected to emit 28,002 tons/year of the total statewide SO₂ emissions of 35,538 tons/year. For NO_x, Iowa EGUs

are projected to emit 21,442 tons/year of the state's total 96,398 tons/year.

³⁵ For example, the SO₂ apportionment for LGS is calculated as follows: 78.8% * (5,605/(5,605 +

9,897)) = 28.5%. The NO_x apportionment for LGS is: 22.2% * (3,403/(3,403 + 6,025)) = 8.0%.

³⁶ See table 5.5 of the State submission, included in the docket for this action.

boiler at LGS and WSEC-3 to implement operational improvements to the existing dry FGD systems. The permits include new SO₂ emissions limits and compliance schedules. The new SO₂ emission limit for the main boiler at LGS is 800 lb/hr based on a 30-day rolling average. The new SO₂ emission limit for WSEC-3 is 770 lb/hr based on a 30-day rolling average. Iowa issued both permits on July 20, 2023, with compliance dates of December 31, 2023. Iowa determined that WSEC-4 is currently equipped with all feasible control options. The current permit restricts WSEC-4 to an enforceable best available control technology (BACT) SO₂ emission limit of 0.1 lb/MMBtu and a NO_x emission limit of 0.07 lb/MMBtu. To establish permanent emission limits for its long-term strategy for regional haze, Iowa submitted the air construction permits for LGS, WSEC-3, and WSEC-4 for incorporation into the SIP in 40 CFR 52.820(d), *EPA approved state source-specific requirements*. The State's SIP submission requested that the EPA not act on Condition 11 of the permits for LGS and WSEC-3 nor Condition 6 of the permit for WSEC-4, and accordingly those conditions are not included in this action. The full permits are included in appendix E of the State submission in the docket for this action.

b. The EPA's Evaluation of Iowa's Emissions Reduction Measures and Compliance With § 51.308(f)(2)(i)

The EPA is proposing to find that Iowa has satisfied the requirements of § 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 Iowa reasonably evaluated the two pollutants—SO₂ and NO_x—that currently drive visibility impairment within the linked Class I areas and that it adequately explained and supported its decision to focus on these two pollutants through its technical analyses included in the state submission.³⁷

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. The State must include in its implementation plan a description of the criteria it used to determine which sources or groups of sources it evaluated and how the four factors were taken into consideration in

selecting the measures for inclusion in its long-term strategy. As explained above, Iowa relied on the cumulative sulfate and nitrate emissions weighted residence time (EWRT) multiplied by Q/d (emissions divided by distance) analysis performed by a CenSARA contractor to compute a cumulative percentage of the total visibility impairment from major sources for each Class I area. Iowa used the per-facility percentage contributions (ranked from largest to smallest) to compute a cumulative (rolling total) percentage of the total visibility impairment to each Class I area. Iowa selected sources for four-factor analysis based upon a cumulative impact threshold of 50 percent in any Class I area. Based on this analysis, Iowa selected two sources: Louisa Generating Station and Walter Scott Jr. Generating Station.

Pursuant to the RHR, states must consider selecting sources identified by other states or by FLMs. A state receiving a request to select a particular source(s) should either perform a four-factor analysis on the source(s) or provide a well-reasoned explanation as to why it is choosing not to do so. See 2021 Clarifications Memo at 4. No other states identified additional sources for evaluation. During initial consultations with FLMs, Iowa received recommendations from FLMs to evaluate several sources. The U.S. Forest Service identified three sources based on its review of emission rate data (lb/MMBtu) and results from a LADCO Q/d analysis: University of Northern Iowa, Burlington Generating Station, and Muscatine Power and Water, Unit 8. The National Park Service identified eleven Iowa sources using a Q/d(SO₂ + NO_x) threshold of 1.2 based on 2017 National Emissions Inventory (NEI) emissions data for the non-EGUs and 2019 Clean Air Markets Division (CAMD) data for EGUs: Walter Scott Jr. Energy Center (EGU), Louisa Generating Station (EGU), George Neal North (EGU), George Neal South (EGU), Burlington Generating Station (EGU), Muscatine Power and Water (EGU), Ottumwa Generating Station (EGU), ADM Corn Processing—Cedar Rapids (non-EGU), Continental Cement Company—Davenport (non-EGU), Natural Gas Pipeline Co. of America—Station 107 (non-EGU), and Northern Natural Gas Co.—Ogden (non-EGU). However, Iowa chose to rely on a different source selection methodology based on CenSARA's AOI analysis, as explained above and in the State submission. While Iowa did not select additional sources identified by FLMs for four-factor analysis, it provided

supplemental information supporting its decision to use CenSARA's AOI analysis because it resulted in more technical data.

During the formal FLM consultation and public comment period, Iowa received several comments to broaden its source selection criteria by using a higher percent contribution threshold and expand its source selection to include two additional sources in Iowa: George Neal North and George Neal South. As explained in the 2021 Clarifications Memo, states have the discretion to choose any source selection threshold or methodology that is reasonable, as long as whatever choices states make are reasonably explained and produce a reasonable outcome. 2021 Memo at 3. Iowa described its source selection criteria in the state submission and selected all sources that met the source selection threshold. In this case, the 50 percent cumulative impact threshold identified two sources in Iowa. We note that Iowa selected its two largest EGUs for four-factor analysis and that the evaluation of these sources had the potential to meaningfully reduce their contributions to visibility impairment. Furthermore, the 2019 Guidance explains that the Regional Haze Rule "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. Thus, although the source selection threshold resulted in two sources being evaluated, Iowa reasonably chose factors to consider when selecting sources and applied these factors in a reasonable way. Therefore, we propose to find Iowa's source selection methodology and the sources selected for further analysis to be reasonable for the second planning period.

As detailed above, Iowa included four-factor analyses performed by MidAmerican Energy Company for each of the two sources selected for further analysis. The state chose to evaluate visibility benefits of control measures along with the four statutory factors and described how each of the factors were considered in the SIP submission. In considering whether compliance costs for sources were reasonable, Iowa evaluated the cost estimates for each technically feasible control option for both SO₂ and NO_x completed by MidAmerican.

Based on the EPA's review, we find that Iowa's control cost analysis was both reasonable and consistent with the EPA Air Pollution Control Cost

³⁷ See section 3.3 of the State submission, included in the docket for this action.

Manual.³⁸ The State submission included details on the consideration of 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. EPA finds the consideration of these statutory factors was reasonable and consistent with the 2019 Guidance and 2021 Clarifications Memo. The EPA further reviews the control cost analyses in the TSD contained in the docket for this rulemaking.

Iowa also included a visibility benefits analysis that estimated sulfate impacts relative to nitrate impacts from LGS and WSEC on the 20% most impaired days at the five linked Class I areas, as described in section V.E.a. of this document. Based on that analysis, the State estimated that sulfate impacts to visibility in the linked Class I areas are 4.4 times greater than nitrate impacts for both LGS and WSEC. While visibility is not an explicitly listed factor to consider when determining whether additional controls are reasonable, the purpose of the four-factor analysis is to determine what degree of progress toward natural visibility conditions is reasonable. Therefore, the EPA has interpreted the CAA and the RHR as allowing states to consider visibility alongside the four statutory factors when comparing multiple emission reduction control options that may be necessary to make reasonable progress. See 2021 Clarifications Memo at 12. We find that Iowa's consideration of visibility improvements was reasonable and consistent with the requirements of the CAA.

The State determined that operational improvements to the existing FGD systems at both LGS and WSEC-3 were the most cost-effective control option and showed reducing SO₂ emissions increased visibility benefits in several Class I areas. Iowa stated that these emission reduction measures will reduce actual SO₂ emissions by an estimated 9,688 tons per year. The State determined that WSEC-4 is currently equipped with all feasible control options and that the existing measures are necessary to reasonable progress. Iowa submitted the air construction permits for LGS, WSEC-3, and WSEC-4 for inclusion in its long-term strategy. The permits are included in appendix E of the State submission in the docket for this action. Section 51.308(f)(2) of the

RHR requires that emission reduction 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). The permits for LGS and WSEC-3 include limits in lb/hour, with compliance determined on thirty-day rolling averages through the use of Continuous Emission Monitors (CEMs) to the EPA standards, necessary recordkeeping and reporting requirements, and cover all times of operation. The new limits are: 800 lb/hr for MidAmerican Energy Co.—Louisa Station Unit EU1, Louisa Boiler, and 770 lb/hr for MidAmerican Energy Co.—Walter Scott Jr. Energy Center, Unit 003, Boiler #3. WSEC-4 was subject to the prevention of significant deterioration (PSD) preconstruction permitting for SO₂ and NO_x emissions in 2003. As part of the PSD review process, BACT was required for SO₂ and NO_x controls. The air construction permit includes a BACT SO₂ emission limit of 0.1 lb/MMBtu (30-day rolling average) and an annual emission restriction of 3,362 tons per rolling 12-month period. The BACT emission limit for NO_x is 0.07 lb/MMBtu (30-day rolling average) and an annual emission restriction of 2,353 tons per rolling 12-month period. Compliance with SO₂ and NO_x BACT limits is demonstrated using continuous emissions monitoring systems (CEMS). The EPA finds the air quality construction permits, submitted by Iowa to serve as the enforceable mechanism of the long-term strategy, meet the requirements of § 51.308(f)(2) to include enforceable emissions limitations. We propose to find Iowa's four-factor analysis and emission reduction measures to be reasonable for the second planning period.

In sum, the EPA proposes to find that Iowa has satisfied the requirements that states determine the emission reduction measures that are necessary to make reasonable progress by considering the four factors, and that its long-term strategy includes the enforceable emission limitations, compliance schedules, and other measures necessary to make reasonable progress.

c. Additional Long-Term Strategy Requirements

The consultation requirements of § 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.

Iowa included documentation of its consultation with RPOs and individual states in its SIP submission. Specifically, Iowa consulted with three states containing the five Class I Areas that Iowa sources were expected to impact: Minnesota, Michigan, and Missouri. Documentation of consultation with each state is contained in appendix H to the State submittal. In addition, Iowa consulted with CenSARA and LADCO through its participation in regular planning calls each RPO. Iowa did not receive any requests from other states nor did it encounter any disagreements. We propose to determine that Iowa has satisfied the consultation requirements of § 51.308(f)(2)(ii).

The documentation requirement of § 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.”

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. Iowa's SIP submission included in section 7 emissions information by sector and pollutant from LADCO's 2016 modeling inventory and from the 2017 NEI. The state analysis included data from the 2016 base year and 2028 modeled emissions inventories for NO_x, SO₂, PM_{2.5}, VOCs, and NH₃. The State's four factor analysis relied on emission data from 2009–2021. The State also included emission data from 2009–2021 for Iowa EGUs. Based on Iowa's consideration of the emission data in their SIP submittal, the EPA proposes to find that Iowa has satisfied the emissions information requirement in § 51.308(f)(2)(iii).

We also propose to find that Iowa reasonably considered the five additional factors in § 51.308(f)(2)(iv) in

³⁸EPA Air Pollution Control Cost Manual, <https://www.epa.gov/economic-and-cost-analysis-air-pollution-regulations/cost-reports-and-guidance-air-pollution>.

developing its long-term strategy. Pursuant to § 51.308(f)(2)(iv)(A), Iowa 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. Iowa included in its SIP submission details of control measures with their effective dates and pollutants addressed.

Iowa's consideration of measures to mitigate the impacts of construction activities as required by § 51.308(f)(2)(iv)(B) is included in section 6.2.2. of its SIP submission. Iowa described the minor NSR permit requirements for aggregate processing plants, concrete batch plants, and asphalt plants and its rules to reduce fugitive dust emissions from beyond the property line.³⁹ Iowa noted that construction activities are unlikely to contribute to visibility impairment in Class I areas due to the extensive transport distances in combination with relatively low emissions and release heights for construction activities.

Pursuant to § 51.308(f)(2)(iv)(C), source retirements and replacement schedules are addressed in section 6.2.3 of Iowa's submission. The LADCO modeling used by Iowa considered known source retirements and replacements in developing the 2028 emission projections. The Iowa EGU source retirements, refuelings, or replacements that occurred during or after the 2016 base year are identified in table 6–4 of the State submission.⁴⁰

Iowa's consideration of smoke management as required in 40 CFR 51.308(f)(2)(iv)(D) is included in section 6.2.4. of the SIP submission. Iowa explained that source apportionment modeling conducted by Central Regional Air Planning Association (CENRAP) for the first implementation period demonstrated that fires in Iowa do not significantly contribute to visibility in Class I areas. Iowa determined that conclusion is still valid since Iowa's total prescribed fire and agricultural fire emissions represent less than one percent of the U.S. totals in the 2017 NEI, as shown in tables 6–5 and 6–6 of the State submission.

Iowa considered the anticipated net effect of projected changes in emissions as required by § 51.308(f)(2)(iv)(E) by discussing, in section 8 of its submission, the photochemical modeling for the 2018–2028 period it conducted by LADCO. Table 8–1 of the

State submission summarizes the visibility improvements in linked Class I areas. The results show improvements of 0.71 to 1.24 deciviews on the 20 percent most impaired days and no visibility degradation on the clearest days. Iowa explained the results are conservative because they do not incorporate the scrubber improvements from its long term strategy (LTS), which will further improve visibility.

Because Iowa has reasonably considered each of the five additional factors the EPA proposes to find that Iowa 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. This provision does not apply to Iowa because it does not have a Class I Area. 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. This provision does not apply because the states with Class I areas that are affected by Iowa sources did not submit any RPGs that are above the URP.

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. 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. As noted previously, most regulatory requirements in § 51.308(f)(6) do not apply to states without Class I Areas.

However, § 51.308(f)(6)(iii) and (v) apply to all states that have emissions that contribute to a Class I Area, including Iowa. Section 51.308(f)(6)(iii) requires SIPs to provide 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 in other states.

Iowa included details on the monitoring data the State used to estimate its visibility contribution to out-of-state Class I Areas, to address § 51.308(f)(6)(iii). Iowa relies on the IMPROVE monitoring network for monitoring at the Class I areas Iowa selected. We note Iowa included details on two IMPROVE protocol monitors previously operated by the State in section 9 of the state plan. Iowa's 2023 Ambient Air Monitoring Network Plan included the removal of the IMPROVE protocol monitors and was separately reviewed and approved by EPA. The removal of the IMPROVE protocol monitors does not impact this action because IMPROVE protocol monitors are not located at and do not represent visibility at mandatory Class I Federal areas. Therefore, neither the presence nor lack of IMPROVE protocol monitors has any direct impact on “determining the contribution of emissions from within the state to out-of-state Class I areas”.

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. 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.

To address § 51.308(f)(6)(v), Iowa included emissions information by pollutant from LADCO's 2016 modeling inventory and from the 2017 NEI.⁴¹ The State's four factor analysis relied on emission data from 2009–2021. The State also included emission data from 2009–2021 for Iowa EGUs. Iowa also included future projections for 2028. Iowa committed to update the inventory periodically and comply with the Air Emissions Reporting Requirements. Based on Iowa's consideration of the emission data in their SIP submittal, the EPA proposes to find that Iowa has satisfied the emissions information requirement in § 51.308(f)(6)(v).

⁴¹ See section 7 and 11 of the Iowa Regional Haze SIP—Final August 2023, included in the docket for this action.

³⁹ 567 IAC 23.3(2)“c.”

⁴⁰ See table 6–4 of the Iowa Regional Haze SIP—Final August 2023.

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 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, § 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.

Iowa's submission describes the status of measures of the long-term strategy from the first implementation period. Iowa relied upon the Clean Air Interstate Rule (CAIR), later replaced by the Cross-State Air Pollution Rule (CSAPR), to satisfy long-term strategy obligations and Best Available Retrofit Technology (BART) requirements for EGUs. Iowa met all the identified reasonable measures during the first implementation period. Iowa's SIP submission includes EGU emission data

demonstrating the reductions achieved throughout the State in table 10–1. The included emission data demonstrates a decrease in SO₂ and NO_x emissions since 2008, the year preceding CAIR implementation. Between 2008 and 2021, SO₂ and NO_x emissions declined by 81,258 and 30,078 tons, respectively.

The EPA proposes to find that Iowa 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) does not apply to Iowa because it does not have a Class I Area.

Pursuant to § 51.308(g)(4), in section 10 of their submittal, Iowa provided a summary of NEI data for SO₂, NO_x, VOCs, PM₁₀, PM_{2.5}, and NH₃ for the years 2008 and 2017. The summarized emissions data in tables 10–2 and 10–3 of the state submission include anthropogenic emissions represented by point source EGU, point source non-EGU, nonpoint sources, on-road mobile sources and nonroad mobile sources; fire emissions including wildfire, prescribed fire and agriculture fire; and biogenic emissions from vegetation and soils. Iowa also included CAMD data in table 10–1 showing annual total EGU SO₂ and NO_x emissions for the time period from 2002 to 2021.

The reductions achieved through Iowa emission control measures are seen in the emissions inventory. Based on Iowa's SIP submittal, NO_x emissions have significantly declined in Iowa from 2008 to 2017 based on decreased emissions in the point EGU, point non-EGU, on-road and non-road sectors. NO_x emissions from the EGU sector decreased by 28,009 tpy, equating to a sector reduction of 55%. Total NO_x reductions decreased by 103,080 tpy, or 34%.

Emissions of SO₂ have shown a significant decline in Iowa from 2008 to 2017, particularly in the point EGU sector. During that period, SO₂ emissions from EGUs decreased by 86,091 tpy, equating to a sector reduction of 73%. Overall, SO₂ emissions declined by 125,347 tpy, or 76%.

Iowa's submission includes a summary of PM₁₀ emissions from all NEI data categories point EGU, point non-EGU, nonpoint, on-road, nonroad, and fire for 2008 and 2017 in Iowa. In Iowa, PM₁₀ emissions decreased in all categories except fire during that period. The PM₁₀ emissions decreased by more than 200,000 tpy, or 37%.

Iowa's submission shows a summary of PM_{2.5} emissions from all NEI data categories for 2008 and 2017 in Iowa. PM_{2.5} emissions decreased all categories except the fire sector. Decreases in PM_{2.5} emissions are attributed to Federal new engine standards for nonroad vehicles and equipment, Federal and State regulations for on-road vehicles, and reductions in the nonpoint sector. The other large decrease in PM_{2.5} emissions is primarily due to the decrease in emissions from fuel combustion at EGU and Industrial stationary sources.

VOC emissions declined in Iowa from 477,959 tpy in 2008 to 141,289 tpy in 2017. VOC decreases were achieved in all sectors except the fire sector.

Overall, ammonia (NH₃) emissions increased in Iowa from 2008 to 2017, primarily driven by increased emissions from the nonpoint source category. Nonpoint increases are due to reporting, grouping and methodology changes, as well as estimated emissions increase from agricultural sources. Overall, ammonia emissions increased by 11% in Iowa from 2008 to 2017.

The EPA is proposing to find that Iowa has satisfied the requirements of § 51.308(g)(4) by providing emissions information for NO_x, SO₂, PM₁₀, PM_{2.5}, VOCs, and NH₃ broken down by type of source.

Iowa uses the emissions trend data in the SIP submission⁴² to support the assessment that anthropogenic haze-causing pollutant emissions in Iowa have decreased during the reporting period and that changes in emissions have not limited or impeded progress in reducing pollutant emissions and improving visibility. Overall, Iowa's 2017 emission inventories for NO_x, SO₂, PM₁₀, PM_{2.5}, and VOCs were lower than their 2008 emission inventories and the forecasted 2018 emissions from Iowa's regional haze SIP for the first planning period⁴³ for those same pollutants emissions. The 2017 emission inventory for NH₃ were higher than the 2008 emission inventory and the forecasted 2018 emissions. However, the slight increase did not impede progress towards improving visibility in Class I Areas. The EPA is proposing to find that Iowa has met the requirements of § 51.308(g)(5).

I. Requirements for State and Federal Land Manager Coordination

Section 169A(d) of the CAA requires states to consult with FLMs before

⁴² See section 10.5 "Emissions Changes Assessment" of the Iowa Region Haze SIP—Final August 2023, included in the docket for this action.

⁴³ See table 10–5 of the Iowa Regional Haze SIP—Final August 2023, included in the docket for this action.

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, § 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. Section 51.308(i)(4) requires states to provide for ongoing consultation between the state and FLM's on the implementation of the given plan and on development of future plan revisions or progress reports.

Iowa conducted informal FLM consultation early in the planning process to inform the state's decision-making process. As part of this early engagement with the FLMs, the U.S. Forest Service and the National Park Service each provided a recommendation to Iowa suggesting that it consider specific individual sources in its long-term strategies. In March 2020, the Forest Service identified three sources based on its review of emission rate data (lb/MMBtu) and results from a LADCO Q/d analysis. In June 2020, the National Park Service identified eleven Iowa sources using a Q/d(SO₂ + NO_x) threshold of 1.2 based on 2017 NEI emissions data for the non-EGUs and 2019 CAMD data for EGUs. As part of the consultation, Iowa reviewed its source selection methods and results with FLMs on June 3, 2020. On January 20, 2022, the state met with FLMs to informally discuss Iowa's four-factor analysis.

On October 11, 2022, Iowa submitted a draft Regional Haze SIP to the U.S. Forest Service, the U.S. Fish and Wildlife Service, and the National Park

Service for a 60-day review and comment period pursuant to 40 CFR 51.308(i)(2).⁴⁴ On November 3, 2022, Iowa held a virtual consultation meeting with the FLMs. Iowa received comments from the Forest Service and the National Park Service on December 8, 2022.⁴⁵ Iowa responded to the FLM comments and included the responses in section 11.5 of its submission to EPA and their public notice, in accordance with the requirements in CAA section 169A(d) and § 51.308(i)(3). Notices of the proposed SIP, availability and the public hearing were published on IDNR's website, published in the *Des Moines Register* on February 13, 2023, and issued on the IDNR air quality listserv. A virtual public hearing on the proposed SIP revision was held on March 16, 2023. Written comments relevant to the proposal were accepted until the close of business March 16, 2023. Iowa's August 2023 SIP includes a commitment to ongoing consultation with FLMs in accordance with § 51.308(i)(4).

For the reasons stated above, the EPA proposes to find that Iowa 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.

Iowa's August 2023 SIP submission includes a commitment to submit periodic progress reports in accordance with § 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 § 51.308(g).⁴⁶

VI. What action is the EPA proposing?

The EPA is proposing to approve the Iowa SIP submission received on August 15, 2023, as satisfying the regional haze requirements for the second implementation period contained in 40 CFR 51.308(f). We are processing this as a proposed action because we are soliciting comments on this proposed action. Final rulemaking will occur after consideration of any comments.

VII. Incorporation by Reference

In this document, the EPA is proposing to include regulatory text in an EPA final rule that includes incorporation by reference. In

⁴⁴ *Id.*

⁴⁵ See appendix F of the State submission, included in the docket for this action.

⁴⁶ See section 10.5 of the "Iowa Regional Haze SIP—Final August 2023."

accordance with requirements of 1 CFR 51.5, the EPA is proposing to incorporate by reference "Iowa Regional Haze Plan for the Second Implementation Period" source specific requirements for MidAmerican Energy Company Louisa Station (Permit number 05-A-031-P6) and MidAmerican Energy Company Walter Scott Jr. Energy Center (Permit numbers 75-A-357-P9 and 03-A-425-P4), submitted on August 15, 2023. The EPA has made, and will continue to make, these materials generally available through <https://www.regulations.gov> and at the EPA Region 7 Office (please contact the person identified in the **FOR FURTHER INFORMATION CONTACT** section of this preamble for more information).

VIII. Environmental Justice Considerations

The 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." The 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."⁴⁷

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 Executive Order 12898 of achieving environmental justice for people of color, low-income populations, and Indigenous peoples. However, recognizing the importance of environmental justice considerations to local communities, the EPA conducted an environmental justice screening analysis around the location of the facilities associated with this action to identify potential environmental stressors on these communities and the potential impacts of this action. The EPA is providing the information associated with this analysis for informational purposes only. The information provided herein is not a basis of the proposed action. The EPA conducted the screening analyses using EJScreen, an EJ mapping and screening tool that provides the EPA with a nationally consistent dataset and approach for combining various environmental and demographic

⁴⁷ See <https://www.epa.gov/environmentaljustice/learn-about-environmentaljustice>.

indicators.⁴⁸ The EJScreen tool presents these indicators at a Census block group (CBG) level or a larger user specified “buffer” area that covers multiple CBGs.⁴⁹ An individual CBG is a cluster of contiguous blocks within the same census tract and generally contains between 600 and 3,000 people. EJScreen is not a tool for performing in-depth risk analysis, but is instead a screening tool that provides an initial representation of indicators related to EJ and is subject to uncertainty in some underlying data (e.g., some environmental indicators are based on monitoring data which are not uniformly available; others are based on self-reported data).⁵⁰ For informational purposes, we have summarized EJScreen data within larger “buffer” areas covering multiple block groups and representing the average resident within the buffer areas surrounding the facilities selected by Iowa for further control analysis. EJScreen environmental indicators help screen for locations where residents may experience a higher overall pollution burden than would be expected for a block group with the same total population in the U.S. These indicators of overall pollution burden include estimates of ambient PM_{2.5} and ozone concentration, a score for traffic proximity and volume, percentage of pre-1960 housing units (lead paint indicator), and scores for proximity to Superfund sites, risk management plan (RMP) sites, and hazardous waste facilities.⁵¹ EJScreen also provides information on demographic indicators, including percent low-income, communities of color, linguistic isolation, and less than high school education.

The EPA prepared EJScreen reports covering buffer areas of approximately 6-mile radius around the facilities selected by Iowa for further analysis. For each facility, the EPA indicates in the following statements whether there

is an environmental or socioeconomic indicator for the selected source area above the 80th percentile nationally.⁵² These indicators are displayed in the table on page 3 of each report. The report for Walter Scott Jr. Energy Center showed environmental indicators greater than the 80th national percentiles superfund proximity and RMP facility proximity. The report for Louis Generating Station does not include environmental or socioeconomic indicators greater than the 80th national percentiles. The full, detailed EJScreen reports for the two facilities selected by Iowa for further analysis are provided in the docket for this rulemaking for informational purposes only.

This action is proposing to approve Iowa’s second planning period regional haze plan as meeting the requirements of the CAA and the EPA’s RHR. Exposure to PM and SO₂ is associated with significant public health effects. Short-term exposures to SO₂ can harm the human respiratory system and make breathing difficult. People with asthma, particularly children, are sensitive to these effects of SO₂.⁵³ Exposure to PM can affect both the lungs and heart and is associated with: premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing. People with heart or lung diseases or conditions, children, and older adults are the most likely to be affected by PM exposure.⁵⁴ We expect that this action and resulting emissions reductions will generally be neutral or contribute to reduced environmental and health impacts on all populations near both Walter Scott Jr. Energy Center and Louisa Generating Station. There is nothing in the record which indicates that this proposed action, if finalized, would have disproportionately high or adverse human health or environmental effects on communities with environmental justice concerns.

This action is proposing to approve Iowa’s second planning period regional haze plan as meeting the requirements of the CAA and the EPA’s RHR.

⁵² For a place at the 80th percentile nationwide, that means 20% of the U.S. population has a higher value. EPA identified the 80th percentile filter as an initial starting point for interpreting EJScreen results. The use of an initial filter promotes consistency for EPA programs and regions when interpreting screening results.

⁵³ See <https://www.epa.gov/so2-pollution/sulfur dioxide-basics#effects>.

⁵⁴ See <https://www.epa.gov/pm-pollution/healthand-environmental-effects-particulate-matter-pm>.

However, as stated previously, the EPA is not required to, but has provided the information associated with the environmental justice analysis for informational purposes only. The information provided herein does not serve as a basis of the proposed action.

IX. Statutory and Executive Order Reviews

Under the CAA, the Administrator is required to approve a SIP submission 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 approves state law as meeting Federal requirements and does not impose additional requirements beyond those imposed by state law. For that reason, this 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 14094 (88 FR 21879, April 11, 2023);
 - 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 subject to Executive Order 13045 (62 FR 19885, April 23, 1997) because it approves a state program;
 - Is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001); and
 - 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.
- 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

⁴⁸ The EJSCREEN tool is available at <https://www.epa.gov/ejscreen>.

⁴⁹ See <https://www.census.gov/programssurveys/geography/about/glossary.html>.

⁵⁰ In addition, EJSCREEN relies on the five-year block group estimates from the U.S. Census American Community Survey. The advantage of using five-year over single-year estimates is increased statistical reliability of the data (i.e., lower sampling error), particularly for small geographic areas and population groups. For more information, see https://www.census.gov/content/dam/Census/library/publications/2020/acs/acs_general_handbook_2020.pdf.

⁵¹ For additional information on environmental indicators and proximity scores in EJSCREEN, see “EJSCREEN Environmental Justice Mapping and Screening Tool: EJSCREEN Technical Documentation,” Chapter 3 and appendix C (September 2019) at https://www.epa.gov/sites/default/files/2021-04/documents/ejscreen_technical_document.pdf.

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 Iowa Department of Natural Resources 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. The EPA performed an environmental justice analysis, as is described above in the section titled, “Environmental Justice Considerations.” The analysis was done for the purpose of providing additional context and information about this

rulemaking to the public, not as a basis of the 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. In addition, there is no information in the record upon which this decision is based 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 Iowa 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.

Dated: July 22, 2024.

Meghan A. McCollister, Regional Administrator, Region 7.

Title 40, chapter I, of the Code of Federal Regulations is proposed to be amended as follows:

PART 52—APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS

1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401 et seq.

Subpart Q—Iowa

2. In § 52.820:

a. The table in paragraph (d) is amended by adding the entries “(170)”, “(171)”, and “(172)” in numerical order.

b. The table in paragraph (e) is amended by adding the entry “(56)” in numerical order.

The additions read as follows:

§ 52.820 Identification of plan.

* * * * *

(d) * * *

EPA-APPROVED IOWA SOURCE-SPECIFIC ORDERS/PERMITS

Table with 5 columns: Name of source, Order/permit No., State effective date, EPA approval date, Explanation. Rows include MidAmerican Energy Co.—Louisa Station, MidAmerican Energy Co.—Walter Scott Jr. Energy Center, and MidAmerican Energy Company—Walter Scott, Jr. Energy Center.

(e) * * *

EPA-APPROVED IOWA NONREGULATORY PROVISIONS

Table with 5 columns: Name of nonregulatory SIP provision, Applicable geographic or nonattainment area, State submittal date, EPA approval date, Explanation. Row includes Iowa Regional Haze Plan for the Second Implementation Period.

■ 3. Revise § 52.842 to read as follows:

§ 52.842 Visibility protection.

(a) The requirements of section 169A of the Clean Air Act are met because the Regional Haze plan submitted by Iowa on March 25, 2008, and supplemented on May 14, 2019, includes fully

approvable measures for meeting the requirements of the Regional Haze Rule including 40 CFR 51.308(d)(3) and (e) with respect to emissions of NO_x and SO₂ from electric generating units.

(b) The requirements of section 169A of the Clean Air Act are met because the

Regional Haze plan submitted by Iowa on August 15, 2023, includes fully approvable measures for meeting the requirements of the Regional Haze Rule in 40 CFR 51.308.

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