ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA–R09–OAR–2024–0005; FRL–11919–01–R9]

Partial Approval and Disapproval of Air Quality Implementation Plans; Arizona; Regional Haze State Implementation Plan for the Second Implementation Period and Prong 4 (Visibility) for the 2015 Ozone and 2012 Particulate Matter Standards

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) is proposing to partially approve and partially disapprove the regional haze state implementation plan (SIP) revision submitted by Arizona on August 15, 2022 (''2022 Arizona Regional Haze Plan''), under the Clean Air Act (CAA) and the EPA's Regional Haze Rule for the program's second implementation period. Arizona'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. Within this action, the EPA is also proposing to disapprove the visibility transport prong of Arizona's infrastructure SIP submittals for the 2012 annual fine particulate matter ($PM_{2.5}$) and 2015 ozone National Ambient Air Quality Standards (NAAQS). The EPA is taking this action pursuant to CAA sections 110 and 169A.

DATES: Written comments must be received on or before July 1, 2024.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA–R09–OAR–2024–0005 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*. 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.* If you need assistance in a language other than English or if you are a person with a disability who needs a reasonable accommodation at no cost to you, please contact the person identified in the **FOR FURTHER INFORMATION CONTACT** section.

FOR FURTHER INFORMATION CONTACT: Khoi Nguyen, Geographic Strategies & Modeling Section (AIR–2–2), Planning & Analysis Branch, EPA Region IX, 75 Hawthorne Street, San Francisco, CA 94105, (415) 947–4120, or by email at *nguyen.khoi@epa.gov.*

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

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I. What action is the EPA proposing for regional haze?

On August 15, 2022,[1] the Arizona Department of Environmental Quality (ADEQ) submitted the 2022 Arizona Regional Haze Plan. ADEQ supplemented its SIP revision on August 25, 2023, with nonpoint source rules (''2023 Arizona Regional Haze Rules Supplement'').[2] ADEQ made these SIP submissions to satisfy requirements of the CAA's regional haze program pursuant to CAA sections 169A and 169B and 40 CFR 51.308. The EPA is proposing to partially approve and partially disapprove the 2022 Arizona Regional Haze Plan. For the reasons described in this document, the EPA is proposing to approve the elements of the 2022 Arizona Regional Haze Plan related to requirements contained in 40 CFR 51.308(f)(1), (f)(4)–(6), and (g)(1)–(5). The EPA is proposing to disapprove the elements of the 2022 Arizona Regional Haze Plan related to requirements contained in 40 CFR 51.308(f)(2), (f)(3), and (i)(2)–(4). We are

[1] Letter dated August 15, 2022, from Daniel Czecholinski, Director, Arizona Department of Environmental Quality Air Quality Division, to Martha Guzman, Regional Administrator, EPA Region IX (submitted electronically August 15, 2022). On August 16, 2022, the EPA determined that the SIP submittal met the completeness criteria outlined in 40 CFR part 51, Appendix V. Letter dated August 16, 2022, from Elizabeth Adams, Director, Air and Radiation Division, EPA Region IX, to Daniel Czecholinski, Director, Arizona Department of Environmental Quality Air Quality Division.

[2] Letter dated August 21, 2023, from Daniel Czecholinski, Director, Arizona Department of Environmental Quality Air Quality Division, to Martha Guzman, Regional Administrator, EPA Region IX (submitted electronically August 25, 2023).

not proposing to act on the 2023 Arizona Regional Haze Rules Supplement at this time.

II. Background and Requirements for Regional Haze Plans

A. Regional Haze Background

In the 1977 CAA Amendments, Congress created a program for protecting visibility in the nation's mandatory Class I Federal areas, which include certain national parks and wilderness areas.[3] 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.'' [4] The CAA further directs the EPA to promulgate regulations to assure reasonable progress toward meeting this national goal.[5] 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.[6] 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.[7] The EPA promulgated the Regional Haze Rule (RHR), codified at 40 CFR 51.308,[8] on July 1, 1999.[9] 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 (SO_2), nitrogen oxides (NO_X), and, in some cases, volatile organic compounds (VOC) and ammonia (NH_3)). Fine particle precursors react in the atmosphere to form $PM_{2.5}$, which impairs visibility by scattering and absorbing light. Visibility impairment reduces the perception of clarity and color, as well as visible distance.[10]

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.[11] 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.'' [12] 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).[13] States' first regional haze SIPs were due by December 17, 2007,[14] with subsequent SIP submissions containing updated long-term strategies originally due July 31, 2018, and every ten years thereafter.[15] 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.[16]

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.[17]

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

[3] CAA 169A. Areas statutorily designated as mandatory Class I Federal areas consist of national parks exceeding 6,000 acres, wilderness areas and national memorial parks exceeding 5,000 acres, and all international parks that were in existence on August 7, 1977. CAA 162(a). There are 156 mandatory Class I areas. The list of areas to which the requirements of the visibility protection program apply is in 40 CFR part 81, subpart D.

[4] CAA 169A(a)(1).

[5] CAA 169A(a)(4).

[6] 45 FR 80084 (December 2, 1980).

[7] CAA 169B.

[8] 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. ADEQ submitted SIP revisions to address the regional haze regulations at 40 CFR 51.309, on December 23, 2003, December 30, 2004, and December 24, 2008. The EPA approved certain burning and smoke management rules that were part of the 2008 SIP submittal, but disapproved the remainder of those submittals. 78 FR 48326 (August 8, 2013).

[9] 64 FR 35714.

[10] 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, pp 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.

[11] CAA 169A(b)(2). 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). See also 40 CFR 51.308(b), (f) (establishing submission dates for iterative regional haze SIP revisions); (64 FR at 35768, July 1, 1999).

[12] CAA 169A(b)(2)(B).

[13] CAA 169A(b)(2)(A); 40 CFR 51.308(d), (e).

[14] 40 CFR 51.308(b).

[15] 64 FR at 35768 (July 1, 1999).

[16] Id. at 35721. 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).

[17] CAA 169A(g)(1); 40 CFR 51.308(d)(1).

and ending with natural conditions in 2064. This linear interpolation is known as the uniform rate of progress (URP) and is used as a tracking metric to help states assess the amount of progress they are making towards the national visibility goal over time in each Class I area.[18] 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.'' [19] 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.[20] Section 51.308(d) also contains seven additional factors states must consider in formulating their long-term strategies,[21] as well as provisions governing monitoring and other implementation plan requirements.[22] Finally, the 1999 RHR required states to submit periodic progress reports, which are 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,[23] and to consult with the Federal Land Manager(s) [24] (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, which apply for the second and subsequent implementation periods.[25] 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 in Section III of this document.

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'').[26] 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'').[27] Additionally, the EPA further clarified the recommended procedures for processing ambient visibility data and optionally adjusting the URP to account for international anthropogenic and prescribed fire impacts in two technical guidance documents: the December 2018 ''Technical Guidance on Tracking Visibility Progress for the Second Implementation Period of the Regional Haze Program'' (''2018 Visibility Tracking Guidance''),[28] 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'').[29]

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 emissions 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.[30] This is consistent with Congress's determination that a visibility protection program is needed in addition to the CAA's NAAQS and Prevention of Significant Deterioration (PSD) programs, as further emissions reductions may be necessary to adequately protect visibility in Class I areas throughout the country.[31]

[18] 40 CFR 51.308(d)(1)(i)(B), (d)(2). 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 starting 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 at 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).

[19] 40 CFR 51.308(d)(3).

[20] 40 CFR 51.308(d)(3)(i), (ii).

[21] 40 CFR 51.308(d)(3)(v).

[22] 40 CFR 51.308(d)(4).

[23] See 40 CFR 51.308(g), (h).

[24] 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.

[25] 82 FR 3078.

[26] 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).

[27] 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).

[28] 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).

[29] 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).

[30] See generally 2021 Clarifications Memo.

[31] See, *e.g.,* H.R. Rep No. 95–294 p. 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),[32] 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 Western Regional Air Partnership (WRAP), one of the five RPOs, is a collaborative effort of state governments, Tribal governments, and various Federal agencies established to initiate and coordinate activities associated with the management of regional haze, visibility, and other air quality issues in the western corridor of the United States. Member states (listed alphabetically) include: Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming. The Federal partner members of WRAP are the EPA, U.S. National Parks Service (NPS), U.S. Fish and Wildlife Service (FWS), and U.S. Forest Service (USFS). There are also 468 federally recognized Tribes within the WRAP region.

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

Under the CAA and the EPA's regulations, all 50 states, the District of Columbia, and the U.S. Virgin Islands were required to submit regional haze SIP revisions 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.[33] To this end, section 51.308(f) lays out the process by which states determine what constitutes their long-term strategies, with the order of the requirements in section 51.308(f)(1) through (3) generally mirroring the order of the steps in the reasonable progress analysis [34] 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.[35] 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.[36] 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 emissions 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 51.308(f)(2)(iv) separately provides five ''additional factors'' [37] that states must consider in developing their long-term strategies.[38] A state evaluates potential emissions 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.[39]

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 section 51.308(g)(1) through (5) pertaining to periodic reports describing progress towards the RPGs,[40] as well as requirements for FLM consultation that apply to all visibility protection SIPs and SIP revisions.[41]

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 the EPA's regulations.[42] Upon EPA approval, a SIP is enforceable by the Agency and the public under the CAA. If the EPA finds that a state failed 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.[43]

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,[44] and explained that the statute and regulations lay out an ''extremely low triggering threshold'' for determining

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'').

[32] RPOs are sometimes also referred to as ''multi-jurisdictional organizations,'' or MJOs. For the purposes of this notice, the terms RPO and MJO are synonymous.

[33] CAA 169A(b)(2)(B).

[34] 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).

[35] See 40 CFR 51.308(f), (f)(2).

[36] See 40 CFR 51.308(f)(1).

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

[38] See 40 CFR 51.308(f)(2).

[39] 40 CFR 51.308(f)(2)–(3).

[40] 40 CFR 51.308(f)(5).

[41] 40 CFR 51.308(i).

[42] See CAA 169A(b)(2); CAA 110(a).

[43] CAA 110(c)(1).

[44] 64 FR 35720–22.

''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.'' [45]

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, the 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.[46] 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 section 51.308(f)(1) related to tracking visibility improvement over time. The requirements of this section apply only to states that have Class I areas within their borders; the required calculations must be made for each such Class I area. The EPA's 2018 Visibility Tracking Guidance [47] provides recommendations to assist states in satisfying their obligations under section 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.

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 percent clearest (the 20 percent of monitored days in a calendar year with the lowest values of the deciview index) and 20 percent most impaired days (the 20 percent of monitored days in a calendar year with the highest amounts of anthropogenic visibility impairment).[48] A state must calculate visibility conditions for both the 20 percent clearest and 20 percent 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).[49] States must also calculate natural visibility conditions for the clearest and most impaired days,[50] by estimating the conditions that would exist on those two sets of days absent anthropogenic visibility impairment.[51] Using all these data, states must then calculate, for each Class I area, the amount of progress made since the baseline period (2000–2004) and how much improvement is left to achieve 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.[52] 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.[53]

The 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 section 51.308(f)(1)(i) and provides updated natural conditions estimates for each Class I area.

C. Long-Term Strategy for Regional Haze

The core component of a regional haze SIP submission is a long-term strategy that addresses regional haze in each Class I area within a state's borders and each Class I area that may be affected by emissions from the state. The long-term strategy ''must include the enforceable emissions limitations, compliance schedules, and other measures that are necessary to make reasonable progress, as determined pursuant to (f)(2)(i) through (iv).'' [54] 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 emissions reduction measures that a particular source or group of sources needs to implement to make reasonable progress towards the national visibility goal.[55] Emissions reduction measures that are necessary to make reasonable progress may be either new, additional control measures for a source, or they

[45] Id. at 35721.

[46] 2019 Guidance, pp. 8–9.

[47] 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.*

[48] 40 CFR 51.301. This notice also refers to the 20 percent clearest and 20 percent most anthropogenically impaired days as the ''clearest'' and ''most impaired'' or ''most anthropogenically impaired'' days, respectively.

[49] 40 CFR 51.308(f)(1)(i), (iii).

[50] 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.''

[51] 40 CFR 51.308(f)(1)(ii).

[52] 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.

[53] 82 FR 3107 footnote 116.

[54] 40 CFR 51.308(f)(2).

[55] See 40 CFR 51.308(f)(2)(i).

may be the existing emissions reduction measures that a source is already implementing.[56] 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.[57]

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 emissions reduction measures; to this end, states should 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.[58] A threshold question at this step is which visibility impairing pollutants will be analyzed. As the EPA previously explained, consistent with the first implementation period, the EPA generally expects that each state will analyze at least SO_2 and NO_X in selecting sources and determining control measures.[59] A state that chooses not to consider at least these two pollutants should demonstrate why such consideration would be unreasonable.[60]

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.'' [61] 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.'' [62]

The 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.[63]

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.[64] This is 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.'' [65] The EPA has explained that the four-factor analysis is an assessment of potential emissions 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.'' [66] Thus, for each source it has selected for four-factor analysis,[67] a state must consider a ''meaningful set'' of technically feasible control options for reducing emissions of visibility impairing pollutants.[68] 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.'' [69]

The 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.'' [70] In addition to add-on controls and other retrofits (*i.e.,* new emissions reduction measures for sources), the EPA explained that states should generally analyze efficiency improvements for sources' existing measures as control options in their four-factor analyses, as in many cases such improvements are reasonable given that they typically involve only additional operation and maintenance costs. Additionally, the 2021 Clarifications Memo provides that states that have assumed a higher 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 emissions rates to determine if it could reasonably attain lower emissions rates with its existing

[56] See 2019 Guidance, p. 43; 2021 Clarifications Memo, pp. 8–10.

[57] 40 CFR 51.308(f)(2).

[58] 40 CFR 51.308(f)(2)(i).

[59] See 2019 Guidance, p. 12; 2021 Clarifications Memo, p. 4.

[60] 2021 Clarifications Memo, p. 4.

[61] 2019 Guidance, p. 9.

[62] 2021 Clarifications Memo, p. 3.

[63] Id. at 4. 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), pp. 87–88.

[64] The CAA provides that, ''[i]n determining reasonable progress there shall be taken into consideration'' the four statutory factors. CAA 169A(g)(1). However, in addition to four-factor analyses for selected sources, groups of sources, or source categories, a state may also consider additional emissions 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.

[65] CAA 169A(g)(1).

[66] 82 FR 3091.

[67] ''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 at 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, pp. 7–8.

[68] Id. at 3088.

[69] 2019 Guidance, p. 29.

[70] 2021 Clarifications Memo, p. 7.

measures. If so, the state should analyze the lower emissions rate as a control option for reducing emissions.[71] The EPA's recommendations to analyze potential efficiency improvements and achievable lower emissions 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.'' [72]

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.[73] 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.[74] 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.[75] 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.[76] Ultimately, while states have discretion to reasonably weigh the factors and to determine what level of control is needed, section 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, section 51.308(f)(2)(i) requires states to determine the emissions reduction measures for sources that are necessary to make reasonable progress by considering the four factors. Pursuant to section 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.[77] If the outcome of a four-factor analysis is a new, additional emissions 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 emissions increases and thus to make reasonable progress towards the second part of the national visibility goal: preventing future anthropogenic visibility impairment.[78] 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 source's existing measures are not necessary to make reasonable progress.[79] 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 section 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 emissions 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, section 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 emissions 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.[80] That is, a state's decisions about the emissions reduction measures that are necessary to make reasonable progress must be consistent with the statutory goal of remedying existing and preventing future visibility impairment.

The four statutory factors (and potentially visibility) are used to determine what emissions 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'' [81] that states must consider in developing their long-term strategies: (1) Emissions reductions due

[71] Id. at 7.

[72] Id. at 5, 10.

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

[74] See 2019 Guidance, pp. 30–36.

[75] 2021 Clarifications Memo, pp. 12–15.

[76] Id. at 13.

[77] 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, p. 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 at 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).

[78] See CAA 169A(a)(1).

[79] See 2021 Clarifications Memo, pp. 8–10.

[80] 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).

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

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.[82] 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 emissions 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.[83]

Because the air pollution that causes regional haze crosses state boundaries, section 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 emissions 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 emissions limitation) are necessary to make reasonable progress at a Class I area, it must include those measures in its SIP.[84] Additionally, the RHR requires that states that contribute to visibility impairment at the same Class I area consider the emissions reduction measures the other contributing states have identified as being necessary to make reasonable progress for their own sources.[85] If a state has been asked to consider or adopt certain emissions 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.[86] 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.[87] Under all circumstances, a state must document in its SIP submission all substantive consultations with other contributing states.[88]

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.'' [89] 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.[90] 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.[91] The two RPGs are intended to reflect the projected impacts, on the two sets of days, of the emissions 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.[92] 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.[93]

For the second implementation period, the RPGs are set for 2028. Reasonable progress goals are not enforceable targets; [94] rather, they ''provide a way for the states to check the projected outcome of the [long-term strategy] against the goals for visibility improvement.'' [95] While states are not legally obligated to achieve the visibility conditions described in their RPGs, section 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 emissions 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.[96]

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

[82] See 2019 Guidance, p. 21.

[83] 2021 Clarifications Memo, p. 13.

[84] 40 CFR 51.308(f)(2)(ii)(A).

[85] 40 CFR 51.308(f)(2)(ii)(B).

[86] 40 CFR 51.308(f)(2)(ii)(C).

[87] See id.; 2019 Guidance, p. 53.

[88] 40 CFR 51.308(f)(2)(ii)(C).

[89] 82 FR 3091.

[90] See 40 CFR 51.308(f)(3)(iii)–(iv).

[91] 40 CFR 51.308(f)(3)(i).

[92] RPGs are intended to reflect the projected impacts of the measures all contributing states include in their long-term strategies. However, due to the timing of analyses and of control determinations by other states, other on-going emissions changes, a particular state's RPGs may not reflect all control measures and emissions reductions that are expected to occur by the end of the implementation period. The 2019 Guidance provides recommendations for addressing the timing of RPG calculations when states are developing their long-term strategies on disparate schedules, as well as for adjusting RPGs using a post-modeling approach. 2019 Guidance, pp. 47–48.

[93] See 2021 Clarifications Memo, p. 6.

[94] 40 CFR 51.308(f)(3)(iii).

[95] 2019 Guidance, p. 46.

[96] See 40 CFR 51.308(f)(1)(i), 82 FR 3097–98.

under 40 CFR 51.308(f)(2)(i), that no additional emissions reduction measures would be reasonable to include in its long-term strategy.[97] 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.[98]

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 emissions 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.'' [99]

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.[100] The IMPROVE monitoring data is used to determine the 20 percent most anthropogenically impaired and 20 percent 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.[101] *S*ection 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 revision and are not subject to EPA review as part of the Agency's evaluation of a SIP revision.[102] All states' SIP revisions must also provide for any other elements, including reporting, recordkeeping, and other measures, that are necessary for states to assess and report on visibility.[103] Per the 2019 Guidance, a state may note in its regional haze SIP revision that its compliance with the in 40 CFR part 51 subpart A satisfies the requirement to provide for an emissions inventory for the most recent year for which data are available. To satisfy the requirement to provide estimates of future projected emissions, a state may explain in its SIP revision how projected emissions were developed for use in establishing RPGs for its own and nearby Class I areas.[104]

Separate from the requirements related to monitoring for regional haze purposes under 40 CFR 51.308(f)(6), the RHR also contains a requirement at 40 CFR 51.308(f)(4) related to any additional monitoring that may be needed to address visibility impairment in Class I areas from a single source or a small group of sources. This is called ''reasonably attributable visibility impairment.'' [105] 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.[106] 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 emissions reduction measures from the first implementation period, and the resulting emissions reductions.[107]

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, section 51.308(g)(3) requires states with Class I areas within their borders to first determine current visibility conditions for each area on the most impaired and clearest days,[108] and then to calculate the difference between those current conditions and baseline (2000–2004) visibility conditions to assess progress made to date.[109] States

[97] 40 CFR 51.308(f)(3)(ii).

[98] See 2019 Guidance, pp. 50–51.

[99] See 82 FR 3093, 3099–3100; 2019 Guidance, p. 22; 2021 Clarifications Memo, pp. 15–16.

[100] 40 CFR 51.308(f)(6), (f)(6)(i), (f)(6)(iv).

[101] 40 CFR 51.308(f)(6)(ii), (iii).

[102] See ''Step 8: Additional requirements for regional haze SIPs'' in 2019 Guidance, p. 55.

[103] 40 CFR 51.308(f)(6)(vi).

[104] Id.

[105] 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.

[106] See 81 FR 26942, 26950 (May 4, 2016); 82 FR 3119 (January 10, 2017).

[107] 40 CFR 51.308(g)(1) and (2).

[108] 40 CFR 51.308(g)(3)(i).

[109] See 40 CFR 51.308(g)(3)(ii).

must also assess the changes in visibility impairment for the most impaired and clearest days since they submitted their first implementation period progress reports.[110] 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.[111] 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.'' [112] 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.[113] 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.[114] 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.[115]

IV. The EPA's Evaluation of Arizona's Regional Haze Submission for the Second Implementation Period

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

Arizona submitted its initial regional haze SIP under 40 CFR 51.308 to the EPA on February 28, 2011 (hereinafter ''2011 Submittal'').[116] The EPA actions following the 2011 Submittal are outlined in Table 1.

TABLE 1—SUMMARY OF EPA ACTIONS UNDER CAA SECTION 308 ON ARIZONA REGIONAL HAZE IN THE FIRST IMPLEMENTATION PERIOD

Date	EPA action
December 5, 2012	''Phase 1'' partial approval and partial disapproval of certain provisions of the 2011 Submittal and promulgation of partial federal implementation plan (FIP).[a]
July 30, 2013	''Phase 2'' partial approval and partial disapproval of remaining portions of Arizona Regional Haze 2011 Submittal.[b]
September 3, 2014	''Phase 3'' promulgation of FIP for remaining portions of Arizona Regional Haze program.[c]
April 10, 2015	Approval of SIP revision for the Arizona Electric Power Cooperative (AEPCO) Apache Generating Station.[d]
April 17, 2015	FIP revision replacing the control technology demonstration requirements for NO_X at Lhoist North America of Arizona, Inc. Nelson Lime Plant with revised recordkeeping and reporting requirements.[e]
April 13, 2016	FIP revision revising NO_X requirements for the Salt River Project Agricultural Improvement and Power District (SRP) Coronado Generating Station.[f]
November 21, 2016 ...	FIP revision replacing the control technology demonstration requirements for NO_X at CalPortland Cement (CPC) Rillito Plant Kiln 4 and Phoenix Cement Company (PCC) Clarkdale Plant Kiln 4 with revised recordkeeping and reporting requirements.[g]
March 27, 2017	Approval of SIP revision to replace FIP for Arizona Public Service (APS) Cholla Generating Station.[h]
October 10, 2017	Approval of SIP revision to replace FIP for the SRP Coronado Generating Station.[i]

[a] 77 FR 72512 (December 5, 2012).
[b] 78 FR 46142 (July 30, 2013).
[c] 79 FR 52420 (September 3, 2014).
[d] 80 FR 19220 (April 10, 2015).
[e] 80 FR 21176 (April 17, 2015).
[f] 81 FR 21735 (April 13, 2016).
[g] 81 FR 83144 (November 21, 2016).
[h] 82 FR 15139 (March 27, 2017).

[110] See 40 CFR 51.308(g)(3)(iii), (f)(5).
[111] See 40 CFR 51.308(g)(4), (f)(5).
[112] 40 CFR 51.308(i)(2).
[113] 40 CFR 51.308(i)(2).
[114] 40 CFR 51.308(i)(3).
[115] 40 CFR 51.308(i)(4).
[116] On December 23, 2003, ADEQ submitted a Regional Haze plan under 40 CFR 51.309 (''309 Plan''). Letter dated December 23, 2003, from Stephen A. Owens, Director, ADEQ, to Wayne Nastri, Regional Administrator, EPA, Region IX. On December 30, 2004, ADEQ submitted a revision to its 309 Plan, consisting of rules on emissions trading and smoke management, and a correction to the State's regional haze statutes. Letter dated December 30, 2004, from Stephen A. Owens, Director, ADEQ, to Wayne Nastri, Regional Administrator, EPA. On December 24, 2008, ADEQ sent a letter resubmitting the 309 Plan revisions to the EPA. Letter dated December 24, 2008, from Stephen A. Owens, Director, ADEQ, to Wayne Nastri, Regional Administrator, EPA. On May 16, 2006 (71 FR 28270) and May 8, 2007 (72 FR 25973), the EPA approved the smoke management rules that were part of these submittals. On August 8, 2013 (78 FR 48326), the EPA disapproved the remainder of the State's submittals under 40 CFR 309.

[i] 82 FR 46903 (October 10, 2017).

On November 12, 2015, the State of Arizona submitted its Progress Report to meet the requirements of 40 CFR 51.308(g) and (h).[117] The EPA approved the Progress Report on July 11, 2019.[118]

B. Overview of Arizona's Second Implementation Period SIP Submission

In accordance with CAA sections 169A and the RHR at 40 CFR 51.308(f), on August 15, 2022, ADEQ submitted a revision to the Arizona SIP to address its regional haze obligations for the second implementation period, which runs through 2028. Arizona made its 2022 Regional Haze Plan submission available for public comment on June 13, 2022. ADEQ received and responded to public comments and included the comments and responses to those comments in their submission.

The following sections describe Arizona's SIP submission, including analyses conducted by the WRAP and Arizona, Arizona's assessment of progress made since the first implementation period in reducing emissions of visibility impairing pollutants, and the visibility improvement progress at its Class I areas and nearby Class I areas. This notice also provides the EPA's evaluation of Arizona's submission against the requirements of the CAA and RHR for the second implementation period of the regional haze program.

C. Identification of Class I Areas

Section 169A(b)(2) of the CAA requires each state in which any Class I area is located or ''the emissions from which may reasonably be anticipated to cause or contribute to any impairment of visibility'' in a Class I area to have a plan for making reasonable progress toward the national visibility goal. The RHR implements this statutory requirement at 40 CFR 51.308(f), which provides that each state's plan ''must address regional haze in each mandatory Class I Federal area located within the State and in each mandatory Class I Federal area located outside the State that may be affected by emissions from within the State,'' and (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 SIP revisions to address visibility impairment establishes ''an 'extremely low triggering threshold' in determining which States should submit SIPs for regional haze.'' [119] In concluding that each of the contiguous 48 states and the District of Columbia meet this threshold,[120] the EPA relied on ''a large body of evidence demonstrat[ing] that long-range transport of fine PM contributes to regional haze,'' [121] 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.'' [122] 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.'' [123] 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.'' [124] The EPA's 2017 revisions to the RHR did not disturb this conclusion.[125]

Arizona has 12 Class I areas within its borders: the Chiricahua National Monument, Chiricahua Wilderness Area, Galiuro Wilderness Area, Grand Canyon National Park, Mazatzal Wilderness Area, Mount Baldy Wilderness Area, Petrified Forest National Park, Pine Mountain Wilderness, Saguaro National Park,[126] Sierra Ancha Wilderness Area, Superstition Wilderness Area, and Sycamore Canyon Wilderness Area.

Arizona did not expressly identify within its SIP which Class I Federal areas located outside of Arizona may be affected by emissions from within Arizona. However, as part of its source selection process described in Chapter 8 and Appendix C, Section C2 of the 2022 Arizona Regional Haze Plan, Arizona included the Q/d [127] values associated with Class I areas outside the State. Further, ADEQ reviewed the source apportionment results of the ''On the Books'' (''2028OTBa2'') projections scenario from the WRAP Regional Haze photochemical grid modeling platform.[128] ADEQ participated in interstate consultation with California, Utah, Nevada, Colorado, and New Mexico, which included discussion of the WRAP modeling and source apportionment products.[129] For New Mexico specifically, ADEQ also provided WRAP regional modeling platform source apportionment results for the 20 percent most impaired days at the four Class I areas in New Mexico that are closest to Arizona.[130]

As explained above, the EPA concluded in the 1999 RHR that ''all [s]tates contain sources whose emissions are reasonably anticipated to contribute to regional haze in a Class I area,'' [131] and this determination was not changed in the 2017 RHR. Critically, the statute and regulation both require that the cause-or-contribute assessment consider all emissions of visibility-impairing pollutants from a state, as opposed to emissions of a particular pollutant or emissions from a certain set

[117] Letter dated November 12, 2015, from Eric C. Massey, Director, Air Quality Division, ADEQ, to Jared Blumenfeld, Regional Administrator, EPA Region IX.

[118] 84 FR 33002.

[119] 64 FR 35721.

[120] 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 Columba may reasonably be anticipated to cause or contribute to visibility impairment in a Class I area.'' 64 FR at 35721. Hawaii, Alaska, and the U.S. Virgin Islands must also submit regional haze SIPs because they contain Class I areas.

[121] Id.

[122] Id. at 35722.

[123] Id. at 35721.

[124] Id. at 35722.

[125] See 82 FR 3094.

[126] Saguaro National Park was originally established in 1933 as a National Monument. In 1976, portions of Saguaro National Monument were designated as a Wilderness Area, and the Saguaro Wilderness Area was designated as a Mandatory Class I area in 1979. 44 FR 69124 (November 30, 1979). Congress officially elevated the area known as Saguaro National Monument to the current designation as a National Park in 1994.

[127] Q/d represents a source's annual emissions in tons (Q) divided by the distance in kilometers (d) between the source and the nearest Class I area. For regional haze purposes, only primary visibility-impairing pollutants were included in a source's total Q: NO_X, SO_2, and PM_{10}.

[128] 2022 Arizona Regional Haze Plan, Chapter 7.4 and Appendix D. The Particle Source Apportionment Technology (PSAT) tool was applied at a regional level to separate U.S. anthropogenic contributions from those of fire, natural, and international anthropogenic contributions for a current period and a future year in 2028.

[129] Id. at Chapter 2.6.

[130] Id. at Table 2–3.

[131] 64 FR at 35721.

of sources. Consistent with these requirements, the 2019 Guidance makes it clear that ''all types of anthropogenic sources are to be included in the determination'' of whether a state's emissions are reasonably anticipated to result in any visibility impairment.[132] As explained in Section IV.E.2 of this document, we are proposing to find that the 2022 Arizona Regional Haze Plan did not fully meet the requirements of 40 CFR 51.308(f)(2) related to the development of a long-term strategy. Although the State's failure to identify specific out-of-state Class I areas is not the basis for this proposed disapproval, we recommend that ADEQ more clearly identify which out-of-state Class I areas may be affected by emissions from Arizona.

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.[133]

In the 2022 Arizona Regional Haze Plan, ADEQ used visibility data from IMPROVE monitoring sites for 2000–2004 for baseline visibility.[134] ADEQ also obtained visibility data from IMPROVE monitoring data for 2005–2019. The five-year average of 2015–2019 represents current visibility conditions. ADEQ also determined natural visibility by estimating the natural concentrations of visibility-impairing pollutants and then calculating total light extinction with the IMPROVE algorithm. Comparison of baseline conditions to natural visibility conditions shows the improvement necessary to attain natural visibility by 2064 measured in deciviews of improvement per year that represents the URP. The calculations of baseline, current, and natural visibility conditions, as well as the progress to date, differences between current visibility conditions and natural visibility conditions, and the URP for each of the state's Class I areas can be found in Chapter 5.2 of the 2022 Arizona Regional Haze Plan. The URP glidepaths and 2028 visibility projections are discussed further in Section 7 and Appendix D. A summary of Arizona's visibility conditions and unadjusted URPs is also presented in Table 2 of this document. A summary of Arizona's adjusted URPs is presented in Table 21 of this document.

Data for the Chiricahua National Monument, Chiricahua Wilderness Area, and the Galiuro Wilderness Area come from the CHIR1 monitoring site.[135] These three Class I areas have 2000–2004 baseline visibility conditions of 4.9 deciviews on the 20 percent clearest days and 10.5 deciviews on the 20 percent most impaired days. ADEQ calculated an estimated natural background visibility of 1.8 deciviews on the 20 percent clearest days and 4.9 deciviews on the 20 percent most impaired days for these three Class I areas. The current visibility conditions, which are based on 2015–2019 monitoring data, were 3.9 deciviews on the clearest days and 9.5 deciviews on the most impaired days, which are 2.1 deciviews and 4.6 deciviews greater than natural conditions on the respective sets of days. The progress to date, subtracting current conditions from baseline conditions, yields a 1.1 deciview improvement for the 20 percent clearest days and 1.0 deciview improvement for the 20 percent most impaired days. ADEQ calculated an annual URP of 0.09 deciviews per year needed to reach natural visibility on the 20 percent most impaired days by 2064. ADEQ also indicates that the visibility improvement needed to maintain the URP from the baseline to 2028 is 2.2 deciviews.

Data for the Grand Canyon National Park come from the GRCA2 site.[136] The Grand Canyon has 2000–2004 baseline visibility conditions of 2.2 deciviews on the 20 percent clearest days and 8 deciviews on the 20 percent most impaired days. ADEQ calculated an estimated natural background visibility of 0.3 deciviews on the 20 percent clearest days and 4.2 deciviews on the 20 percent most impaired days for these three Class I areas. The current visibility conditions, which are based on 2015–2019 monitoring data, were 1.6 deciviews on the clearest days and 6.9 deciviews on the most impaired days, which are 1.3 deciviews and 2.7 deciviews greater than natural conditions on the respective sets of days. The progress to date, subtracting current conditions from baseline conditions, yields a 0.6 deciview improvement for the 20 percent clearest days and 1.1 deciview improvement for the 20 percent most impaired days. ADEQ calculated an annual URP of 0.06 deciviews per year needed to reach natural visibility on the 20 percent most impaired days by 2064. ADEQ also indicates that the visibility improvement needed to maintain the URP from the baseline to 2028 is 1.5 deciviews.

Data for the Mazatzal Wilderness Area and Pine Mountain Wilderness Area come from the IKBA1 monitoring site.[137] These two Class I areas have 2000–2004 baseline visibility conditions of 5.4 deciviews on the 20 percent clearest days and 11.2 deciviews on the 20 percent most impaired days. ADEQ calculated an estimated natural background visibility of 1.9 deciviews on the 20 percent clearest days and 5.2 deciviews on the 20 percent most impaired days for these two Class I areas. The current visibility conditions, which are based on 2015–2019 monitoring data, were 4.2 deciviews on the clearest days and 9.5 deciviews on the most impaired days, which are 2.3 deciviews and 4.3 deciviews greater than natural conditions on the respective sets of days. The progress to date, subtracting current conditions from baseline conditions, yields a 1.2 deciview improvement for the 20 percent clearest days and 1.7 deciview improvement for the 20 percent most impaired days. ADEQ calculated an annual URP of 0.10 deciviews per year needed to reach natural visibility on the 20 percent most impaired days by 2064. ADEQ indicates that the visibility improvement needed to maintain the URP from the baseline to 2028 is 2.4 deciviews.

Data for the Mount Baldy Wilderness Area come from the BALD1 monitoring

[132] 2019 Guidance, p. 8.

[133] 40 CFR 51.308(f)(1)(vi)(B).

[134] 2022 Arizona Regional Haze Plan, Chapter 5.

[135] Figure 5–2 in the 2022 Arizona Regional Haze Plan depicts the annual and 5-year average most impaired day and clearest day visibility in deciviews (dv), the unadjusted MID URP, and the clearest days threshold for the CHIR1 site.

[136] Figure 5–3 in the 2022 Arizona Regional Haze Plan depicts the annual and 5-year average most impaired day and clearest day visibility in dv, the unadjusted MID URP, and the clearest days threshold for the GRCA2 site.

[137] Figure 5–4 in the 2022 Arizona Regional Haze Plan depicts the annual and 5-year average most impaired day and clearest day visibility (dv), the unadjusted MID URP, and the clearest days threshold for the IKBA1 site.

site.[138] Mount Baldy has 2000–2004 baseline visibility conditions of 3.0 deciviews on the 20 percent clearest days and 8.8 deciviews on the 20 percent most impaired days. ADEQ calculated an estimated natural background visibility of 0.5 on the 20 percent clearest days and 4.2 deciviews on the 20 percent most impaired days. The current visibility conditions, which are based on 2015–2019 monitoring data, were 1.8 deciviews on the clearest days and 7.3 deciviews on the most impaired days, which are 1.3 deciviews and 3.1 deciviews greater than natural conditions on the respective sets of days. The progress to date, subtracting current conditions from baseline conditions, yields a 1.2 deciview improvement for the 20 percent clearest days and 1.5 deciview improvement for the 20 percent most impaired days. ADEQ calculated an annual URP of 0.08 deciviews per year needed to reach natural visibility on the 20 percent most impaired days by 2064. ADEQ indicates that the visibility improvement needed to maintain the URP from the baseline to 2028 is 1.8 deciviews.

Data for the Petrified Forest National Park come from the PEFO1 monitoring site.[139] The Class I area has 2000–2004 baseline visibility conditions of 5.0 deciviews on the 20 percent clearest days and 9.8 deciviews on the 20 percent most impaired days. ADEQ calculated an estimated natural background visibility of 1.1 deciviews on the 20 percent clearest days and 4.2 deciviews on the 20 percent most impaired days. The current visibility conditions, which are based on 2015–2019 monitoring data, were 3.3 deciviews on the clearest days and 8.1 deciviews on the most impaired days, which are 2.2 deciviews and 3.9 deciviews greater than natural conditions on the respective sets of days. The progress to date, subtracting current conditions from baseline conditions, yields a 1.8 deciview improvement for the 20 percent clearest days and 1.7 deciview improvement for the 20 percent most impaired days. ADEQ calculated an annual URP of 0.09 deciviews per year needed to reach natural visibility on the 20 percent most impaired days by 2064. ADEQ indicates that the visibility improvement needed to maintain the URP from the baseline to 2028 is 2.4 deciviews.

Data for the Saguaro National Park come from the SAGU1 monitoring site.[140] The Class I area has 2000–2004 baseline visibility conditions of 6.9 deciviews on the 20 percent clearest days and 12.6 deciviews on the 20 percent most impaired days. ADEQ calculated an estimated natural background visibility of 2.2 deciviews on the 20 percent clearest days and 5.1 deciviews on the 20 percent most impaired days. The current visibility conditions, which are based on 2015–2019 monitoring data, were 5.8 deciviews on the clearest days and 10.7 deciviews on the most impaired days, which are 3.6 deciviews and 5.6 deciviews greater than natural conditions on the respective sets of days. The progress to date, subtracting current conditions from baseline conditions, yields a 1.1 deciview improvement for the 20 percent clearest days and 1.9 deciview improvement for the 20 percent most impaired days. ADEQ calculated an annual URP of 0.12 deciviews per year needed to reach natural visibility on the 20 percent most impaired days by 2064. ADEQ indicates that the visibility improvement needed to maintain the URP from the baseline to 2028 is 3.0 deciviews.

Data for the Sierra Ancha Wilderness Area come from the SIAN1 monitoring site.[141] The Class I area has 2000–2004 baseline visibility conditions of 6.2 deciviews on the 20 percent clearest days and 10.8 deciviews on the 20 percent most impaired days. ADEQ calculated an estimated natural background visibility of 2.0 deciviews on the 20 percent clearest days and 5.1 deciviews on the 20 percent most impaired days. The current visibility conditions, which are based on 2015–2019 monitoring data, were 4.3 deciviews on the clearest days and 9.4 deciviews on the most impaired days, which are 2.3 deciviews and 4.3 deciviews greater than natural conditions on the respective sets of days. The progress to date, subtracting current conditions from baseline conditions, yields a 1.9 deciview improvement for the 20 percent clearest days and 1.4 deciview improvement for the 20 percent most impaired days. ADEQ calculated an annual URP of 0.09 deciviews per year needed to reach natural visibility on the 20 percent most impaired days by 2064. ADEQ indicates that the visibility improvement needed to maintain the URP from the baseline to 2028 is 2.3 deciviews.

Data for the Superstition Wilderness Area come from the TONT1 monitoring site.[142] The Class I area has 2000–2004 baseline visibility conditions of 6.5 deciviews on the 20 percent clearest days and 11.7 deciviews on the 20 percent most impaired days. ADEQ calculated an estimated natural background visibility of 2.0 deciviews on the 20 percent clearest days and 5.1 deciviews on the 20 percent most impaired days. The current visibility conditions, which are based on 2015–2019 monitoring data, were 4.9 deciviews on the clearest days and 10.3 deciviews on the most impaired days, which are 2.9 deciviews and 5.2 deciviews greater than natural conditions on the respective sets of days. The progress to date, subtracting current conditions from baseline conditions, yields a 1.6 deciview improvement for the 20 percent clearest days and 1.3 deciview improvement for the 20 percent most impaired days. ADEQ calculated an annual URP of 0.09 deciviews per year needed to reach natural visibility on the 20 percent most impaired days by 2064. ADEQ indicates that the visibility improvement needed to maintain the URP from the baseline to 2028 is 2.6 deciviews.

Data for the Sycamore Canyon Wilderness Area come from the SYCA_RHTS monitoring site.[143] The Class I area has 2000–2004 baseline visibility conditions of 5.6 deciviews on the 20 percent clearest days and 12.2 deciviews on the 20 percent most impaired days. ADEQ calculated an estimated natural background visibility of 1.0 deciview on the 20 percent clearest days and 4.7 deciviews on the 20 percent most impaired days. The current visibility conditions, which are based on 2015–2019 monitoring data, were 3.9 deciviews on the clearest days and 11.7 deciviews on the most impaired days, which are 2.9 deciviews and 7.0 deciviews greater than natural

[138] 2022 Arizona Regional Haze Plan, Tables 5–1 through 5–3.

[139] Figure 5–5 in the 2022 Arizona Regional Haze Plan depicts the annual and 5-year average most impaired day and clearest day visibility in dv, the unadjusted MID URP, and the clearest days threshold for the PEFO1 site.

[140] Figure 5–6 in the 2022 Arizona Regional Haze Plan depicts the annual and 5-year average most impaired day and clearest day visibility in dv, the unadjusted MID URP, and the clearest days threshold for the SAGU1 site.

[141] Figure 5–7 in the 2022 Arizona Regional Haze Plan depicts the annual and 5-year average most impaired day and clearest day visibility in dv, the unadjusted MID URP, and the clearest days threshold for the SIAN1 site. Data is not available for 2016–2020 for SIAN1.

[142] Figure 5–8 in the 2022 Arizona Regional Haze Plan depicts the annual and 5-year average most impaired day and clearest day visibility in dv, the unadjusted MID URP, and the clearest days threshold for the TONT1 site.

[143] Figure 5–9 in the 2022 Arizona Regional Haze Plan depicts the annual and 5-year average most impaired day and clearest day visibility in dv, the unadjusted MID URP, and the clearest days threshold for the SYCA_RHTS site. The abbreviation ''SYCA_RHTS'' is for Sycamore Regional Haze Tracking Site, and combines data from the SYCA1 IMPROVE site, which closed in 2015 during the baseline period, and data from the newer SYCA2 site.

conditions on the respective sets of days. The progress to date, subtracting current conditions from baseline conditions, yields a 1.6 deciview improvement for the 20 percent clearest days and 0.4 deciview improvement for the 20 percent most impaired days. ADEQ calculated an annual URP of 0.12 deciviews per year needed to reach natural visibility on the 20 percent most impaired days by 2064. ADEQ indicates that the visibility improvement needed to maintain the URP from the baseline to 2028 is 3.0 deciviews.

TABLE 2—VISIBILITY CONDITIONS AND UNIFORM RATE OF PROGRESS, IN DECIVIEWS (dv)

	20% Clearest days				20% Most-impaired days				Maintain URP		
Class I Area	Baseline	Current	Natural	Difference	Baseline	Current	Natural	Difference	dv per year	total dv (baseline to 2019)	total dv (baseline to 2028)
Chiricahua NM WA	4.9	3.9	1.8	2.1	10.5	9.5	4.9	4.6	0.09	1.4	2.2
Chiricahua WA	4.9	3.9	1.8	2.1	10.5	9.5	4.9	4.6	0.09	1.4	2.2
Galiuro WA	4.9	3.9	1.8	2.1	10.5	9.5	4.9	4.6	0.09	1.4	2.2
Grand Canyon NP	2.2	1.6	0.3	1.3	8.0	6.9	4.2	2.7	0.06	1.0	1.5
Mazatzal WA	5.4	4.2	1.9	2.3	11.2	9.5	5.2	4.3	0.10	1.5	2.4
Mount Baldy WA	3.0	1.8	0.5	1.3	8.8	7.3	4.2	3.1	0.08	1.2	1.8
Petrified Forest NP	5.0	3.3	1.1	2.2	9.8	8.1	4.2	3.9	0.09	1.4	2.2
Pine Mountain WA	5.4	4.2	1.9	2.3	11.2	9.5	5.2	4.3	0.10	1.5	2.4
Saguaro NP	6.9	5.8	2.2	3.6	12.6	10.7	5.1	5.6	0.12	1.9	3.0
Sierra Ancha WA	6.2	4.3	2.0	2.3	10.8	9.4	5.1	4.3	0.09	1.2	2.3
Superstition WA	6.5	4.9	2.0	2.9	11.7	10.3	5.1	5.2	0.11	1.6	2.6
Sycamore Canyon WA	5.6	3.9	1.0	2.9	12.2	11.7	4.7	7.0	0.12	1.9	3.0

Source: 2022 Arizona Regional Haze Plan, p. 38, Tables 5–1, 5–2, and 5–3. Baseline conditions are for 2000–2004 Current Conditions are for 2015–2019; Difference is Current dv minus Natural Conditions. Maintain URP shows the deciviews per year and the total deciview improvements needed to maintain the Uniform Rate of Progress to 2019 and 2028.

ADEQ chose to adjust its URP to account for international anthropogenic impacts and for the impacts of wildland prescribed fires. The WRAP/WAQS Regional Haze modeling platform used scaled 2014 NEI wildland prescribed fire data for purposes of calculating the URP adjustments. ADEQ submits activity data related to wildland prescribed fires approved under its SIP approved Enhanced Smoke Management Program to the EPA for use in the development of the NEI. WRAP used the results from the CAMx 2028OTBa2 High-Level Source Apportionment run to obtain concentrations due to international emissions and to prescribed fire. These concentrations were then used in a relative sense to estimate the contributions for use in adjusting the URP. That is, the modeled relative effect of removing their emissions (relative response factors) was applied to projections of 2028 concentrations. The resulting concentration decrease was taken as the contribution of these sources. The international and prescribed fire contributions were therefore calculated in a fashion consistent with each other and with the 2028 projections. This approach is consistent with the default method described in the EPA's September 2019 regional haze modeling Technical Support Document (''EPA 2019 Modeling TSD'') [144] and with the source apportionment approach described in EPA's 2018 Visibility Tracking Guidance.[145] Two different adjusted glidepath options, ''International Emissions Only (A)'' and ''International Emissions + Wildland Rx Fire (B),'' were made available on the WRAP TSS to adjust the URP glidepath end points projections at 2064 for Class I federal areas on the most impaired days. ADEQ used the International Emissions + Wildland Rx Fire glidepath endpoint adjustment option. The choice of adjustment option made a negligible difference for five of the nine IMPROVE monitor locations, a small difference for three others, and a larger difference for the SYCA_RHTS monitor covering the Sycamore Canyon Wilderness. The deciview values for the URP glidepaths, both unadjusted and adjusted, were fairly close to values estimated in the EPA 2019 Modeling TSD. The choice of adjustment option made no difference in whether the RPG for each area was above or below its URP glidepath, which is discussed in the Section IV.F of this document.

The EPA is therefore proposing to find that Chapter 5 and Appendix A of the 2022 Arizona Regional Haze Plan meet the requirements of 40 CFR 51.308(f)(1) related to the calculations of baseline, current, and natural visibility conditions; progress to date; differences between current visibility conditions and natural visibility conditions; and the URPs for the second implementation period. We also propose to find that ADEQ has estimated the impacts from anthropogenic sources outside the United States and wildland prescribed fires using scientifically valid data and methods, and we therefore propose to approve the adjustments to the URPs pursuant to 40 CFR 51.308(f)(1)(vi)(B).

E. Long-Term Strategy for Regional Haze

1. Arizona's Long-Term Strategy in the 2022 Arizona Regional Haze Plan

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. As explained in Section 3 of this notice, reasonable progress is achieved when all states contributing to visibility impairment in

[144] Memorandum from Richard A. Wayland, Director, Air Quality Assessment Division, EPA, to Regional Air Division Directors, Subject: ''Availability of Modeling Data and Associated Technical Support Document for the EPA's Updated 2028 Visibility Air Quality Modeling,'' September 19, 2019, available at *https://www.epa.gov/visibility/technical-support-document-epas-updated-2028-regional-haze-modeling.*

[145] Memorandum from Richard A. Wayland, Director, Air Quality Assessment Division, EPA, to Regional Air Division Directors, Subject: ''Technical Guidance on Tracking Visibility Progress for the Second Implementation Period of the Regional Haze Program,'' December 20, 2018, available at *https://www.epa.gov/sites/default/files/2018-12/documents/technical_guidance_tracking_visibility_progress.pdf.*

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.[146] Each state's long-term strategy must include the enforceable emissions limitations, compliance schedules, and other measures that are necessary to make reasonable progress.[147] 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 analysis of 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 emissions 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 section 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 in a four-factor analysis for the second implementation period and how the four factors were taken into consideration in selecting the emissions reduction measures for inclusion in the long-term strategy.[148]

The consultation requirements of section 51.308(f)(2)(ii) provide that states must consult with other states that are reasonably anticipated to contribute to visibility impairment in a Class I area to develop and coordinate emissions management strategies containing the emissions reduction measures that are necessary to make reasonable progress. Section 51.308(f)(2)(ii)(A) and (B) require states to consider the emissions 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.

The following sections summarize Arizona's long-term strategy for the second planning period, as set forth in the 2022 Arizona Regional Haze Plan. The EPA's evaluation with respect to the requirements of 51.308(f)(2) is provided in Section IV.E.2.

a. Point Sources

i. Source Selection

PM is composed of different chemical constituents, including sulfates, nitrates, organic carbon, elemental carbon, coarse mass, and soil dust (''PM species'' or ''species''). ADEQ focused its source evaluation on the PM species that dominate visibility impairment at its Class I areas.[149] ADEQ evaluated light extinction for PM species by calculating total light extinction [150] and anthropogenic extinction [151] for each species on the most impaired days at its Class I areas. ADEQ indicated that when the anthropogenic portion of the impact is considered, the sulfate, nitrate, and coarse mass species collectively constitute 80 percent of total extinction on average across the Arizona Class I areas (ranging from 72.3 percent at the PEFO1 monitor to 88.8 percent at the CHIR1 monitor).[152] ADEQ also noted that, while organic carbon mass and light absorbing carbon account for more than 10 percent of the anthropogenic light extinction impact for at least one of the Class I areas, the emissions that contribute to these species are primarily from biogenic, wildfires, and onroad sources, for which the State has limited available control opportunities. Based on this analysis, ADEQ determined that sulfate, nitrate, and coarse mass are the three species that should be evaluated for source controls during this planning period in order to maximize the visibility benefit of controls. SO_2 emissions are a precursor to the formation of sulfate, and NO_X emissions are a precursor to the formation of nitrate. Coarse mass emissions involve particulates with an aerodynamic diameter between 10 and 2.5 microns (*i.e.,* PM_{10} less $PM_{2.5}$). Because coarse mass is not commonly included in emissions inventories, states generally use particulate matter with an aerodynamic diameter under 10 microns (PM_{10}) as a surrogate for coarse mass. Therefore, ADEQ conducted its screening based on NO_X, SO_2, and PM_{10} emissions.

Arizona used the Q/d method to identify sources that are reasonably expected to contribute to visibility impairment at any Class I area. ADEQ used a Q/d threshold of 10 (combined NO_X, SO_2 and PM_{10} emissions) based on the 2014 National Emissions Inventory (NEI) Version 2 (''2014v2'') emissions. ADEQ's approach included additional steps in order to screen out processes within the identified sources that have installed or will install ''effective controls'' prior to the end of the second planning period.[153] ADEQ evaluated 2018 operational and emissions data to determine which processes have an effective control installed or incorporated within the last five years or will install or incorporate an effective control prior to 2028.[154]

ADEQ used following the criteria for determining what constitutes an effective control: (1) the control was installed within the last five years of this analysis (*i.e.,* during or since 2014) or will be installed prior to 2028; (2) the control was installed to meet (a) PSD requirements (or is otherwise considered a to be equivalent to the best available control technology (BACT)), (b) BART requirements (including BART reconsiderations and better-than-BART determinations),[155] (c) Regional Haze 1st planning period Reasonable Progress, requirements, or (d) other SIP requirements to achieve NAAQS compliance; and (3) process emissions must be controlled through routing those emissions through a newly constructed or recently upgraded pollution control device or ''taking emission limits that would otherwise equate to the installation of a pollution control device.'' [156]

ADEQ further determined that the application of the effective control screening should be applied at the process level as opposed to the facility-wide level. Given an increase in resolution at the process level as compared to the unit level, ADEQ determined that examining facility processes was the most appropriate level of resolution for determining which emission sources at a facility would undergo a four-factor control determination. Additionally, given that some permitted sources submit emissions inventories containing hundreds of processes, including many that emit low levels of pollutants, ADEQ

[146] 40 CFR 51.308(f)(2)(i).

[147] 40 CFR 51.308(f)(2).

[148] 40 CFR 51.308(f)(2)(iii).

[149] 2022 Arizona Regional Haze Plan, Section 8.2.1.

[150] Id., Appendix C, Table 3.

[151] Id. at Table 4.

[152] Id. at Table 5.

[153] A full description of the methodology and determinations of effective controls and their treatment are included in Appendix C of the 2022 Arizona Regional Haze Plan. Figure 8–1 of the 2022 Arizona Regional Haze Plan presents a flowchart of ADEQ's major point source screening process.

[154] Arizona Regional Haze Plan, Appendix C, Section C2.2.1.2.

[155] Pursuant to 40 CFR 51.308(e)(2), States have the flexibility to adopt alternatives that provide greater reasonable progress towards natural visibility conditions than BART for one or more subject-to-BART sources (commonly known as ''better-than-BART'' alternatives).

[156] Arizona Regional Haze Plan Appendix C, p. 30.

determined that it was unnecessary to perform a control evaluation on all processes at each facility, but that at least the largest 80 percent of pollutant- and process-specific emissions at a source should be considered.

As shown in Table 3 of this document, ADEQ determined that 55 processes within the identified sources were effectively controlled.[157] These include certain processes where no control has been installed within the last five years, but where new emissions limits were established, such as Tucson Electric Power (TEP) Company Irvington Generating Station (IGS) Unit 4 and AEPCO Apache Generating Station Unit 2, both of which converted from coal to natural gas as part of better-than-BART alternatives during the first planning period. ADEQ then screened out these effectively controlled processes from further consideration and indicated that these effectively controlled processes will be reevaluated in future rounds of Regional Haze planning.

TABLE 3—LIST OF EFFECTIVE CONTROLS IDENTIFIED BY ADEQ FOR ARIZONA MAJOR POINT SOURCES

Facility	Unit/process description	Control program	Comments
AEPCO—Apache Generating Station.	Steam Unit 1 Gas	Regional Haze—BART Alternative.	NO_X limit of 0.056 pounds per million British thermal unit (lb/MMBtu) standalone and 0.1 lb/MMBtu combined ST1/GT1 and a 30-calendar day average of 1,205 lb/day, PM_{10} limit of 0.0075 lb/MMBtu, and SO_2 limit of 0.00064 lb/MMBtu.
AEPCO—Apache Generating Station.	Steam Unit 2 Gas	Regional Haze—BART Alternative.	Conversion from coal to natural gas with NO_X limit of 0.085 lb/MMBtu 30-day average, SO_2 limit of 0.00064 lb/MMBtu 30-day average, PM_{10} limit of 0.008 lb/MMBtu 30-day average.
AEPCO—Apache Generating Station.	Steam Unit 2 Coal	Regional Haze—BART Alternative.	Conversion from coal to natural gas w/NO_X limit of 0.085 lb/MMBtu 30-day average, SO_2 limit of 0.00064 lb/MMBtu 30-day average, PM_{10} limit of 0.008 lb/MMBtu 30-day average.
AEPCO—Apache Generating Station.	Steam Unit 3 Coal	Regional Haze—BART Alternative.	Selective non-catalytic reduction (SNCR) installation w/a NO_X 30-day average limit of 0.23 lb/MMBtu.
AEPCO—Apache Generating Station.	Steam Unit 3 Gas	Regional Haze—BART Alternative.	SNCR installation w/a NO_X 30-day average limit of 0.23 lb/MMBtu.
AEPCO—Apache Generating Station.	Gas Combust Turbine #1.	Regional Haze—BART Alternative.	NO_X limit of 0.056 lb/MMBtu standalone and 0.1 lb/MMBtu combined ST1/GT1 and a 30-calendar day average of 1,205 lb/day, PM_{10} limit of 0.0075 lb/MMBtu, and SO_2 limit of 0.00064 lb/MMBtu.
APS—Cholla Power Plant.	Coal Combustion In Steam Unit #1.	Regional Haze—BART.	Cease operation or convert unit from coal to natural gas by April 30, 2025, with 20% annual capacity factor.
APS—Cholla Power Plant.	Coal Combustion in Steam Unit #2.	Regional Haze—BART.	Permanently shut down April 1, 2016.
APS—Cholla Power Plant.	Coal Combustion in Steam Unit #3.	Regional Haze—BART.	Permanently cease coal burning by April 30, 2025. Natural gas option with less than 20% average annual capacity factor (NO_X, SO_2, and PM_{10} emissions limits specified).
APS—Cholla Power Plant.	Coal Combustion in Steam Unit #4.	Regional Haze—BART.	Permanently cease coal burning by April 30, 2025. Natural gas option with less than 20% average annual capacity factor (NO_X, SO_2, and PM_{10} emissions limits specified).
Asarco—Hayden Smelter.	Flash Furnace, Converter.	SIP Action—Pb, SO_2.	Converter retrofit & HSA Lime Injection/Baghouse.
Asarco—Hayden Smelter.	Paved Road Traffic	SIP Action—Pb	Limits on Lead Bearing Fugitive Dust from the Hayden smelter.
Asarco—Hayden Smelter.	Product Dryer Baghouses.	SIP Action—Pb, SO_2.	Converter retrofit & HSA Lime Injection/Baghouse.
Asarco—Hayden Smelter.	Storage & Handling	SIP Action—Pb	Limits on Lead Bearing Fugitive Dust from the Hayden smelter.
Asarco—Hayden Smelter.	Unpaved Road Traffic.	SIP Action—Pb	Limits on Lead Bearing Fugitive Dust from the Hayden smelter.
Asarco—Hayden Smelter.	Flash Furnace/Converter Primary Ventilation—Acid Plant Outlet.	SIP Action—SO_2 ...	Flash furnace fugitive SO_2 capture and control improvements made as part of the converter retrofit project.
Asarco—Hayden Smelter.	Converter Aisle Fugitives.	SIP Action—SO_2 ...	New tertiary ventilation system.
Asarco—Hayden Smelter.	Fines Crushing Circuit.	SIP Action—Pb	Limits on Lead Bearing Fugitive Dust from the Hayden smelter.
Asarco—Hayden Smelter.	Flash Furnace Fugitives.	SIP Action—SO_2 ...	Flash furnace fugitive SO_2 capture and control improvements made as part of the converter retrofit project.
Asarco—Hayden Smelter.	Flash Furnace Baghouse Outlet.	SIP Action—SO_2 ...	Flash furnace fugitive SO_2 capture and control improvements made as part of the converter retrofit project.
Asarco—Hayden Smelter.	Peirce Smith Converters.	SIP Action—SO_2 ...	New tertiary ventilation system.
Asarco—Hayden Smelter.	Peirce Smith Converters.	SIP Action—Pb, SO_2.	Converter retrofit & HSA Lime Injection/Baghouse.
Asarco—Hayden Smelter.	Revert Crushing Circuit.	SIP Action—Pb	Limits on Lead Bearing Fugitive Dust from the Hayden smelter.
Asarco—Hayden Smelter.	Secondary Hood Baghouse.	SIP Action—SO_2 ...	New tertiary ventilation system.

[157] Id. at Exhibit CI.

TABLE 3—LIST OF EFFECTIVE CONTROLS IDENTIFIED BY ADEQ FOR ARIZONA MAJOR POINT SOURCES—Continued

Facility	Unit/process description	Control program	Comments
Asarco—Hayden Smelter.	Tertiary Hood Ventilation Outlet.	SIP Action—SO_2 ...	New tertiary ventilation system.
Calportland-Rillito Cement Plant.	Preheater & Kiln 4	Regional Haze—Reasonable Progress.	SNCR installation with a NO_X limit of 3.46 lb/ton.
Chemical Lime Nelson Plant.	Baghouse	Regional Haze—BART.	SNCR NO_X limit of 3.80 lb/ton. Use of lower sulfur fuel with SO_2 limit of 9.32 lb/ton.
Chemical Lime Nelson Plant.	Baghouse	Regional Haze—BART.	SNCR NO_X limit of 2.61 lb/ton. Use of lower sulfur fuel with SO_2 limit of 9.73 lb/ton.
Coronado Generating Plant.	Coal Combustion Unit 1.	Regional Haze—BART.	Selective catalytic reduction (SCR) installation or shut down by 12/31/2025. 0.065 lb/MMBtu average NO_X limit and 0.060 lb/MMBtu average SO_2 limit. Additional facility-wide cap on SO_2 emissions.
Coronado Generating Plant.	Fuel Oil Combustion Unit 1.	Regional Haze—BART.	SCR installation or shut down by 12/31/2025. 0.065 lb/MMBtu average NO_X limit and 0.060 lb/MMBtu average SO_2 limit. Additional facility-wide cap on SO_2 emissions.
Coronado Generating Plant.	Coal Combustion Unit 2.	Regional Haze—BART.	SCR installation in June 2014.
Coronado Generating Plant.	Fuel Oil Combustion Unit 2.	Regional Haze—BART.	SCR installation in June 2014.
Freeport McMoran Miami Smelter.	Smelting: Isa & Elf	SIP Action—SO_2 ...	2018 environmental upgrades included capture of anode vessel process emissions, routing to baghouse and caustic scrubber.
Freeport McMoran Miami Smelter.	Captured Converter Fugitives and Anode Process Emissions.	SIP Action—SO_2 ...	Anode process emissions routed through baghouse and caustic scrubber, Converter fugitive emissions routed through caustic scrubber.
Freeport McMoran Miami Smelter.	Collected Fugitives	SIP Action—SO_2 ...	Vent fume system, including Wet Electrostatic Precipitator (ESP) and caustic scrubber.
Freeport McMoran Miami Smelter.	Bypass Stack	SIP Action—SO_2 ...	Bypass stack subject to facility-wide SO_2 limit in SO_2 and permit.
Freeport McMoran Miami Smelter.	Smelting Fugitives	SIP Action—SO_2 ...	Fugitive originating from IsaSmelt vessel, electric furnace, converters, and anode vessels, each of which have emissions capture and control systems.
Freeport McMoran Miami Smelter.	Natural Gas Combustion.	SIP Action—SO_2 ...	Majority of smelter natural gas combustion occurs within IsaSmelt, Electric Furnace, Converters and Anode Vessels and is co-mingled with process gas which is routed to the various control devices. Insignificant emissions originating from uncontrolled space heaters, small water heaters, etc.
Freeport McMoran Miami Smelter.	Anode Refining	SIP Action—SO_2 ...	2018 environmental upgrades included capture of anode vessel process emissions, routing to baghouse and caustic scrubber.
Phoenix Cement—Clarkdale.	Raw Mill/Kiln	Regional Haze—Reasonable Progress.	SNCR installation with a NO_X limit of 2.67 lb/ton.
Phoenix Cement—Clarkdale.	Coal Milling	Regional Haze—Reasonable Progress.	SNCR installation with a NO_X limit of 2.67 lb/ton.
Tucson Electric Power—Irvington.	U1 Boiler—Natural Gas.	PSD BACT	Replacement of unit with 10 upgraded reciprocating internal combustion engines (RICE) engines and a combined annual NO_X limit of 170 tons per year (tpy).
Tucson Electric Power—Irvington.	U2 Boiler—Natural Gas.	PSD BACT	Replacement of unit with 10 upgraded RICE engines and a combined annual NO_X limit of 170 tpy.
Tucson Electric Power—Irvington.	U4 Boiler—Natural Gas.	Regional Haze—BART Alternative.	Fuel switch with a 0.25 lb/MMBtu NO_X limit, 0.57 lb/MMBtu SO_2 limit, and 0.010 lb/MMBtu PM_{10} limit.
Tucson Electric Power—Irvington.	IGT1–Turbine—Natural Gas.	PSD BACT	Replacement of unit with 10 upgraded RICE engines and a combined annual NO_X limit of 170 tpy.
Tucson Electric Power—Irvington.	IGT2–Turbine—Natural Gas.	PSD BACT	Replacement of unit with 10 upgraded RICE engines and a combined annual NO_X limit of 170 tpy.

Source: 2022 Arizona Regional Haze Plan, Appendix C, Exhibit CI.

ADEQ then recalculated Q/d using a threshold of 10 for each facility utilizing the remaining processes and 2018 data.

Based on the source screening results, ADEQ determined that the 11 permitted sources listed in Table 4 of this document would undergo a four-factor analysis.[158]

TABLE 4—ARIZONA SOURCE SCREENING RESULTS

Facility	Q (tpy)	d (km)	Q/d	Nearest Class I area
ASARCO LLC—Mission Complex	1,254	42	30	Saguaro National Park.
ASARCO LLC—Ray Operations	371	26	14	Superstition Wilderness Area.

[158] 2022 Arizona Regional Haze Plan, Table 8–2.

TABLE 4—ARIZONA SOURCE SCREENING RESULTS—Continued

Facility	Q (tpy)	d (km)	Q/d	Nearest Class I area
CalPortland—Rillito Cement Plant	246	8	30	Saguaro National Park.
Drake Cement LLC	375	22	17	Sycamore Canyon Wilderness Area.
El Paso Natural Gas—Willcox Compressor Station	321	27	12	Chiricahua Wilderness Area.
El Paso Natural Gas—Williams Compressor Station	786	19	40	Sycamore Canyon Wilderness Area.
Freeport-McMoran—Morenci	2,768	54	52	Gila Wilderness Area.
Freeport-McMoran—Sierrita Mine	869	42	21	Saguaro National Park.
Phoenix Cement—Clarkdale	136	10	14	Sycamore Canyon Wilderness Area.
Tucson Electric Power Co—Irvington	444	16	28	Saguaro National Park.
Tucson Electric Power Co—Springerville	17,044	50	339	Mount Baldy Wilderness Area.

Source: 2022 Arizona Regional Haze Plan, Table 8–2. The Q and Q/d values shown here exclude those processes that ADEQ screened out based on a finding that they were effectively controlled.

ii. Overall Approach to Four-Factor Analyses

For cost calculation interest rates, ADEQ requested that the sources undergoing a four-factor analysis provide source specific lending/interest rates in line with the general recommendations of the 7th Edition of the EPA Control Cost Manual.[159] In the absence of source-specific information, ADEQ relied on a 4.75 percent interest rate developed by analyzing and averaging historical bank prime rate data. ADEQ looked at 3-year average bank prime rates for the periods of 2017–2019 (4.83 percent) and April 2018–March 2020 (4.78 percent). These dates were chosen as they were the most recent data at the time of the analysis. ADEQ determined, based on these 3-year averages, that a 3-year average bank prime rate of 4.75 percent was appropriate. ADEQ indicates that the use of a 3-year average was more appropriate than the utilization of the bank prime rate at a singular point in time due to the variability that can occur in bank prime rates over time. ADEQ also performed an analysis to determine a reasonable cost-effectiveness (cost/ton) threshold for Arizona emissions sources evaluated under the four-factor analysis in the regional haze second planning period, based on the cost-effectiveness values for controls required in regional haze SIP revisions from the first planning period. ADEQ indicated that it found that none of the implemented cost-effectiveness values during the first planning period exceeded $5,300/ton. Adjusting the cost for inflation to 2019 dollars based on Chemical Engineering Plant Cost Index values,[160] ADEQ determined that any controls having an average cost-effectiveness of more than $6,500/ton would be cost excessive and could be rejected without further justification.

iii. Summary of Four-Factor Analyses

TABLE 5—SUMMARY OF FACILITIES AND PROCESSES EVALUATED UNDER FOUR-FACTOR ANALYSIS

Facility	Process	Pollutant	Projected 2028 emissions (tpy)
ASARCO LLC—Mission Complex	Trucks hauling ore and waste rock	PM_{10}	713
	Rubber tire rigs traveling on unpaved roads	PM_{10}	97
ASARCO LLC—Ray Operations	Trucks hauling ore and waste rock	PM_{10}	158
	Miscellaneous vehicles traveling on unpaved roads	PM_{10}	87
	Dumps and tailings windblown dust	PM_{10}	41
	Dozing mine areas, dumps and stockpiles	PM_{10}	21
	Blasting ore and waste rock	NO_X	89
CalPortland—Rillito Cement Plant	Clinker From K234—Overhead Crane Building	PM_{10}	62.5
	Unpaved Roads	PM_{10}	51.7
	Plant Materials	PM_{10}	17.3
	Finish Milling—D2–PC	PM_{10}	9.5
	Iron Stockpile	PM_{10}	8.5
	Finish Milling—D3–1–DC2	PM_{10}	7.1
	Cooler—Kiln 4 H2–GB	PM_{10}	7.0
	Quarry Materials	PM_{10}	6.5
	Paved Roads	PM_{10}	5.8
	Mining Operations—Blasting	NO_X	5.7
	Quarry Crusher System—B2–DC1	PM_{10}	5.3
Drake Cement LLC	Raw Mill and Kiln	NO_X	[a] 316
El Paso Natural Gas—Willcox Compressor Station	TURBINE–1	NO_X	134
	TURBINE–2	NO_X	157
El Paso Natural Gas—Williams Compressor Station	TURBINE–1	NO_X	290
	RECIP–1	NO_X	148
	RECIP–2	NO_X	170
	RECIP–5	NO_X	205
Freeport—McMoran—Morenci	Haul Trucks Traveling on Mine Roads	PM_{10}	1,552
	Other Vehicles Traveling on Mine Roads	PM_{10}	229
	Loading Ores into Haul Trucks	PM_{10}	120

[159] 2022 Arizona Regional Haze Plan, Section 8.3.2.

[160] Available at *https://www.chemengonline.com/site/plant-cost-index/*.

TABLE 5—SUMMARY OF FACILITIES AND PROCESSES EVALUATED UNDER FOUR-FACTOR ANALYSIS—Continued

Facility	Process	Pollutant	Projected 2028 emissions (tpy)
Freeport—McMoran—Sierrita Mine	Unpaved Roads	PM_{10}	449
	Loading Ores into Haul Trucks	PM_{10}	82
	Sierrita Tailings	PM_{10}	171
	Blasting Operations	NO_X	97
Phoenix Cement—Clarkdale	Rock Sampling and Storage—Raw Storage Piles	PM_{10}	31.4
	Coal/Coke Handling 2—Coal/Coke Storage Pile	PM_{10}	12.1
	Gypsum Handling—Gypsum Storage Piles	PM_{10}	7.4
	Cement Storage—DC510	PM_{10}	5.5
	Quarry Rds/Blast/Drill—Quarry—Blasting	NO_X	3.5
	Raw Storage and Homog2—DC607	PM_{10}	3.1
	Kiln Feed System—DC409	PM_{10}	3.0
	Clinker Handling and STR3—DC352	PM_{10}	2.8
	Finish Milling—DC340	PM_{10}	2.6
	Cement Storage 2—DC512	PM_{10}	2.6
	Raw Mill—DC366	PM_{10}	2.2
	Rock Reclaimer and TPS—DC205	PM_{10}	2.4
	Cement Storage 2—DC508	PM_{10}	2.1
	Clinker Handling and STR3—DC350	PM_{10}	2.0
	Raw Storage and Homog1—DC601	PM_{10}	1.9
	Clinker Handling and STR1—DC447	PM_{10}	1.9
	Clinker Cooling—DC445	PM_{10}	1.7
	Clinker Handling and STR3—DC312	PM_{10}	1.6
	Raw Storage and Homog2—DC224	PM_{10}	1.6
	Raw Storage and Homog2—DC228	PM_{10}	1.6
	Raw Storage and Homog2—DC615	PM_{10}	1.6
	Raw Storage and Homog2—DC616	PM_{10}	1.6
	Coal/Coke Handling1—DC452	PM_{10}	1.4
	Finish Milling—DC341	PM_{10}	1.3
	Paved Plant Roads	PM_{10}	1.2
Tucson Electric Power Co—Irvington	Unit 3	NO_X	251
Tucson Electric Power Co—Springerville	Unit 1 Boiler	PM_{10}	92
		NO_X	2,099
		SO_2	2,869
	Unit 2 Boiler	PM_{10}	107
		NO_X	2,283
		SO_2	2,982
	Unit 3 Boiler	PM_{10}	158
		NO_X	1,019
		SO_2	1,036
	Unit 4 Boiler	PM_{10}	31
		NO_X	929
		SO_2	1,039

[a] The Plan does not state the projected 2028 emissions for this unit. However, the highest annual facility-wide NO_X emissions during the baseline period were 316 tpy in 2018, so this may be considered an upper-bound of emissions from the Raw Mill and Kiln.

Source: 2022 Arizona Regional Haze Plan, Appendix C.

ASARCO LLC (Asarco) Mission Complex [161] is a copper mine located in Sahuarita, Arizona. The facility operates an open-pit copper mine, two concentrators, and a by-products molybdenum plant. Asarco Mission Complex was screened in with a Q/d value of 30, and the nearest Class I area is Saguaro National Park at 42 kilometers away. ADEQ identified two processes that are subject to the four-factor analysis for Asarco Mission Complex: haul trucks hauling ore and waste rock, and rubber rigs traveling on unpaved roads. Using information supplied by Asarco, ADEQ conducted four-factor analyses for these two processes, the results of which are summarized in Table 6 of this document. Based on these results, ADEQ determined that the emissions controls that Asarco is implementing for the two processes, such as a speed limit of 35 miles per hour and application of water, reflect current best management practices for the mining industry and that it is reasonable not to require additional controls during this planning period. Although ADEQ did not specify why no other controls were reasonable, cost appears to have been the determining factor, as the cost effectiveness of all feasible controls exceeded ADEQ's chosen cost-effectiveness threshold of $6,500/ton.

[161] 2022 Arizona Regional Haze Plan, Chapter 8.3.3.1 and Appendix C, Section C3.3.

TABLE 6—SUMMARY OF CONTROL OPTIONS FOR ASARCO MISSION COMPLEX

Process	Control	Emission reduction	Cost-effectiveness ($/ton)
Truck Hauling Ore and Waste Rock	Reduce the speed limit for haul trucks from 35 mph to 25 mph.	203.7	$80,544
	Apply additional water to haul roads (outside pit only).	71.3	12,183
	Apply additional water to haul roads (inside and outside pit).	356.5	10,117
	Increase freeboard in the haul trucks	Emissions reductions could not be quantified.	N/A
Rubber Tire Rigs Traveling on Unpaved Non-Haul Roads.	Reduce the speed limit for rubber tire rigs from 35 mph to 25 mph.	No reduction expected since average traveling speed of rubber tire rigs is 15 mph.	N/A
	Apply additional water to unpaved roads (non-haul roads only).	49.7	18,043
	Apply additional water to unpaved roads (haul roads non-haul roads only).	59.4	15,771
	Apply and maintain surface gravel on unpaved non-haul roads (decreasing the silt content from 6.9% to 6.4%).	5.1	25,711
	Paving unpaved non-haul roads	73.7	47,295

Source: 2022 Arizona Regional Haze Plan, Appendix C, Section C.3.3.

Asarco Ray Operations is located near Kearny, Arizona and consists of an open pit mine, concentrator, solvent extraction-electrowinning operation, and associated maintenance, warehouse, and administrative facilities.[162] The facility was screened in with a Q/d value of 14, and the nearest Class I area is Saguaro National Park at 26 kilometers away. ADEQ identified five processes that are subject to the four-factor analysis for Asarco Ray Operations: trucks hauling ore and waste rock, miscellaneous vehicles traveling on unpaved roads, dumps and tailings windblown dust, dozing mine areas, dumps and stockpiles, and blasting ore and waste rock. Asarco completed and submitted a four-factor analysis report for the five processes in December 2019 and provided additional information in March 2020 through 2021. ADEQ's determination in the 2022 Arizona Regional Haze Plan is that the emissions controls that Asarco is implementing for these processes, such as a speed limit of 35 miles per hour, water sprays, and application of chemical dust suppressants (on non-haul roads), reflect current best management practices for the mining industry and that it is reasonable not to require additional controls during this planning period.

CalPortland Rillito Cement Plant is a portland cement manufacturing plant in Rillito, Arizona.[163] The facility was screened in with a Q/d value of 30, and the nearest Class I area is Superstition Wilderness Area at 8 kilometers away. ADEQ evaluated potential controls at nine emissions sources at the CalPortland Rillito Cement Plant and conducted a four-factor analysis for each control that it found to be feasible. The results of these analyses are shown in Table 7. While ADEQ's was conducting its four-factor analysis for the Rillito facility, CalPortland took on a voluntary, enforceable air quality control permit condition for the location of its iron stockpile (horseshoe pit, three-sided artificial windbreak).[164] ADEQ subsequently found that no other controls were reasonable based the statutory four factors. Although ADEQ did not specify why no other controls were reasonable, cost appears to have been the determining factor, as the cost effectiveness of all feasible controls exceeded ADEQ's chosen cost-effectiveness threshold of $6,500/ton.

TABLE 7—SUMMARY OF CONTROL OPTIONS FOR CALPORTLAND CEMENT

Source	Control option	Technically feasible (Y/N)	Emissions reduction (tpy)	Cost-effectiveness ($/ton)
Clinker to Overhead Crane Building	Fabric Filter Baghouse	N	N/A	N/A
Clinker to Overhead Crane Building	Full Enclosure	Y	9.38	$13,605
Unpaved Road Vehicular Traffic	Traffic Management Plans	N	N/A	N/A
Unpaved Road Vehicular Traffic	Additional Watering	Y	44.34	23,955
Unpaved Road Vehicular Traffic	Surface Gravel	N	N/A	N/A
Unpaved Road Vehicular Traffic	Paving	N	N/A	N/A
Unpaved Road Vehicular Traffic	Chemical Dust Suppressant	N	N/A	N/A
Paved Road Vehicular Traffic	Cover Haul Trucks	N	N/A	N/A
Paved Road Vehicular Traffic	Stabilize Unpaved Points	Y	0	N/A
Paved Road Vehicular Traffic	Rapid Cleanup of Spills	N	N/A	N/A
Paved Road Vehicular Traffic	Curb or Pave Shoulders	N	N/A	N/A
Paved Road Vehicular Traffic	Street Sweepers	Y	1.5	28,146

[162] 2022 Arizona Regional Haze Plan, Chapter 8.3.3.2 and Appendix C, Section C3.4.

[163] 2022 Arizona Regional Haze Plan, Chapter 8.3.3.3 and Appendix C.

[164] ADEQ Air Quality Control Permit #85424 Attachment C Section XI Regional Haze Requirements of the 2022 Arizona Regional Haze Plan. ADEQ has not submit the new permit condition as a SIP revision.

TABLE 7—SUMMARY OF CONTROL OPTIONS FOR CALPORTLAND CEMENT—Continued

Source	Control option	Technically feasible (Y/N)	Emissions reduction (tpy)	Cost-effectiveness ($/ton)
Material Handling	Water Sprays	N	N/A	N/A
Material Handling	Baghouse	N	N/A	N/A
Material Handling	Enclosures	N	N/A	N/A
Iron Stockpile	Water Application	N	N/A	N/A
Iron Stockpile	Chemical Dust Suppressant	N	N/A	N/A
Iron Stockpile	Artificial Wind Break	Y	0	N/A
Iron Stockpile	Vegetative Wind Break	Y	0	N/A
Iron Stockpile	Compact Piles	N	N/A	N/A
Iron Stockpile	Cover with Tarps	N	N/A	N/A
Finish Mill	Improved Baghouses	Y	15.85–18.26	14,254–16,057
Clinker Cooler	Improved Baghouses	Y	21.19	16,210
Quarry Crusher	Improved Baghouses	Y	5.92	12,099
Blasting	N/A	N/A	N/A	N/A

Source: 2022 Arizona Regional Haze Plan Appendix C, Section C.3.5.

The Drake Cement Paulden facility is a Portland cement manufacturing facility in Paulden, Yavapai County, Arizona.[165] The facility was screened in with a Q/d value of 17, and the nearest Class I area is Sycamore Canyon Wilderness Area at 22 kilometers away. One emission source, the Main Baghouse Raw Mill and Kiln, contributed approximately 84 percent of the facility's total NO_X, SO_2, and PM_{10} combined emissions, and ADEQ evaluated this unit for regional haze controls. The Plan does not state the projected 2028 emissions for this unit. However, the highest annual facility-wide NO_X emissions during the baseline period were 316 tpy in 2018, so this may be considered an upper-bound of emissions from the Raw Mill and Kiln. ADEQ indicated that Low NO_X Burners, Preheater Riser Duct Firing, and SNCR are currently implemented at the Drake Cement Paulden facility. The only remaining potential control available for implementation at the Paulden facility is SCR. Noting that SCR has been employed at only a handful of cement plants in Europe and one in the United States, ADEQ concluded that SCR was technically infeasible. Despite this, ADEQ conducted a four-factor analysis of SCR, using a control efficiency of 65 percent, which resulted in a reduction of 83.6 tons per year at approximately $30,521/ton.[166] This cost exceeds ADEQ's cost threshold and therefore, ADEQ determined that it is reasonable not to require additional controls on Drake Cement during this planning period.

EPNG Willcox Compressor Station is a natural gas compressor station facility that provides natural gas compression to EPNG's pipeline network.[167] The facility screened in with a Q/d value of 12, and the nearest Class I area is Chiricahua Wilderness Area at 27 kilometers away. The two units subject to four-factor analysis were TURBINE–1 and TURBINE–2, with 2028 emissions of 134.72 and 157.44 tons NO_X, respectively.

ADEQ found that EPNG was already implementing Good Combustion Practices at both units, and that the following control options would be technically feasible: Combustion Liner Upgrade with Dry Low NO_X (DLN; 68–71 percent control effectiveness) and SCR (77 percent control effectiveness). The results of ADEQ's analysis of these two options are summarized in Table 8 of this document.

TABLE 8—SUMMARY OF CONTROL OPTIONS FOR EPNG WILLCOX

Process	Control	Emission reduction	Cost-effectiveness ($/ton)
TURBINE–1	Lean Head End Combustion Liner Upgrade with Dry Low-NO_X Control	91.24	$12,764
	SCR	106	10,008
TURBINE–2	Lean Head End Combustion Liner Upgrade with Dry Low-NO_X Control	115.82	10,524
	SCR	124	8,892

Source: 2022 Arizona Regional Haze Plan, Appendix C, Section C3.8.

ADEQ determined that neither the Combustion Liner Upgrade with DLN nor SCR are cost-effective options because they exceed ADEQ's cost threshold. ADEQ found that EPNG should continue to implement Good Combustion Practices but did not consider whether or not this measure was necessary to make reasonable progress.

El Paso Natural Gas (EPNG) Williams Compressor Station is a natural gas compressor station facility that provides natural gas compression to EPNG's pipeline network.[168] The facility was screened in with a Q/d value of 40, and the nearest Class I area is Sycamore Canyon Wilderness Area at 19 kilometers away. EPNG reviewed NO_X control options for both the General Electric (GE) gas turbine (TURBINE–1, with 2028 emissions of 290.42 tons NO_X) and three reciprocating engines (RECIP–1, RECIP–2, and RECIP–5, with

[165] 2022 Arizona Regional Haze Plan, Appendix C, Section C3.6.

[166] Drake Cement estimated a cost effectiveness of $28,641/ton utilizing a 3 percent interest rate. ADEQ updated the interest rate to 4.75 percent for consistency with other four-factor analyses in its SIP submittal. The cost is based on a 30-year lifespan of the SCR.

[167] 2022 Arizona Regional Haze Plan, Chapter 8.3.3.6 and Appendix C, Section C3.8.

[168] 2022 Arizona Regional Haze Plan, Chapter 8.3.3.5 and Appendix C, Section C3.7.

2028 emissions of 148.4, 179.4, and 205.16 tons NO_X, respectively) located at the Williams Compressor Station.

Based on information provided by EPNG, ADEQ evaluated the following controls for the Williams compressor station TURBINE–1 for NO_X: Water or Steam Injection, Combustion Liner Upgrade with Low NO_X Burner Design, Good Combustion Practices, EMX™/SCONOX™ Technology, SCR, and SNCR. Of the list, ADEQ determined three of the control options to be technically feasible: water or steam injection (74 percent control effectiveness), SCR (80 percent control effectiveness), and combustion liner upgrade with low NO_X burner design (78 percent control effectiveness). The results of this analysis are summarized in Table 9 of this document. After the evaluation of these costs of compliance, ADEQ determined that the control options were not cost effective, and that the continued use of Good Combustion Practices is reasonable for TURBINE–1. ADEQ did not determine whether this measure was necessary to make reasonable progress.

Additionally, the following controls were evaluated for the three Williams compressor station reciprocating engines: SCR, Air-Fuel Ratio Adjustment with High Energy Ignition, Low-Emission Combustion (LEC) Retrofits, Replacement of Three Engines with one Low NO_X Emissions Gas Turbine, Replacement of Three Engines with Electric Motors or a Gas Turbine, and Good Combustion Practices. The results of ADEQ's four-factor analysis for the engines are summarized in Table 9 of this document. Based on these results, ADEQ found that all LEC options were cost-effective for every engine based on average cost-effectiveness. However, ADEQ also found that the incremental cost effectiveness of requiring LEC–3 on RECIP–1 as compared to requiring LEC–2 ($11,120/ton) was ''cost-excessive.'' Therefore, while ADEQ determined that LEC–3 was necessary to make reasonable progress for RECIP–2 and RECIP–5, it selected a less stringent control, LEC–2, for RECIP–1. ADEQ also found that replacement of the three engines with a gas turbine would be cost-effective but did not adopt this option due to issues and uncertainties with this option, such as the need for operational flexibility to control pipeline flowrate changes and a potential increase in fuel usage and emissions during low flow conditions.[169]

TABLE 9—SUMMARY OF CONTROL OPTIONS FOR EPNG WILLIAMS

Process	Control	Emission reduction	Cost-effectiveness ($/ton)
TURBINE–1	Water Injection	201.54	$6,536
	Steam Injection	201.54	7,601
	Combustion Liner Upgrade and Low NO_X Burner Design	213.5	8,775
	SCR	219	8,051
RECIP–1	Air-Fuel Ratio Adjustment with High Energy Ignition	20.67	2,484
	LEC–1	76.46	4,058
	LEC–2	116.30	4,581
	LEC–3	131.45	5,334
	SCR	119.18	5,782
	Replacement with Electric Motors	140.21	20,880
RECIP–2	LEC–1	74.36	4,172
	LEC–2	127.42	4,181
	LEC–3	147.59	4,751
	SCR	135.37	5,553
	Replacement with Electric Motors	159.26	23,301
RECIP–5	LEC–1	87.51	3,645
	LEC–2	181.86	2,977
	LEC–3	217.72	3,302
	SCR	202.70	4,409
	Replacement with Electric Motors	238.47	27,011
RECIP–1, 2, & 5	Replacement of Three Engines with Low NO_X Emissions Gas Turbine	484.21	3,905

Source: 2022 Arizona Regional Haze Plan, Appendix C, Section C.3.7.

Freeport-McMoRan Morenci Complex is located in Greenlee County, Arizona and consists of three major operations: mining operations, including the drilling and blasting of ore in open-pit copper mines, three in-pit crushers and an ore conveying system, the Morenci Concentrator and Metcalf Concentrator operations for production of copper and molybdenum concentrates through conventional milling and froth flotation operations, and the Metcalf Mine-for-Leach (MFL) plant and five Solution Extraction and four Electrowinning facilities (SX/EW) operations for production of high quality copper cathodes through leaching and hydrometallurgy.[170] The facility was screened in with a Q/d value of 52 and the nearest Class I area is Gila Wilderness Area at 54 kilometers away.

ADEQ identified two processes that are subject to the four-factor analysis for Freeport-McMoRan Morenci: haul trucks and other vehicles travel on mine roads and loading ore into haul trucks. Using information supplied by Freeport-McMoRan, ADEQ conducted four-factor analyses for these two processes, the results of which are summarized in Table 10 of this document. Based on these results, ADEQ determined that the emissions controls Freeport is already implementing for the two processes, such as a speed limit of 35 miles per hour and application of water, reflect current best management practices for the mining industry, and that it is reasonable not to require additional controls during this planning period. Although ADEQ did not specify why it found that no other controls were reasonable, cost appears to have been the determining factor, as the cost effectiveness of all feasible controls

[169] Id. at 126–127.

[170] 2022 Arizona Regional Haze Plan, Chapter 8.3.3.7 and Appendix C, Section C3.9.

exceeded ADEQ's chosen threshold of $6,500/ton.

TABLE 10—SUMMARY OF CONTROL OPTIONS FOR FREEPORT-MCMORAN MORENCI

Process	Control	Emission reduction	Cost-effectiveness ($/ton)
Haul Trucks and Other Vehicles Traveling on Mine Roads.	Reduce the speed limit for haul trucks to 25 mph ..	427	$383,018
	Apply additional water to unpaved mine roads	890.8	10,949
	Increase freeboard in the haul trucks	Not quantifiable	N/A
Loading Ores into Haul Trucks	Apply additional water to ores	52.06	406,990
	Ceasing operations during high wind hours	0.06	14,625,548

Source: 2022 Arizona Regional Haze Plan, Appendix C, Section C.3.9.

Freeport-McMoRan Sierrita Complex is located in southern Pima County, Arizona and consists of three major operations: mining operations, including the drilling and blasting of ore in open-pit copper mines, the Sierrita concentrator operations for production of copper and molybdenum concentrates, and the run of mine (ROM) oxide-leaching plant and the Twin Buttes SX/EW operations for production of high quality copper cathodes.[171] The facility was screened in with a Q/d value of 21, and the nearest Class I area is Saguaro National Park at 42 kilometers away. ADEQ identified four processes that are subject to the four-factor analysis for the Freeport-McMoRan Sierrita complex: vehicle travel on unpaved roads, tailings, loading/unloading ore into haul trucks, and blasting operations. Using information supplied by Freeport-McMoRan, ADEQ conducted four-factor analyses for these four processes, the results of which are summarized in Table 11 of this document. Based on these results, ADEQ determined that the emissions controls Freeport-McMoRan is already implementing, such as a speed limit of 35 miles per hour and water application, reflect current best management practices for the mining industry, and that it is reasonable not to require additional controls during this planning period. Although ADEQ did not specify why it found that no other controls were reasonable, cost appears to have been the determining factor, as the cost effectiveness of all feasible controls exceeded ADEQ's chosen threshold of $6,500/ton.

TABLE 11—SUMMARY OF CONTROL OPTIONS FOR FREEPORT-MCMORAN SIERRITA

Process	Control	Emission reduction	Cost-effectiveness ($/ton)
Vehicle Travel on Unpaved Mine Roads	Reduce the speed limit from 34.5 mph to 25 mph ..	124	$233,539
	Apply additional water to unpaved roads (increasing the control efficiency from 90% to 95%).	224.7	12,021
	Increase freeboard in the haul trucks	Emissions reductions could not be quantified.	N/A
Loading Ores into Haul Trucks	Apply water to ores to increase the moisture content from 2% to 4.8%.	57.73	240,703
	Ceasing loading operations during high wind hours	0.66	8,081,366
Emissions from Tailings	No feasible controls	N/A	N/A
Blasting Operations	No feasible controls	N/A	N/A

Source: 2022 Arizona Regional Haze Plan, Appendix C, Section C.3.10.

Phoenix Cement Clarkdale Facility is a Portland cement plant and quarry near Clarkdale, Arizona that is owned by an enterprise division of the Salt River Pima-Maricopa Indian Community.[172] The facility was screened in with a Q/d value of 14, and the nearest Class I area is Sycamore Canyon Wilderness Area at 10 kilometers away. As shown in Table 3 of this document, ADEQ screened out the raw mill/kiln and coal milling emissions sources because they were required to install SNCR as part of the first implementation period of the Regional Haze Rule and were deemed effectively controlled. The remaining emissions sources subject to a four-factor analysis included: raw storage piles, coal/coke storage piles, gypsum storage piles, paved plant roads, quarry blasting, and material handling processes. Based on the results of these analyses, which are summarized in Table 12 of this document, ADEQ determined that no new controls were reasonable. Although ADEQ did not specify its reasoning, cost appears to have been the determining factor, as the cost effectiveness of all feasible controls exceeded ADEQ's cost-effectiveness threshold of $6,500/ton.

[171] 2022 Arizona Regional Haze Plan, Chapter 8.3.3.8 and Appendix C, Section C3.10.

[172] 2022 Arizona Regional Haze Plan, Chapter 8.3.3.9 and Appendix C, Section C3.11.

TABLE 12—SUMMARY OF CONTROL OPTIONS FOR PHOENIX CEMENT CLARKDALE

Process	Control	Emission reduction	Cost-effectiveness ($/ton)
Raw Storage Piles	Enclosure	28.31	$154,422
	Increase Moisture Content	Technically Infeasible	N/A
	Cover with Tarps	Technically Infeasible	N/A
Coal/Coke Storage Pile	Enclosure	10.94	228,410
	Increase Moisture Content	Technically Infeasible	N/A
Gypsum Storage Piles	Enclosure	6.64	44,441
	Increase Moisture Content	Technically Infeasible	N/A
	Cover with Tarps	Technically Infeasible	N/A
Paved Plant Roads	Berm Installation	Already Implemented	N/A
	Curbing/Paving or Shoulder Stabilization	Already Implemented	N/A
	Curbing with Gutters	Already Implemented	N/A
	Traffic Rerouting	Already Implemented	N/A
	Storm Water Drainage	Already Implemented	N/A
	Street Sweepers	Already Implemented	N/A
	Watering	1.10	77,438
Quarry Blasting	N/A	N/A	N/A
Material Handling Processes	Fabric Filters	Already Implemented	N/A

Source: 2022 Arizona Regional Haze Plan, Appendix C, Section C.3.11.

Tucson Electric Power (TEP) Company Irvington Generating Station (IGS) is located in Tuscon, Arizona and includes two fossil fuel-fired electric utility steam-generating units, designated as Units 3 and 4; two simple cycle combustion turbines; ten RICE; and various ancillary units used to produce electricity for consumers.[173] The facility is permitted by the Pima Department of Environmental Quality (PDEQ), and was screened in with a Q/d value of 28, with the nearest Class I area 16 kilometers away at Saguaro National Park. As shown in Table 3, ADEQ screened out IGS Unit 4 as effectively controlled based on the fact that it was subject to a ''better-than-BART'' alternative determination, and the simple cycle turbines were replaced with ten RICE engines, leaving only Unit 3 subject to a four-factor analysis.

On January 18, 2021, TEP submitted a permit application to PDEQ for the following voluntary NO_X emissions limits for Unit 3: 335 tons per 12-month rolling total, 753 tons per 36-month rolling total, and 1,285 cumulative tons for the remaining life of the unit. The unit must shut down permanently before the cumulative limit is exceeded. ADEQ updated the four-factor analysis for IGS to include these new emissions limits as the baseline emissions for control evaluation, as these limits will become enforceable upon finalization of the revised IGS permit and approval of ADEQ's regional haze reasonable progress determination for IGS by the EPA. Specifically, ADEQ analyzed a range of different scenarios under which Unit 3 could meet the emissions limits, using a remaining useful life of between 6 and 20 years, as shown in Table 13 of this document. Under each of these scenarios, the cost of all available control options (low NO_X burners (LNB), SCR, and SCR+LNB) exceeded ADEQ's cost threshold of $6,500/ton. Therefore, ADEQ determined that with the emissions reductions associated with the new Unit 3 emissions caps, no additional controls are necessary to make reasonable progress towards natural visibility at Class I areas during this implementation period. ADEQ also indicated that despite the expected emissions reductions at IGS Unit 3, ADEQ cannot guarantee emissions reductions for the single year 2028 long-term strategy (2028LTS) modeling scenario as compared to the baseline. However, the limits in place will ensure no degradation as compared to the baseline.[174] Therefore, ADEQ indicated that they are conservatively assuming no change in NO_X emissions in the 2028 RPG calculations.

TABLE 13—SUMMARY OF CONTROL OPTIONS FOR IGS UNIT 3 WITH LIFETIME CAP OF 1,285 TONS

Control	Remaining useful life (years)	Annual emissions with cap (tpy)	Emission reduction (tpy)	Cost-effectiveness ($/ton)
LNB	20	64.25	33.23	$10,355
	15	85.67	44.30	9,020
	10	128.50	66.45	7,729
	6	214.17	110.75	6,730
SCR	20	64.25	51.84	26,260
	15	85.67	69.12	23,231
	10	128.50	103.68	20,318
	6	214.17	172.80	18,091
SCR+LNB	20	64.25	58.05	29,253
	15	85.67	77.40	25,791
	10	128.50	116.09	22,482

[173] 2022 Arizona Regional Haze Plan, Chapter 8.3.3.10 and Appendix C, Section C3.12.

[174] 2022 Arizona Regional Haze Plan, Appendix B, Section B2.2.2.

TABLE 13—SUMMARY OF CONTROL OPTIONS FOR IGS UNIT 3 WITH LIFETIME CAP OF 1,285 TONS—Continued

Control	Remaining useful life (years)	Annual emissions with cap (tpy)	Emission reduction (tpy)	Cost-effectiveness ($/ton)
	6	214.17	193.49	19,938

Source: 2022 Arizona Regional Haze Plan Appendix C, Section C3.12.

TEP Springerville Generating Station (SGS) is located near Springerville, Arizona, and consists of four coal-fired electric generating units with a combined, nominal, net generating capacity of 1,620 megawatts.[175] Units 1 and 2 at SGS are owned and operated by TEP. Unit 3 is owned by Tri-State Generation and Transmission Association, Inc., and Unit 4 is owned by the Salt River Project Agricultural Improvement and Power District. All units are operated by TEP. The facility was screened in with a Q/d value of 339, and the nearest Class I area is Mount Baldy Wilderness Area at 50 kilometers away. Based on information from TEP, ADEQ completed four-factor analyses that considered emissions of PM_{10}, NO_X, and SO_2, and associated control technologies, the results of which are summarized in Table 14 of this document.

TABLE 14—SUMMARY OF CONTROL OPTIONS FOR SPRINGERVILLE GENERATING STATION

Process	Control	Pollutant	Technically feasible (Y/N)	Emissions reduction (tpy)	Cost effectiveness ($/ton)
Unit 1	Baghouse	PM_{10}	Y	Already Implemented	N/A
	Wet ESP	PM_{10}	Y	Not further considered	N/A.
	ESP	PM_{10}	Y	Not further considered	N/A.
	LNB and overfire air (OFA)	NO_X	Y	Already Implemented	N/A
	SNCR	NO_X	Y	289	8,079.
	SCR	NO_X	Y	1,375	9,194.
	Current Spray Dryer Absorber (SDA).	SO_2	N/A	Already Implemented	N/A.
	Upgraded SDA	SO_2	Y	1,060	883 (20 years), 828 (30 years).
	Dry Sorbent Injection (DSI)	SO_2	Y	699	11,976 (20 years), 11,544 (30 years).
	Circulating Dry Scrubber (CDS).	SO_2	Y	2,025	8,230 (20 years), 6,670 (30 years).
	Wet Flue Gas Desulfurization (FGD).	SO_2	Y	2,508	8,185 (20 years), 6,393 (30 years).
Unit 2	Baghouse	PM_{10}	Y	Already Implemented	N/A.
	Wet ESP	PM_{10}	Y	Not further considered	N/A.
	ESP	PM_{10}	Y	Not further considered	N/A.
	LNB and OFA	NO_X	Y	Already Implemented	N/A.
	SNCR	NO_X	Y	364	6,769.
	SCR	NO_X	Y	1,516	8,395.
	Current SDA	SO_2	N/A	Already Implemented	N/A.
	Upgraded SDA	SO_2	Y	1,062	908 (20 years),853 (30 years).
	DSI	SO_2	Y	678	12,843 (20 years), 12,399 (30 years).
	CDS	SO_2	Y	2,086	7,995 (20 years), 6,480 (30 years).
	Wet FGD	SO_2	Y	2,598	7,638 (20 years), 5,944 (30 years).
Unit 3	Baghouse	PM_{10}	Y	Already Implemented	N/A.
	Wet ESP	PM_{10}	Y	Not further considered	N/A.
	ESP	PM_{10}	Y	Not further considered	N/A.
	LNB, OFA and SCR	NO_X	Y	Already Implemented	N/A.
	Low sulfur coal and SDA	SO_2	N/A	Not further considered	N/A.
Unit 4	Baghouse	PM_{10}	Y	Already Implemented	N/A.
	Wet ESP	PM_{10}	Y	Not further considered	N/A.
	ESP	PM_{10}	Y	Not further considered	N/A.
	LNB, OFA and SCR	NO_X	Y	Already Implemented	N/A.
	Low sulfur coal and SDA	SO_2	N/A	Not further considered	N/A.

Source: 2022 Arizona Regional Haze Plan Appendix C, Section C3.13.

[175] 2022 Arizona Regional Haze Plan, Chapter 8.3.3.11 and Appendix C, Section C3.13.

For PM_{10}, ADEQ concluded that because Units 1–3 are already equipped with baghouses to control particulate matter emissions, further evaluation was not needed. However, ADEQ did not consider whether these measures were necessary to make reasonable progress and thus a part of their long-term strategy. For electrostatic precipitators (ESP) and wet ESP, ADEQ indicated that because ESP collection efficiency is comparable to or less than that of the current baghouses installed on the units, ADEQ determined that replacing the control device with an ESP, while technically feasible, should not be considered further.

For NO_X at Units 1 and 2, ADEQ appears to have rejected new controls based on costs being above ADEQ's $6,500/ton threshold. ADEQ concluded that TEP should continue to implement the existing NO_X controls but did not consider whether these measures were necessary to make reasonable progress and thus should be a part of their long-term strategy.

For NO_X at Units 3 and 4, ADEQ concluded that the existing controls of combustion controls (LNB+OFA) and SCR is the most effective control technology available for NO_X for coal fired EGUs, and thus, no further analysis for other control technologies was needed.

For SO_2 at Units 1 and 2, ADEQ evaluated control costs based on a remaining useful life of 20 and 30 years. For CDS and FGD at Units 1 and 2, ADEQ indicated that the average cost-effective values were near or exceeding ADEQ's cost-effectiveness threshold of $6,500/ton. ADEQ also calculated incremental costs for these measures that ranged from approximately $9,400 to over $13,500. ADEQ indicated that due to the high incremental costs and excessive capital cost of the controls, CDS and wet FGD were not reasonable. ADEQ also reported the results of visibility modeling performed by TEP and stated that, while it did not consider visibility impacts as a fifth factor, ''the small visibility benefits associated with the modeled SO_2 controls supports the determination that CDS and wet FGD control options are not necessary to make reasonable progress towards natural visibility at Class I areas during this implementation period.'' [176] Therefore, ADEQ concluded that it was reasonable to require TEP to upgrade the current SDA systems. However, instead of setting a throughput-based limit (*e.g.,* lb/MMBtu) corresponding to the upgraded SDA on each unit, ADEQ instead chose to set mass-based emissions caps that it determined to be ''equivalent'' to upgraded SDA. Specifically, ADEQ set a combined emissions limitation for Unit 1 and Unit 2 of 16.1 tons per day limit, on a 30-calendar-day rolling averaging period and 3,729 tons per year limit, on a 12-month rolling averaging period. ADEQ indicated that these caps would ''provide compliance flexibility yet still guarantee that each unit is well controlled to protect and improve the visibility in Class I areas.'' [177]

For SO_2 at Units 3 and 4, ADEQ indicated that these units were equipped with SDA systems subject to the 2012 Mercury Air Toxics Standards (MATS) rule. ADEQ reviewed the most recent 5 years (2016–2020) of the SO_2 emissions data for SGS. The SO_2 emissions rates for Unit 3 and Unit 4 ranged from 0.069 to 0.090 lb/MMBtu and from 0.076 to 0.10 lb/MMBtu on an annual basis, respectively. ADEQ indicated that this demonstrates that Unit 3 and Unit 4 have continuously complied with the applicable MATS rule SO_2 emission standard of 0.20 lb/MMBtu. ADEQ therefore determined that no new controls are reasonable. ADEQ did not address whether or not the existing measures were necessary to make reasonable progress and thus should be a part of its long-term strategy.

For each new control determined to be reasonable, ADEQ submitted revised permit conditions for EPA approval into the Arizona portion of the SIP. Table 20 of this document provides a summary of controls and permit conditions that ADEQ submitted for EPA approval.

b. Nonpoint Sources

i. Source Selection

ADEQ also determined that it was appropriate to examine nonpoint sources (also known as ''area sources'') that emit visibility impairing pollutants, based on feedback from stakeholders to consider sources not previously controlled in the last round of planning. ADEQ used the following steps to select area sources for analysis:

1. Gather 2014 EPA NEIv2 county-level nonpoint datasets for the State of Arizona.

2. Isolate source classification code (SCC) annual emissions (tpy) for PM_{10} primary, nitrogen oxide, and sulfur dioxide.

3. Remove PM_{10} primary emissions from consideration for those counties that are not located within 50 km of a Class I area since PM_{10} does not generally experience high transport distances.

4. Sum the remaining SCC-specific PM_{10} primary, nitrogen oxide, and sulfur dioxide annual emissions to calculate ''Q.''

5. Sort all SCCs from highest to lowest ''Q.''

6. Determine the ''Q''-threshold which achieved inclusion of the SCCs with the largest ''Q's'' until >80 percent of total ''Q'' emissions across all SCCs are accounted for (*i.e.,* ''Q'' >13,500 tpy includes 6 sectors which account for 81.6 percent of the total statewide).

7. Isolate those sources with a ''Q'' value greater than 13,500 tpy.

Following this process, ADEQ identified six nonpoint source sectors, as shown in Table 15 of this document. ADEQ removed locomotive and biogenic sectors from consideration, due to the majority of emissions from these sectors originating from sources which ADEQ is generally unable to control.

TABLE 15—SUMMARY OF SELECTED NON-POINT SOURCE CATEGORIES

SCC	NO_X	PM_{10}	SO_2	Q	Sector
2285002006	18,045	541	11	18,597	Mobile—Locomotives.
2294000000	0	14,501	0	14,501	Dust—Paved Road Dust.
2296000000	0	107,924	0	107,924	Dust—Unpaved Road Dust.
2311020000	0	15,536	0	15,536	Dust—Industrial/Commercial/Institutional Construction Dust.
2325000000	0	44,753	0	44,753	Industrial Processes—Mining.
2701220000	13,912	0	0	13,912	Biogenics—Vegetation and Soil.

[176] 2022 Arizona Regional Haze Plan, Appendix C, p. 233.

[177] Id. at 239.

ii. Overall Approach to Four-Factor Analyses

Because the selected non-point source categories were all PM_{10} sources, ADEQ focused on evaluating PM_{10} controls on nonpoint sources in those Class I areas which monitors exhibited coarse mass impacts on the most impaired days of greater than 10 percent of the total anthropogenic extinction during the 2013–2017 period.[178] These Class I areas were: Chiricahua National Monument and Wilderness Area, Galiuro Wilderness Area, Saguaro National Park, and Superstition Wilderness Area. ADEQ indicated that because PM_{10} is generally not transported long distances, it limited its evaluation of emissions reduction strategies for paved and unpaved roads, mining and quarrying, and non-residential construction on nonpoint sources within 50 km of these Class I areas.

ADEQ used a cost threshold of $5,000/ton for cost effective measures for non-point sources.[179] ADEQ stated that it had selected a lower threshold for nonpoint sources compared to point sources, because (1) this threshold was used by Colorado in its first planning period action for nonpoint sources; (2) ADEQ considers the economic burden of control costs higher for nonpoint sources than point sources because these are generally smaller sources and less able to afford expensive control requirements; and (3) ADEQ ''is able to achieve reasonable progress at Arizona Class I areas with the nonpoint control measures identified with a $5,000/ton threshold.'' [180]

iii. Summary of Four-Factor Analyses

ADEQ indicated that Industrial/Commercial/Institutional (ICI) construction dust was based on general construction activities, earthmoving, material handling, transport, and storage, activity on disturbed surfaces, and emissions from uncovered haul trucks. ADEQ reviewed available controls and considered stakeholder input. ADEQ further relied on cost estimates derived from industry representatives such as the Associated General Contractors of Arizona (AGCA), vendor quotes, and estimates from Pinal County and Maricopa County control measure analyses. The results of ADEQ's four-factor analysis for this source category are summarized in Table 16 of this document. The following control options were determined to be reasonable with cost effectiveness values below ADEQ's cost threshold of $5,000/ton: paving unpaved parking and staging areas, applying acrylic polymer to unpaved parking and staging areas, applying gravel to unpaved parking and staging areas, and limiting vehicle speed at work sites to 15 mph with signage.

TABLE 16—SUMMARY OF CONTROL OPTIONS FOR ICI CONSTRUCTION

Control measure	Technically feasible?	Cost-effectiveness ($/ton)
Require dust control plans [permit] for construction or land clearing projects	Yes	$5,076.
Require haul trucks to be covered/Control freeboard and spillage from haul vehicles. [material transport].	Yes	N/A.
Alter load-in load-out procedures (*e.g.,* load on downwind side, watering, empty loader slowly, keep bucket close to truck while dumping). [material handling].	Yes	$25,040–$25,304.
Utilize trackout control device, gravel pad, or other means to stabilize access points where unpaved traffic surfaces adjoin paved roads.	Yes	$24,875 for gravel pad—$147,248 for pipe grid.
Provide for rapid clean-up of mud/dirt track out, material spills, on paved roads (Street Sweeping).	Yes	$5,164.
Apply water to disturbed surfaces and dust generating operations (pre-watering, operational).	Yes	$7,959–$8,770 for unpaved traffic areas, $1,194,223–$1,375,027 for open areas.
Apply chemical stabilizers/dust suppressants to unpaved parking and staging areas	Yes	$3,528 for acrylic polymer, $2,139 for gravel, $4,820 for paving.
Limit, restrict or reroute motor vehicle access to work site. [Reduce vehicle disturbance of unpaved surfaces (access/haul roads, staging areas, parking areas/lots, etc.).].	Yes	$16,635.
Limit vehicle speed at work site	Yes	$2,526–$4,717.

Source: 2022 Arizona Regional Haze Plan, Appendix C, Section C.4.3.

For nonpoint mining and quarrying, ADEQ evaluated three activities: earthmoving, including overburden removal and replacement; drilling and blasting; and material handling, including loading and unloading. Relying on cost estimates derived from industry representatives such as the Arizona Rock Products Association and vendor quotes, ADEQ conducted a four-factor analysis of available controls, the results of which are summarized in Table 17 of this document. Because the controls were either not technically feasible or the cost-effectiveness values far exceeded ADEQ's $5,000/ton cost threshold ($18,308/ton for additional watering and purchasing an additional water truck being the lowest cost effectiveness value), ADEQ determined it is not reasonable to require additional nonpoint mining and quarrying controls during this planning period.

[178] 2022 Arizona Regional Haze Plan, Chapter 8.3.4.

[179] Id. at Appendix C, p. 242.

[180] Id. at footnote 207.

TABLE 17—SUMMARY OF CONTROL OPTIONS FOR MINING AND QUARRYING

Activity	Control measure	Technically feasible?	Cost-effectiveness ($/ton)
Earthmoving & Excavating.	Additional Watering—Purchase Additional Water Truck	Yes	$18,308
	Additional Watering—Rent Additional Water Truck	Yes	24,496
	Implement Additional Watering with Available Trucks	N/A	
	Water in Operational Areas—Other Water Distribution Systems (besides trucks).	N/A	
	Applying dust suppressants (other than water)	No	
	Avoid clearing during wind gusts	N/A	
Material Handling—Bulk Loading.	Partial Closure with Hanging Curtains and the use of Water Spraying at Primary Dump.	Yes	101,309
	Regularly Apply Water Through Wetting of Material at the Pit	Yes	204,319
	Regularly Apply Water Through Water Sprays	N/A	
	Reduce Falling Distance	N/A	
	Use of Loading Spouts	No	
	Use of Loading Spout Equipped with Dust Control System	No	
	Use of Cascading Loading Spouts	No	
	Use of Cascading Loading Spouts Equipped with Wind Shrouds and Discharge Skirts.	No	
	Use of Conical Loading Hoppers (Dust Suppression Hopper)	No	
	Use of Dry Fog Dust Suppression System at Loading/Unloading Points	No	
Material Handling—Stockpiles.	Wetting Product with Plain Water and/or Wetting Agents as it is Loaded/Unloaded Onto Stockpile Through Use Of New Water Truck.	Yes	204,319
	Continuous Watering with New Water Truck	N/A	
	Continuous Watering with Existing Water Truck	N/A	
	Wetting Product with Plain Water and/or Wetting Agents as It Is Loaded/Unloaded onto Stockpile Through Use of Spray Bars.	N/A	
	Dry Fog Dust Suppression System during Material Loading/Unloading onto Pile.	N/A	
	Reduce Falling Distance	N/A	
Blasting	Utilize Good Design (*i.e.,* Drilling Fewer Holes)	N/A	
	Temporarily Cease Operations Until Conditions Improve	N/A	
	Employ BMPs	N/A	
	Wet Down Blasting Area	No	
	Water Cartridges (Underground Blasting)	No	
	Fogger Spray	No	
	Air Filtration System (Underground Blasting)	No	
	Minimize Area to Be Blasted at Any One Time	N/A	

Source: 2022 Arizona Regional Haze Plan, Appendix C, Section C.4.3.

For paved road dust, ADEQ indicated that emissions estimates were based on re-entrained road dust emissions from paved road surfaces, re-entrained road dust emissions from unpaved shoulders of paved roads, re-entrained road dust emissions from medians of paved roads, re-entrained road dust emissions and track out from access points where unpaved traffic surfaces adjoin paved roads, and re-entrained road dust emissions from material spills. ADEQ conducted a four-factor analysis of available controls, the results of which are summarized in Table 18 of this document. Based on these results, ADEQ determined the following two control measures to be reasonable: paving access points where unpaved traffic surfaces adjoin paved roads and providing for traffic rerouting or rapid cleanup of temporary (and not readily preventable) sources of dust on paved roads (trackout, spills, water erosion, runoff, and skid control sand). Therefore, ADEQ indicated that these new measures were considered to be a part of Arizona's long-term strategy for the second planning period.[181] ADEQ rejected other evaluated controls because they exceeded ADEQ's $5,000/ton threshold.

TABLE 18—SUMMARY OF CONTROL OPTIONS FOR PAVED ROAD DUST

Control measure	Technically feasible?	Cost-effectiveness ($/ton)
Pave, cover with aggregate, or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads. (Aggregate Coverage).	Yes	$5,058
Pave, cover with aggregate, or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads. (Paving).	Yes	2,351
Pave, cover with aggregate, or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads. (Chemical Stabilization).	Yes	221
Require haul trucks to be covered	Yes	N/A
Provide for traffic rerouting or rapid cleanup of temporary (and not readily preventable) sources of dust on paved roads (trackout, spills, water erosion, runoff, and skid control sand).	Yes	3,614

[181] 2022 Arizona Regional Haze Plan, p. 96.

TABLE 18—SUMMARY OF CONTROL OPTIONS FOR PAVED ROAD DUST—Continued

Control measure	Technically feasible?	Cost-effectiveness ($/ton)
Reduced usage of skid control sand or salt and improved material specification (e.g., require use of coarse, non-friable material during snow and ice season).	N/A	N/A
Require curbing and pave or stabilize shoulders of paved roads. (Asphalt Concrete)	Yes	9,434
Require curbing and pave or stabilize shoulders of paved roads. (Chemical Stabilization)	Yes	14,144
Stabilize medians of paved roads. (Asphalt Concrete)	Yes	9,434
Stabilize medians of paved roads. (Chemical Stabilization)	Yes	14,144
Ensure stabilization during work on unpaved shoulders of paved roads (e.g., weed abatement/vegetation management).	Yes	31,877
Provide for storm water drainage to prevent water erosion onto paved roads	No	N/A
Employ PM_{10} certified street sweepers on principal arterials.	Yes	5,164
Reduce speed limits	No	N/A

Source: 2022 Arizona Regional Haze Plan, Appendix C, Section C.4.4.

For unpaved road dust, ADEQ evaluated re-entrained road dust emissions from unpaved roads as part of its analysis. ADEQ conducted a four-factor analysis of available controls, the results of which are summarized in Table 19 of this document. Based on these results, ADEQ determined that it is not reasonable to require additional unpaved road dust controls during this planning period. Although ADEQ did not specify why no other controls were reasonable, cost appears to have been the determining factor, as the cost effectiveness of all feasible controls exceeded ADEQ's chosen cost-effectiveness threshold of $5,000/ton.

TABLE 19—SUMMARY OF CONTROL OPTIONS FOR UNPAVED ROAD DUST

Control measure	Technically feasible?	Cost-effectiveness ($/ton)
Develop traffic reduction plans for unpaved roads. Use of speed bumps, low speed limits, etc., to encourage use of other (paved) roads.	No	N/A
Pave unpaved roads (chip-seal) 800 average daily trips (ADT)	Yes	$19,545
Pave unpaved roads (asphalt) 800 ADT	Yes	26,227
Pave unpaved roads (concrete) 800 ADT	Yes	33,571
Chemically stabilize unpaved roads (dust suppressants other than water). 800 ADT	Yes	47,528
Apply and maintain surface gravel. 800 ADT	Yes	223,420
Prohibit [limit] construction of new unpaved roads chip seal	Yes	19,545
Prohibit [limit] construction of new unpaved roads asphalt	Yes	26,227
Prohibit [limit] construction of new unpaved roads concrete	Yes	33,571

Source: 2022 Arizona Regional Haze Plan, Appendix C, Section C.4.5.

In the 2023 Arizona Regional Haze Rules Supplement, ADEQ submitted ''Nonpoint Rules to Supplement Arizona's 2022 Regional Haze SIP.'' ADEQ added three new rules to Arizona Administrative Code (A.A.C.) Title 18, Chapter 2, Article 13 to incorporate measures intended to reduce emissions of fugitive dust from nonpoint sources in and around the following Class I areas: Chiricahua National Monument and Wilderness Area, Galiuro Wilderness Area, Saguaro National Park, and Superstition Wilderness Area. The rules limit emissions from certain dust generating activities at nonresidential construction sites and from paved roads to implement ADEQ's control determinations for the nonpoint sources. The three rules submitted are: A.A.C. R18–2–D1301 (Definitions for R18–2–D1302 and R18–2–D1303), A.A.C. R18–2–D1302 (Fugitive Dust Emissions from Nonresidential Construction), and A.A.C. R18–2–D1303 (Fugitive Dust Emissions from Paved Roads). The EPA will act on these three rules in a separate rulemaking.

Arizona is not using the anticipated emissions reductions from the nonpoint source emissions reduction measures in the state's 2028 RPG calculations and in the estimate of emissions reductions from their long-term strategy. ADEQ indicated that while the new emissions reduction measures are reasonable on a per event/location basis, the agency does not currently have enough information to quantify the total number of track out events and access points to which these controls would be applicable. ADEQ indicated that it intends to gather additional information through the implementation of these measures and take emissions reduction credits in future Regional Haze planning periods.

c. Summary of Control Determinations

Arizona's control measure determinations, including the specific permit conditions and rules submitted to the EPA for approval into the Arizona SIP by incorporation by reference, are summarized in Table 20 of this proposed rulemaking document. Some emissions controls are included in the modeling of 2028 RPGs of Arizona's long-term strategy, and ADEQ estimated the emissions reductions to be: 2,122 tpy SO_2 for SGS 1 & 2, and 499 tpy NO_X for Williams Compressor Station. ADEQ indicated that the State's calculation of 2028 RPGs does not include anticipated emissions reductions from IGS Unit 3 nor the nonpoint sources.

TABLE 20—ARIZONA REGIONAL HAZE NEW CONTROL MEASURE DETERMINATIONS

Source	Unit	Control	Pollutant	Compliance deadline	Permit conditions or rules submitted for approval into the Arizona SIP
Springerville Generating Station.	Units 1 and 2	Combined annual SO_2 cap for Units 1 & 2 of 3,729 tpy.	SO_2	One year after SIP approval.	Arizona Department of Environmental Quality Significant Permit Revision No. 91093 to Operating Permit No. 65614 Cover Page and Attachment "E" Regional Haze Provisions: Tucson Electric Power Plant—Springerville Generating Station.
	Units 1 and 2	Combined 16.1 tons/day SO_2 30-day rolling average.	SO_2	One year after SIP approval.	
Williams Compressor Station.	RECIP–1	Low Emission Combustion (LEC–2) controls.	NO_X	18 months after SIP approval.	Arizona Department of Environmental Quality Significant Permit Revision No. 93062 to Operating Permit No. 77575 Cover Page and Attachment "D": Regional Haze Provisions.
	RECIP–2	Low Emission Combustion (LEC–3) controls.	NO_X	18 months after SIP approval.	
	RECIP–5	LEC–3 controls	NO_X	18 months after SIP approval.	
Irvington Generating Station.	Unit 3	Useful life NO_X cap of 1,285 tons	NO_X	One year after SIP approval.	Pima Department of Environmental Quality Air Quality Permit No. 1052 Cover Page and Section VI. Unit EGU–I3 Regional Haze State Implementation Plan.
		Rolling 3-year average NO_X cap of 251 tpy.	NO_X	One year after SIP approval.	
		Single year annual NO_X cap of 392 tpy	NO_X	One year after SIP approval.	
Industrial, Commercial, and Institutional Construction.	N/A	(1) Paving unpaved parking and staging areas, (2) applying acrylic polymer to unpaved parking and staging areas, (3) applying gravel to unpaved parking and staging areas, and (4) limiting vehicle speed at work site to 15 mph with signage.	PM_{10}	January 1, 2025	A.A.C. R18–2–D1301 (Definitions for R18–2–D1302 and R18–2–D1303) and A.A.C. R18–2–D1302 (Fugitive Dust Emissions from Nonresidential Construction).
Paved Roads	N/A	(1) Paving access points where unpaved traffic surfaces adjoin paved roads; (2) Providing for traffic rerouting or rapid cleanup of temporary (and not readily preventable) sources of dust on paved roads (trackout, spills, water erosion, runoff, and skid control sand).	PM_{10}	September 10, 2023	A.A.C. R18–2–D1301 (Definitions for R18–2–D1302 and R18–2–D1303) and A.A.C. R18–2–D1303 (Fugitive Dust Emissions from Paved Roads).

Source: 2022 Arizona Regional Haze Plan and 2023 Arizona Regional Haze Rules Supplement.
Note: ADEQ is not claiming emissions reduction credit in calculating RPGs for IGS or for the nonpoint sources. ADEQ stated that it intends to claim emissions reduction credit stemming from the enactment of the nonpoint emissions reduction measures in future Regional Haze planning periods.

d. Additional Long-Term Strategy Requirements

Arizona indicates in its submittal that the State consulted with other WRAP states in development of this SIP.[182] The majority of state consultation in the development of the regional haze SIPs was conducted through the WRAP's Regional Haze Planning group, as Arizona participated in regular calls with WRAP states.

Arizona also had individual consultations with California, Utah, Nevada, Colorado, and New Mexico regarding source screening, approaches to four factor analyses, and general SIP preparation. ADEQ indicated that these states were selected by Arizona for consultation in anticipation that they may contribute to visibility impairment in the State's mandatory Class I Federal areas given their proximity to the Arizona border. No other states approached Arizona for regional haze consultation during this planning period. Pursuant to 40 CFR 51.308(f)(2)(ii)(A), ADEQ and the above agencies did not agree on any measures during their state-to-state consultations. Pursuant to 40 CFR 51.308(f)(2)(ii)(B), the agencies confirmed that they shared the measures they have identified as being necessary to make reasonable progress in a mandatory Class I Federal area with ADEQ, and that the Agencies have not requested for ADEQ to consider any measures necessary to make reasonable progress in any mandatory Class I Federal areas. Pursuant to 40 CFR 51.308(f)(2)(ii)(C), ADEQ indicates that there are currently no disagreements between ADEQ and other state agencies on Arizona's emissions reduction measures. ADEQ also documented outreach efforts with the New Mexico Environmental Department but indicated that no feedback was received from New Mexico.

In its submittal, Arizona also commits to continue consultation with California, Nevada, Utah, Colorado, New Mexico, and any other state which may reasonably be anticipated to cause or contribute to visibility impairment in Class I Federal areas located within Arizona.[183] As part of this commitment, Arizona will also continue consultation with any state for which Arizona's emissions may reasonably be anticipated to cause or contribute to visibility impairment in those states' Class I areas. With regard to the established or updated goal for reasonable progress, should disagreement arise between another state or group of states, Arizona indicated that it will describe the actions taken to resolve the disagreement in future regional haze SIP revision. With regard to assessing or updating long-term strategies, Arizona also committed to coordinate its emissions management strategies with affected states and to continue to include in its future regional haze SIP revisions all measures agreed to during state-to-state consultations or a regional

[182] 2022 Arizona Regional Haze Plan, Chapters 2.3 and 2.6.

[183] 2022 Arizona Regional Haze Plan, Chapter 2.6.3.

planning process, or measures that will provide equivalent visibility improvement.[184]

2. The EPA's Evaluation of Arizona's Long-Term Strategy

The EPA is proposing to find that, due to flaws in some of its analyses and conclusions, Arizona has not fully satisfied the long-term strategy requirements of section 51.308(f)(2). In the following sections we summarize the most significant shortcomings in Arizona's source selection process, four-factor analyses, and control determinations, which form the basis for this proposed finding.

a. Source Selection

The EPA finds that many aspects of ADEQ's source selection process, such as its focus on sulfate, nitrate, and coarse mass and its use of a Q/d value of 10 for point sources, were reasonable and adequately explained and documented. However, ADEQ did not provide an adequate justification for screening out certain sources and units from conducting a four-factor analysis on the basis that they are ''effectively controlled'' as part of its source selection process.[185] Specifically, in some cases, ADEQ did not identify the controls for each pollutant at each unit or process, the associated limits, or where the controls/limits currently exist in the Arizona SIP. In other cases, ADEQ listed the controls, but did not clearly explain why it is reasonable to assume, without conducting a four-factor analysis, that no additional controls would be reasonable.[186] For example, ADEQ cites better-than-BART determinations from the first planning period for Apache Generating Station Units 2 and 3 and IGS Unit 4 as a rationale that it is not necessary to conduct a four factor analysis.[187] However, despite ADEQ providing some of the limits associated with these determinations, the mere fact that a unit installed BART (or better-than-BART) controls in the first planning period is not a sufficient justification on its own that no new controls are necessary for reasonable progress in the second planning period.[188] Indeed, the evaluation and control of BART sources under the reasonable progress requirements in the second planning period may be necessary to achieve the national goal of the prevention of any future, and the remedying of any existing, manmade impairment of visibility in Class I areas.[189] Accordingly, ADEQ should have identified where the existing limits are found in the SIP or FIP and clearly explained why no additional controls would likely be reasonable under a four-factor reasonable progress analysis for the second planning period. Therefore, ADEQ also did not adequately explain whether these facilities' existing controls were necessary for reasonable progress and therefore a part of the state's long-term strategy.[190]

b. Four-Factor Analyses

The EPA finds that many of ADEQ's four-factor analyses included flaws in the cost analyses, which in some instances, significantly affected the resulting cost effectiveness values that ADEQ used to determine what measures are necessary to make reasonable progress. These flaws are detailed in the following sections.

i. Controlled Emission Rates

The emission rates used in some of Arizona's four-factor analyses did not appropriately reflect the emissions rate achievable with the relevant controls. For example, in the NO_X four-factor analysis for SGS Units 1 and 2, ADEQ determined that the emission rates of 0.060 lb/MMBtu and 0.15 lb/MMBtu provide a reasonable estimate of the achievable rates for SCR and SNCR, respectively. ADEQ noted considerations related to more frequent startup/shutdown cycles occurrences at SGS and higher baseline NO_X emissions compared to other similar units, as reasons for using these emissions rates.

SCR has been demonstrated to achieve 0.05 lb/MMBtu (or up to 90 percent reduction) a retrofit basis,[191] and achieving this emission rate at Units 1 and 2 instead of 0.06 lb/MMBtu would result in approximately 150 tpy of additional NO_X reductions per unit (based upon 2028 emissions provided in Table 5 of this document). We acknowledge that the startup/shutdown considerations noted by ADEQ are relevant, particularly for establishing emissions limits on a short-term averaging period (such as 24-hour average or rolling 30-day), where startup and shutdown emissions can represent a larger portion of a unit total emission rate. However, ADEQ has not demonstrated why these startup/shutdown considerations would be significant enough at SGS Units 1 and 2 on an annual average basis, which is the averaging period used to calculate ton/year emissions reductions for cost effectiveness calculations, to preclude them from achieving this emissions reduction level with SCR. Similarly, while these factors could also be relevant to SNCR performance, it has not been demonstrated why they would cause SNCR on these units to achieve as little as a 15 percent reduction. Use of lower emissions rates that more accurately reflect the rates achievable with the associated control technologies on an annual basis would have resulted in greater emissions reductions and thus lower cost per ton values associated with these control options. The State's failure to analyze such lower limits in their four-factor analyses, combined with other flaws discussed in Section IV.E.2.b.ii of this document, render the State's analyses insufficient to support reasoned control determinations.

ii. Deviations From Control Cost Manual

When developing a long-term strategy for making reasonable progress, states must consider the four statutory factors.[192] In considering these factors, including the costs of compliance and the remaining useful life of affected sources, it is important to use consistent methods in order to allow for comparisons between different sources within a state, and cost analyses in other states. Therefore, as part of any four-factor analysis, the EPA has recommended that costs of compliance should be calculated consistent with the

[184] Id.

[185] See 40 CFR 51.308(f)(2)(i) (''. . . The State must include in its implementation plan a description of the criteria is 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'').

[186] Id., see also 2021 Clarifications Memo, p. 5, 2019 Guidance, p. 23.

[187] 2022 Arizona Regional Haze Plan, pp. 109 and 114.

[188] See 40 CFR 51.308(e)(5) (''After a State has met the requirements for BART or implemented an emissions trading program or other alternative measure that achieves more reasonable progress than the installation and operation of BART, BART-eligible sources will be subject to the requirements of [40 CFR 51.308(d) and (f)], as applicable, in the same manner as other sources.'').

[189] See 2019 Guidance, p. 25 (''[S]tates may not categorically exclude all BART-eligible sources, or all sources that installed BART controls, as candidates for analysis of control measures.'').

[190] 40 CFR 51.308(f)(2) (''Each State must submit a long-term strategy that addresses regional haze visibility impairment . . . the long-term strategy must include the enforceable emissions limitations . . . that are necessary to make reasonable progress.''); see also 2021 Clarifications Memo, pp. 8–9.

[191] Ravi K. Srivastava, Robert E. Hall, Sikander Khan, Kevin Culligan & Bruce W. Lani (2005) Nitrogen Oxides Emission Control Options for Coal-Fired Electric Utility Boilers, Journal of the Air & Waste Management Association, 55:9, 1367–1388, DOI: 10.1080/10473289.2005.10464736. Available at: *https://www.tandfonline.com/action/showCitFormats?doi=10.1080/10473289.2005.10464736.*

[192] See CAA 169A(b)(2)(B), CAA 169A(g)(7), and 40 CFR 51.308(f)(2)(i).

methods set forth in the EPA's Control Cost Manual.[193] As we have previously noted in relation to BART determinations, ''[w]ithout an 'apples-to-apples' comparison of costs, it is impossible to draw rational conclusions about the reasonableness of the costs of compliance for particular control options. Use of the [Control Cost Manual] methodology is intended to allow a fair comparison of pollution control costs between similar applications for regulatory purposes.'' [194] The same principle applies to the evaluation of the cost of compliance as part of a four-factor analysis.[195] Therefore, where a state deviates from these methods, it should explain how its alternative approach is appropriate and consistent with the regulations and the statutory requirement to make reasonable progress towards the national goal. Arizona did not do so.

One important element of a cost-effectiveness analysis is the remaining useful life of the equipment. The equipment life used to calculate costs for each control technology option, unless constrained by an enforceable retirement date for the source contained in the SIP, should be consistent with that found in the respective chapter of the Control Cost Manual. Any deviations from the Control Cost Manual should be documented and an appropriate rationale provided.[196] ADEQ did not provide appropriate documentation of the remaining useful life (*i.e.,* the control equipment life) used to calculate the costs of controls for some of the facilities it analyzed. For example, in its analysis for EPNG Williams TURBINE–1, ADEQ assumed a useful life of 25 years for NO_X controls, including for SCR, based on the expected life of the turbine. However, an enforceable shutdown date is not associated with the turbine, and in situations where an enforceable shutdown date does not exist, the remaining useful life of a control under consideration should be the full period of the useful life of that control as recommended by the EPA's Control Cost Manual.[197] Similarly, in its analysis for the compressor engines at EPNG Williams, ADEQ amortized SCR and other control options over a 20-year period. This assumption is not supported with any additional information in either ADEQ's TSD or in the original source document from EPNG.

Another important element of the cost effectiveness analysis is the interest rate used. In its cost calculations for EPNG Willcox and Williams, ADEQ used an interest rate of 8.53 percent (for most control options such as SCR) and 9 percent for water/steam injection. These values were well above the bank prime interest rates at the time these analyses were developed, and above the source-specific interest rates used in other facilities' analyses. While the TSD notes that 8.53 percent is based upon site specific information provided by EPNG, that information is not in the TSD or the original source document from EPNG. Additional documentation is needed to support the use of the 8.53 percent and 9 percent interest rates in cost calculations.[198]

In the absence of adequate documentation supporting deviations from the Control Cost Manual, we find that ADEQ's cost analyses are not sufficiently reliable to support its control determinations.

c. Control Determinations

In addition to the issues with source selection and four-factor analyses noted in the previous sections, we find that ADEQ did not reasonably weigh the statutory factors in reaching its control determinations for certain sources, as detailed in the following paragraphs. In addition, where ADEQ determined that no additional measures were necessary to make reasonable progress for a particular source, it did not determine whether the source's existing measures are necessary to make reasonable progress and therefore, whether they should be a part of its long-term strategy.

i. Application of Cost Thresholds

As described in Sections IV.E.1.a.ii and IV.E.1.b of this document, ADEQ set an average cost-effectiveness threshold of $6,500/ton for point sources. Generally, ADEQ did not provide an adequate justification for how this threshold resulted in a reasonable set of control measures.[199] In a few instances, ADEQ rejected controls for which the average cost effectiveness was below this chosen threshold based on incremental cost effectiveness (*i.e.,* the cost-effectiveness of a more expensive control compared to a less expensive control). Specifically, ADEQ rejected wet FGD on SGS 1 and 2, and LEC–3 on Williams RECIP–1, on the grounds that the incremental costs of these controls, relative to less stringent controls, were excessive. Although states may choose to consider incremental costs in a reasonable manner,[200] we find it was unreasonable for ADEQ to do so only for specific units and only as a reason to reject controls that otherwise met the state's chosen cost-effectiveness threshold. In addition, while ADEQ conducted an analysis of numerous first planning period control determinations to set its threshold of $6,500/ton, it considered only a single BART determination to determine that incremental costs of $11,120/ton (for LEC–3 on Williams Units RECIP–1), and $9,400–13,500/ton (for wet WGD on SGS 1 and 2) were excessive.[201] We find that the use of incremental cost in this way, without adequate support or consistent application, is not reasonable.

In addition, we note that several controls were rejected by ADEQ on the grounds that they were marginally above the chosen cost threshold ($6,500/ton for point sources and $5,000/ton for nonpoint sources). For example, the cost effectiveness for water injection at Williams TURBINE–1 was close to ADEQ's cost effectiveness threshold of $6,500/ton, with a difference of $36. The cost effectiveness threshold for SNCR on SGS Unit 2 was also marginally above the $6,500/ton threshold, with a $269 difference. Additionally, a few nonpoint source controls were also marginally above ADEQ's $5,000/ton threshold but rejected based on cost, such as a dust control plan ($76 difference) and sweeping ($164 difference) for ICI construction and sweeping ($164 difference) for paved road dust. Given the flaws in the cost-effectiveness analyses noted in Section IV.E.2.b, which may have resulted in inflated cost-effectiveness values, we

[193] 2019 Guidance, p. 31.

[194] 77 FR 72512, 72518. See also *Arizona ex rel. Darwin* v. *EPA,* 815 F.3d 519, 540 (9th Cir. 2016); (upholding this interpretation as reasonable).

[195] 2019 Guidance, p. 31.

[196] Id. at pp. 33–34. See also 40 CFR 51.308(f)(2)(iii) (''The State must 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'').

[197] Id.

[198] Control Cost Manual, Chapter 2, p. 15. See also 40 CFR 51.308(f)(2)(iii) (''The State must 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'').

[199] ''As the Ninth Circuit explained in *NPCA* v. *EPA,* 788 F.3d at 1142, the Regional Haze Rule does not prevent states from implementing 'bright line' rules, such as thresholds, when considering costs and visibility benefits. However, the state must explain the basis for any thresholds or other rules (see 40 CFR 51.308(f)(2)).'' 2019 Guidance, p. 38.

[200] Id. p. 40.

[201] 2022 Arizona Regional Haze Plan, Appendix C, pp. 121 and 229.

recommend that ADEQ revisit these control determinations in particular.

ii. Use of Visibility as a Factor To Avoid Controls

The EPA has explained that states choosing to consider visibility benefits as an optional additional factor should not use visibility to summarily dismiss cost-effective potential controls, and that a state that has identified cost-effective controls but rejects most or all of them based on visibility benefits is likely to be improperly using visibility as an additional factor.[202] Arizona has not considered visibility benefits for most of its sources, but appears to have considered visibility modeling submitted by TEP for SGS. In the SGS analysis, ADEQ stated that ''[a]ny controls having an average cost-effectiveness of 6,500 $/ton are cost excessive unless there [is] compelling evidence that the controls would result in a significant visibility improvement at Class I areas.'' [203] In addition, ADEQ pointed to ''small visibility benefits'' associated with the modeled NO_X and SO_2 controls to support its determinations that no new NO_X controls and a less stringent SO_2 control (SDA upgrades) are necessary to make reasonable progress with respect to SGS Units 1 and 2.[204] However, ADEQ has not defined what it considers to be a significant visibility improvement or how its analysis comports with the regional haze regulations.

Whether a particular visibility impact is meaningful should be assessed in context and cannot be used to undermine the four statutory factors that are to be analyzed in order to determine what measures are necessary for reasonable progress.[205] As many of the largest individual visibility impairing sources have either already been controlled (under the RHR or other CAA or state programs) or have retired, the remaining individual sources are often smaller and better controlled, with each source making relatively smaller contributions to a Class I area as a proportion of total impairment. This does not mean, however, that additional emissions reductions are not needed in the second planning period and beyond, and the remaining sources need not be analyzed for additional controls. To the contrary, the evaluation and control of such smaller sources may be necessary to achieve the national goal of the prevention of any future, and the remedying of any existing, anthropogenic impairment of visibility in Class I areas.

With a Q of 17,044 and a Q/d of 339, SGS is by far the largest emissions source analyzed by ADEQ in the 2022 Arizona Regional Haze Plan. ADEQ found that Units 3 and 4, as well as Units 1 and 2 for PM_{10}, were effectively controlled, leaving only NO_X and SO_2 at Units 1 and 2 as providing an opportunity for further control. In the absence of any opportunities for larger emissions reductions and corresponding visibility benefits, we find that ADEQ's reliance on ''small'' visibility benefits as an additional justification for not adopting more stringent controls at these units is not persuasive.

We also have concerns with certain aspects of the modeling for SGS. In particular, the analysis considered visibility benefits from a NO_X control on Units 1 and 2 with an emission factor of 0.08 lb/MMBtu, roughly half that resulting from SNCR (0.15 lb/MMBtu) and 25 percent higher than that resulting from SCR (0.06 lb/MMBtu). In addition, the analyses focused on the average over the 20 percent most impaired days and concluded the visibility benefits from installing SCR were small. While it is reasonable to consider visibility impacts on the most impaired days, due to variability in daily transport patterns, the EPA's guidance recommends that for individual sources, the maximum daily visibility impact on all days may be a more meaningful metric.[206]

In sum, we find that ADEQ's consideration of visibility benefits of potential controls at SGS Units 1 and 2 did not provide meaningful support of its rejection of more stringent NO_X and SO_2 controls at these two units.

iii. Mass-Based Emissions Caps at SGS

For SGS Units 1 and 2, ADEQ determined that ''emission reductions equivalent to SDA upgrades at Unit 1 and Unit 2 are necessary to make reasonable progress'' and established two combined emissions limits for Unit 1 and Unit 2: 3,729 tons per year on 12-month rolling average; and 16.1 tons per day (tpd) on a 30-calendar-day rolling average. ADEQ stated that ''establishing the two capped emission limits within the two emission units can provide compliance flexibility yet still guarantee that each unit is well controlled to protect and improve the visibility in Class I areas.'' [207] For the reasons that follow, the EPA proposes to find that these limits will not ensure implementation of the emissions reduction measures that are necessary to make reasonable progress at these units.

First, as noted in the preceding section, ADEQ rejected wet FGD for SGS 1 and 2 in part due to incremental cost effectiveness compared to SDA.[208] However, as ADEQ acknowledged in the SIP submittal, the proposed emissions caps will not, in fact, require TEP to upgrade the SDA controls at these units. Instead, ''TEP will be very likely to manage its operating level strategically instead of completing the upgrades to the SDA systems for meeting the RP requirements.'' [209] Given that TEP will not be required to implement SDA upgrades, we find it was not reasonable to reject wet FGD on the basis of incremental cost relative to SDA.

Second, the cost of SDA upgrades was well below ADEQ's established cost threshold of $6,500/ton, ranging from $828-$883/ton for SGS Unit 1 and $853–$908/ton for SGS Unit 2. Therefore, even if TEP meets the proposed annual and 30-day limits, it appears that SDA upgrades would still be cost-effective, based on ADEQ's established cost threshold.

Third, because the limits are set across two units and the tpd limit is set on a 30-calendar-day basis (rather than a 30-day-boiler-operating day),[210] they would not meaningfully constrain the emissions from one unit during periods when the other unit is not operating. In particular, the annual SO_2 cap of 3,739 tpy is significantly higher than ADEQ's projected 2028 SO_2 emissions for either Unit 1 or Unit 2 (2,869 and 2,982 tpy, respectively) and nearly double each unit's recent emissions (1,980 and 1,988 tpy respectively on average 2021–2023).[211] Similarly, the daily SO_2 cap of 16.1 tpd is greater than half of the *maximum* combined 30-calendar-day emissions of both Unit 1 and Unit 2 over the baseline period of 2016–2019.[212] As noted by ADEQ in their submission and confirmed in TEP's most recent Integrated Resources Plan, TEP intends to retire Unit 1 in 2027.[213] If this occurs,

[202] 2021 Clarifications Memo, p. 13.

[203] 2022 Arizona Regional Haze Plan, Appendix C, p. 216.

[204] Id. at 234.

[205] 40 CFR 51.308(f)(2)(i); 2021 Clarifications Memo, p. 14.

[206] 2019 Guidance, pp. 15–16.

[207] 2022 Arizona Regional Haze Plan, Appendix C, p. 239.

[208] Id. at p. 229.

[209] Id. at p. 236.

[210] A limit based on boiler operating days would effectively exclude days with zero emissions from the calculation of the 30-day average whereas a limit based on calendar days does not.

[211] Emissions information can be publicly accessed through the EPA Clean Air Markets Program data, available at *https://campd.epa.gov/*.

[212] 2022 Arizona Regional Haze Plan, Appendix C, Figure 5: Comparison 30–CD Rolling Average Emission Rates over Baseline Years against Emission Limit. ADEQ did not provide separate daily emissions data for Units 1 and 2.

[213] As part of its preferred alternative in its 2023 Integrated Resources Plan, p. 56, TEP states that

Unit 2 would be able to emit 3,739 tpy SO_2 in 2028, nearly double what it emitted on average in 2021–2023 and significantly more than the 2,982 tpy it is projected to emit in the absence of a cap. In contrast, a lb/MMbtu limit representing SDA set on each unit would ensure emissions from Unit 2 would be reduced by approximately ⅓ from recent emissions levels even if Unit 1 ceases operation.

By comparison, the NO_X emission limits ADEQ proposed for IGS Unit 3 are also mass-based limits and share some similar elements with the proposed SGS Unit 1 and 2 limits. We note that the IGS Unit 3 NO_X limits differ primarily because the proposed limits are not relied upon to implement the control determination of a four-factor analysis. Rather, the IGS Unit 3 limits, which consist of a combination of limitations on unit capacity and total lifetime emissions, are subsequently reflected in the unit's four-factor analysis and have the effect of increasing the cost effectiveness of additional controls into a cost per ton range that ADEQ considered to be not cost effective. However, we also note that as currently established in the permit revision submitted by ADEQ, the IGS Unit 3 limits would become effective only upon approval of ADEQ's regional haze reasonable progress determination for IGS by the EPA. Because these limits are not yet enforceable, we find that they are not an appropriate basis for modifying the baseline control scenario for a four-factor analysis.[214]

Finally, we note that ADEQ's proposed determination is that ''emission reductions equivalent to SDA upgrades at SGS Unit 1 and Unit 2 are necessary to make reasonable progress,'' [215] rather than that the SDA upgrades themselves are necessary to make reasonable progress. This conclusion is not supported by the four-factor analysis, which examines specific control measures (including SDA upgrades), rather than total emissions reductions levels and, which concludes ''it is reasonable to require TEP to upgrade the current SDA systems to further reduce the SO^2 emissions at Unit 1 and Unit 2.'' [216] In particular, as noted above, ADEQ rejected the use of a more stringent control (wet FGD), based on incremental costs compared to the cost of actual SDA upgrades, not emission reductions ''equivalent'' to such upgrades.

For all of these reasons, we propose to find that the SO_2 emissions caps adopted for SGS Units 1 and 2 will not ensure implementation of the emissions reduction measures that are necessary to make reasonable progress at these units.

iv. Analysis of Existing Measures Necessary for Reasonable Progress

As described in Section III.C of this document, where a state determines that no additional measures are necessary to make reasonable progress for a particular source, the state must then determine whether the source's existing measures are necessary to make reasonable progress. Generally, a source's existing measures are needed to prevent future emissions increases and are thus needed to make reasonable progress. If the existing controls at a selected source are necessary to make reasonable progress, the state must adopt emissions limits based on those controls as part of its long-term strategy for the second planning period and include those limits in its SIP (to the extent they do not already exist in the SIP).

ADEQ has not addressed whether any of the existing measures relied upon in its four-factor analyses or its ''effective controls'' determinations are necessary to make reasonable progress and thus should be a part of the State's long-term strategy for the second planning period. For example, for SGS Units 3 and 4, ADEQ determined that no new measures were necessary to make reasonable progress for any pollutant. Similarly, ADEQ found that no additional controls were necessary for NO_X or PM_{10} at SGS Units 1 and 2. However, ADEQ did not evaluate nor determine whether any of the existing measures for these units and pollutants were necessary to make reasonable progress and therefore should be a part of its long-term strategy. The same is true for the many other emissions processes for which ADEQ determined that no new measures were necessary to make reasonable progress. Additionally, in general, an emissions limit reflecting a source's existing measures that are necessary to make reasonable progress should be in the form of the emissions rate achieved when implementing those measures (*e.g.,* pounds per million British thermal units or lbs/MMBtu, pounds per hour or lbs/hr, or pounds per ton or lbs/ton of produced material) and should correspond to the emissions rate that was determined to be necessary to make reasonable progress.[217] It is therefore unclear what measures the State is relying on to make reasonable progress, and which are a part of its long-term strategy for the second planning period.

As part of its analysis of whether existing effective measures are necessary to make reasonable progress, the State should have considered whether the relevant sources are subject to enforceable emissions limits that ensure their emissions rates will not increase.[218]

e. Conclusions

As explained in the preceding sections, due to flaws and omissions in its source selection and four-factor analyses and the resulting control determinations, the EPA proposes to find that Arizona failed to reasonably ''evaluate and determine the emission reduction measures that are necessary to make reasonable progress'' by considering the four statutory factors as required by 40 CFR 51.308(f)(2)(i) and CAA section 169A(g)(1). We also propose to find that Arizona failed to adequately document the technical basis that it relied upon to determine these emissions reduction measures, as required by 40 CFR 51.308(f)(2)(iii). In so doing, Arizona failed to submit to the EPA a long-term strategy that includes ''the enforceable emissions limitations, compliance schedules, and other measures that are necessary to make reasonable progress'' as required by 40 CFR 51.308(f)(2).[219]

Consequently, the EPA is proposing to find that the 2022 Arizona Regional Haze Plan does not satisfy the requirements of 40 CFR 51.308(f)(2). Therefore, we are proposing to disapprove Chapters 2, 6.1–6.3, 8, and 9 and Appendices B, C, E, F, G, and H of the 2022 Arizona Regional Haze Plan.

F. Reasonable Progress Goals

Section 51.308(f)(3) contains the requirements pertaining to RPGs for each Class I area. Because Arizona is host to Class I areas, it is subject to

''Initially, the units will alternate idling between spring and fall (both seasons include the adjacent winter months). TEP plans to transition Unit 1 to summer-only operations prior to full retirement at the end of 2027.''

[214] See 40 CFR 51.231(b) (SIP must show the State has the authority to carry out the SIP at the time of submittal); 2019 Guidance, p. 29 (''[e]nforceable requirements are one reasonable basis for projecting a change in operating parameters and thus emissions'').

[215] 2022 Arizona Regional Haze Plan, p. 236.

[216] Id. at 232.

[217] See Clarifications Memo, p. 11.

[218] See Section III.C of this document.

[219] See also CAA 169A(b)(2), 169(b)(2)(B) (the CAA requires that each implementation plan for a State in which the emissions from may reasonably be anticipated to cause or contribute to visibility impairment in a Class I area ''contain such emision limits, schedules of compliance and other measures as may be necessary to make reasonable progress toward meeting the national goal, . . . including . . . a long-term . . . strategy for making reasonable progress[.]''

section 51.308(f)(3)(i) and potentially subject to 51.308(f)(3)(ii). Section 51.308(f)(3)(i) requires a state in which a Class I area is located to establish RPGs—one each for the most impaired and clearest days—reflecting the visibility conditions that will be achieved at the end of the implementation period as a result of the emissions limitations, compliance schedules, and other measures required under paragraph (f)(2) to be in states' long-term strategies, as well as implementation of other CAA requirements. The long-term strategies as reflected by the RPGs must provide for an improvement in visibility on the most impaired days relative to the baseline period and ensure no degradation on the clearest days relative to the baseline period. Section 51.308(f)(3)(ii) applies in circumstances in which a Class I area's RPGs for the most impaired days represents a slower rate of visibility improvement than the uniform rate of progress calculated under 40 CFR 51.308(f)(1)(vi). Under section 51.308(f)(3)(ii)(A), if the state in which a mandatory Class I area is located establishes an RPG for the most impaired days that provides for a slower rate of visibility improvement than the URP, the state must demonstrate that there are no additional emissions reduction measures for anthropogenic sources or groups of sources in the state that would be reasonable to include in its long-term strategy. Section 51.308(f)(3)(ii)(B) requires that if a state contains sources that are reasonably anticipated to contribute to visibility impairment in a Class I area in another state, and the RPG for the most impaired days in that Class I area is above the URP, the upwind state must provide the same demonstration.

Independent of the URP endpoint adjustments, WRAP used three different visibility projection methods to estimate visibility conditions in 2028 (EPA, EPAwoF, and ModMID) for initial calculation of RPGs. These represent, respectively, the standard approach recommended in EPA photochemical modeling guidance,[220] the same approach except without fire (''woF'') emissions, and a further variant in which the model is used to select the most impaired days (''Mod'', ''MID''), rather than selecting them using baseline monitoring data. The approach ultimately relied upon by ADEQ was EPAwoF. Excluding fire emissions from the model runs used to calculate the relative change in concentrations between 2014 and 2028 has the effect of focusing the projection on the changes in anthropogenic emissions over the period. (Including fire emissions would make the impairment projection less responsive to changes in anthropogenic emissions.) While this is not the standard procedure, it is consistent with the use of anthropogenic impairment from IMPROVE monitor data. These 2028 estimates are described in Appendix D of the 2022 Arizona Regional Haze Plan and are calculated following ''Procedures for Making Visibility Projections and Adjusting Glidepaths using the WRAP-WAQS 2014 Modeling Platform'' [221] to post-process model results from the 2028OTBa2 projections scenario.

ADEQ's RPGs for its Class I areas (shown by the IMPROVE monitor), as compared with baseline conditions and the 2028 Adjusted URP (for the most-impaired days) are set out in Tables 10–1 and 10–2 of the 2022 Arizona Regional Haze Plan and shown in Table 21 of this document. As compared to the 2028 projections illustrated in plan figures 7–11 through 7–19 as ''2028OTBa2 EPA w/o Fire Projection—MID'', these RPGs account for point-source controls resulting from ADEQ's four factor analyses. Appendix D, section D6 of the plan describes how SO_X and NO_X emissions reductions due to the controls were used to scale extinction as used in the IMPROVE equation, then summed and converted to deciviews. While the decreases in the RPGs from this procedure were quite small, the result better fits the regulatory definition of RPG as reflecting the effect of controls.

TABLE 21—ARIZONA BASELINE CONDITIONS, ADJUSTED URP AND 2028 RPGS

Site	20% Most-impaired days		20% Clearest days		
	2000–2004 Baseline	2028 adjusted URP	2028 RPG	2000–2004 Baseline	2028 RPG
BALD1	8.80	7.85	6.71	2.98	1.46
CHIR1	10.50	9.39	8.90	4.91	3.63
GRCA2	7.98	7.33	6.37	2.18	1.29
IKBA1	11.19	9.65	8.63	5.40	3.77
PEFO1	9.82	8.37	7.41	5.02	2.78
SAGU1	12.64	10.65	10.33	6.94	5.77
SIAN1**	10.76	9.35	8.41	6.16	3.98
SYCA_RHTS	12.16	10.14	10.73	5.58	3.43
TONT1	11.65	10.00	9.68	6.46	4.48

Source: 2022 Arizona Regional Haze Plan, Tables 10–1 and 10–2.
** 2013–2017 data is presented instead of 2014–2018 data for SIAN1 as it contains the most recent, complete 3-years dataset for SIAN1.

As described in Section IV.E.2 of this document, we find that ADEQ's determination of emissions reduction measures that are necessary to make reasonable progress does not meet the requirements of section 51.308(f)(2). Section 51.308(f)(3)(i) specifies that RPGs must reflect ''enforceable emissions limitations, compliance schedules, and other measures required under paragraph (f)(2) of this section.'' We commend ADEQ for setting reasonable progress goals in an effort to meet the requirements of 51.308(f)(3) in Chapter 3 of the 2022 Arizona Regional Haze Plan. However, in the absence of an approved long-term strategy, we cannot approve the associated RPGs.

We also note that for this planning period, all but one Arizona IMPROVE monitor are projected to have RPGs for the 20 percent most impaired days that provide for a greater rate of improvement in visibility than the

[220] Modeling Guidance for Demonstrating Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze, EPA 454/R–18–009, EPA OAQPS, November 2018, available at *https://www.epa.gov/scram/state-implementation-plan-sip-attainment-demonstration-guidance.*

[221] ''Procedures for Making Visibility Projections and Adjusting Glidepaths using the WRAP-WAQS 2014 Modeling Platform,'' Ramboll, March 1, 2021, final draft, available at the WRAP Regional Technical Operations Work Group website, *https://www.wrapair2.org/RTOWG.aspx;* direct link: *https://www.wrapair2.org/pdf/2028_Vis_Proj_Glidepath_Adj_2021-03-01draft_final.pdf.*

adjusted uniform rate of progress. The IMPROVE visibility monitor for the Sycamore Canyon Wilderness Class I area is projected to have a 0.59 dv slower rate of visibility improvement than the uniform rate of progress by 2028.[222] Section 51.308(f)(3)(ii) of the Regional Haze Rule requires that if a state adopts an RPG for the most impaired days that provides for a slower rate of improvement in visibility than the uniform rate of progress, *i.e.,* if the RPG is above the URP glidepath, it must include within its SIP submission an assessment of the number of years it would take to attain natural visibility conditions if visibility improvement were to continue at the rate of progress selected by the state as reasonable for the implementation period. ADEQ provided a discussion in its submission that explains how the monitor was relocated in 2015 and experienced increases in soil and coarse mass extinction.[223] However, the rule requires the state with the Class I area and any other state with sources affecting that area to make a ''robust demonstration'' that there are no additional emissions reduction measures for sources that may reasonably be anticipated to contribute to visibility impairment that would be reasonable to include in the long-term strategy. The robust demonstration requires an analysis to ensure there are no additional emissions reduction measures that would be reasonable to include in the long-term strategy. Because we are proposing to find that ADEQ has not met the requirements of 51.308(f)(2), we also propose to find that it has not satisfied 51.308(f)(3)(ii) with respect to Sycamore Canyon.

Finally, we also note that Arizona has not considered whether sources in Arizona are reasonably anticipated to contribute to visibility impairment in a Class I area in another state whose RPG for the most impaired days in that Class I area is above the URP, as required under 40 CFR 51.308(f)(3)(ii)(B).

For these reasons, we propose to disapprove Chapters 7 and 10 and Appendix D of the 2022 Arizona Regional Haze Plan for not meeting the requirements of 40 CFR 51.308(f)(3) pertaining to RPGs.

G. Additional Monitoring To Assess Reasonably Attributable Visibility Impairment

The EPA and FLMs have not previously advised Arizona that additional monitoring is needed to assess reasonably attributable visibility impairment. Therefore, the requirements under 40 CFR 51.308(f)(4) are not applicable to Arizona.

H. 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 section is for states with Class I areas to submit monitoring strategies for measuring, characterizing, and reporting on visibility impairment. Compliance with this requirement may be met through participation in the IMPROVE network.

According to Chapter 4 of the 2022 Arizona Regional Haze Plan, there are nine IMPROVE monitors and 12 Class 1 areas in Arizona, as summarized in Table 22 of this document. The monitoring sites are operated and maintained through a formal cooperative relationship between the EPA, NPS, FWS, USFS, and Bureau of Land Management.

TABLE 22—ARIZONA IMPROVE MONITORS

IMPROVE monitor	Class I area	FLM
BALD1	Mount Baldy Wilderness	USFS.
CHIR1	Chiricahua National Monument	NPS.
	Chiricahua Wilderness, Galiuro Wilderness	USFS.
GRCA2	Grand Canyon National Park	NPS.
IKBA1	Mazatzal Wilderness, Pine Mountain Wilderness	USFS.
PEFO1	Petrified Forest National Park	NPS.
SAGU1	Saguaro National Park	NPS.
SIAN1	Sierra Ancha Wilderness	USFS.
SYCA2	Sycamore Canyon Wilderness	USFS.
TONT1	Superstition Wilderness	USFS.

Source: 2022 Arizona Regional Haze Plan, Table 4–1.

Section 51.308(f)(6)(i) requires SIPs to provide for the establishment of any additional monitoring sites or equipment needed to assess whether reasonable progress goals to address regional haze for all mandatory Class I Federal areas within the state are being achieved. Regional haze data for each Class I area in Arizona is collected by an IMPROVE monitor that is operated and maintained by the FLMs specified in Table 22 of this document. Pursuant to 40 CFR 51.308(f)(6)(i), ADEQ does not recommend the establishment of any additional monitoring sites or equipment to assess whether reasonable progress goals to address regional haze for all Class I Federal areas within the State are being achieved. ADEQ also indicated that there have been incomplete years of data and temporarily closed sites. Arizona has engaged in discussions with IMPROVE, USFS, and the EPA on improving data collection at closed sites and hopes future site changes will increase data reliability.

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.

ADEQ indicates that pursuant to 40 CFR 51.308(f)(6)(ii), Chapters 5, 6.4, and 9 of the 2022 Arizona Regional Haze Plan describe the procedures used in developing this SIP revision. These chapters include the procedures to assess the quantitative impact of emissions from Arizona on Class I Federal areas in Arizona and on Class I Federal areas that Arizona's emissions affect in other states. In general, the WRAP has analyzed and provided information on relative contributions to

[222] 2022 Arizona Regional Haze Plan, Chapter 10.1.

[223] 2022 Arizona Regional Haze Plan, Appendix A.

visibility impairment for Arizona. Arizona has also used data reported by the IMPROVE program as input into the regional technical support analysis tool found at the Visibility Information Exchange Web System and WRAP's Technical Support System, as well as other analysis tools and efforts sponsored by the WRAP.

Section 51.308(f)(6)(iii) does not apply to Arizona, as it has a Class I area.

Section 51.308(f)(6)(iv) requires the SIP to provide for the reporting of all visibility monitoring data to the Administrator at least annually for each Class I area in the state. ADEQ indicates that it does not directly collect or handle IMPROVE data, and that ADEQ will continue to participate in the IMPROVE Visibility Information Exchange Web System for reporting monitoring data. As noted in Table 22 of this document, the IMPROVE monitors are operated and maintained by FLMs. The monitoring strategy for Arizona relies upon the continued availability of the IMPROVE network.

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.

Chapter 6 and Appendix B of the 2022 Arizona Regional Haze Plan describe the procedures used to produce the statewide emissions inventory of pollutants reasonably anticipated to cause or contribute to visibility impairment in the Class I Federal areas that Arizona's emissions affect. ADEQ indicates that their plan relies primarily upon four different emissions inventory scenarios: 2014v2, RepBase2, 2028OTBa2, and 2028LTS. Three of those scenarios (2014v2, RepBase2, 2028OTBa2) were developed by WRAP utilizing methods agreed upon by member states, local air agencies, and western Tribal organizations and in coordination with FLMs and the EPA. The WRAP 2014v2 inventory is based on the 2014v2 NEI plus updates provided by western states through the WRAP Regional Haze workgroup's Emissions and Modeling Protocol subcommittee. The Representative Baseline (RepBase2) emissions scenario updates the 2014v2 inventory to account for changes and variation in emissions between 2014 and 2018 for key WRAP source sectors, as defined by the WRAP Emissions and Modeling Protocol subcommittee.

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.

ADEQ described its 2028 emissions projection methodology in Chapter 6 and Appendix B Section B3 of the 2022 Arizona Regional Haze Plan. ADEQ indicates that the WRAP 2028OTBa emissions inventory projection follows the methods applied in the EPA 2019 Modeling TSD. The WRAP states updated source sectors to account for implementation of all applicable federal and state requirements for U.S. anthropogenic emissions by 2028.

The 2028LTS is an emissions inventory developed by ADEQ with the 2028OTBa2 as a base. The scenario adjusts 2028OTBa2 emissions to account for those controls included within ADEQ's long-term strategy for which statewide emission reductions could be estimated. Arizona has also committed in its SIP submittal to periodically update the emissions inventories which will include incorporation of emissions reductions from any new or ongoing air pollution control programs and any new source retirement/replacement schedules.[224]

The EPA proposes to find that Arizona has met the requirements of 40 CFR 51.308(f)(6) as described above, including through its continued participation in the IMPROVE network, continued inventory work with the WRAP, and commitment to update the inventory periodically, and that no further elements are necessary at this time for Arizona to assess and report on visibility pursuant to 40 CFR 51.308(f)(6)(vi). The EPA therefore is proposing to approve Chapters 4 and 6.4 of the 2022 Arizona Regional Haze Plan as meeting the requirements of 40 CFR 51.308(f)(6).

I. 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)–(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. Sections 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 emissions 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 emissions information is reported. In addition, section 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.

Section 51.308(f)(5) specifies that a progress report submitted as part of a comprehensive regional haze SIP revision must address the time period since the most recent progress report. Arizona submitted its most recent progress report to the EPA on November 12, 2015, which presented data analysis for the period 2009 through 2013.[225] Therefore, for Arizona, the time period required to be addressed in the progress report began in 2014.

Arizona's submission also describes the status of measures of the long-term strategy from the first implementation period, explaining the controls required under both the SIP and FIP and how those controls have been implemented.[226]

Arizona's submission also contains a summary of the emissions from the long-term strategy from the first implementation period for NO_X, SO_2, and PM_{10} at BART facilities.[227] In total, ADEQ estimated reductions of 21,296

[224] 2022 Arizona Regional Haze Plan, Chapter 6.4.

[225] 84 FR 33002 (July 11, 2019).

[226] 2022 Arizona Regional Haze Plan, Chapter 11 and 2023 Arizona Regional Haze Technical Supplement.

[227] 2022 Arizona Regional Haze Plan, Table 11–8.

tpy NO_X, 34,533–38,999 tpy SO_2, and 849 tpy PM_{10}.

The EPA therefore proposes to find that Arizona 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.

Arizona's SIP submission included summaries of the visibility conditions and the trend of the 5-year averages at the Class I areas.[228] The SIP submission included the 5-year baseline (2000–2004) visibility conditions and current conditions (2015–2019) for the clearest and most impaired days, as discussed in Section IV.D of this document. The EPA therefore proposes to find that Arizona has met the requirements of 40 CFR 51.308(g)(3).

In a technical supplement sent on November 22, 2023 (''2023 Arizona Regional Haze Technical Supplement''),[229] ADEQ provided additional supporting information to address the requirements of 40 CFR 51.308(g)(4)–(5). Pursuant to section 51.308(g)(4), Arizona provided a summary of emissions of NO_X, SO_2, PM_{10}, $PM_{2.5}$, VOC, and NH_3 from all sources and activities, including from point, nonpoint, non-road mobile, and on-road mobile sources for the progress report period, using the 2014 and 2017 NEI. ADEQ also provided 2014–2019 Clean Air Markets Program Data (CAMPD) data for all sources with emissions of visibility impairing pollutants. The reductions achieved by Arizona emissions control measures are seen in the emissions inventory and visibility progress. The EPA is therefore proposing to find that Arizona has met the requirements of section 51.308(g)(4) by providing emissions information for NO_X, SO_2, PM_{10}, $PM_{2.5}$, VOC, and NH_3 broken down by type of sources and activities within the state.

Pursuant to section 51.308(g)(5), Arizona provided an assessment of any significant changes in anthropogenic emissions within or outside the state that have occurred since the period, including whether or not these changes in anthropogenic emissions were anticipated in that most recent plan, and whether they have limited or impeded progress in reducing pollutant emissions and improving visibility.[230] ADEQ noted overall reductions of 21 percent in NO_X, 11 percent in SO_2, and 48 percent in VOC using NEI data. ADEQ also noted overall reductions of 45 percent NO_X and 47 percent SO_2 in CAMPD EGU emissions during the progress report period. ADEQ indicated that these reductions have met or exceeded the downward trend predicted from the regional haze plan in the first round. For NH_3, ADEQ noted increases from the agriculture sector, but primarily from a different methodology used to calculate the emissions. ADEQ noted that the increases in NH_3 have not limited or impeded visibility progress. The EPA is proposing to find that Arizona has met the requirements of section 51.308(g)(5).

Additionally, the 2022 Arizona Regional Haze SIP includes a commitment to submit periodic progress reports in accordance with section 51.308(f)[231] 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 section 51.308(g).[232]

For these reasons, the EPA proposes to approve Chapter 11 of the 2022 Arizona Regional Haze Plan (as supplement by the 2023 Arizona Regional Haze Technical Supplement) as meeting the requirements of 40 CFR 51.308(f)(5) and 40 CFR 51.308(g)(1)-(5) for periodic progress reports.

J. Requirements for State and Federal Land Manager Coordination

CAA section 169A(d) requires states to consult with FLMs before holding the public hearing on a proposed regional haze SIP, and to include a summary of the FLMs' conclusions and recommendations in the notice to the public. In addition, the FLM consultation provision in section 51.308(i)(2) requires a state to provide FLMs with an opportunity for consultation that is early enough in the state's policy analyses of its emissions 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.

ADEQ met with USFS and NPS and communicated with the FLMs via email on multiple occasions before providing the draft SIP to those agencies for comment.[233] ADEQ indicated that the purpose of these meetings was to discuss source screening methodologies, selection of particulate matter species for analysis, effective control determinations, initial control determinations, and general consultation on the formation of the long-term strategy. ADEQ also indicated that FWS was invited to these events but did not participate.

On January 4, 2022, Arizona submitted a draft Regional Haze SIP to the FLMs for a 60-day review and comment period pursuant to 40 CFR 51.308(i)(2).[234] ADEQ also met with USFS and NPS on January 13, 2022, to present the draft SIP revision, answer questions, and receive initial feedback. Arizona received comments from the USFS on March 10, 2022, and from the NPS on March 11, 2022. ADEQ responded to the FLM comments and included the responses in Appendix L of their submission to the EPA, in accordance with section 51.308(i)(3).

However, as explained above, because the EPA is proposing to disapprove certain elements of Arizona's SIP revision, namely the long-term strategy under 51.308(f)(2) and the reasonable progress goals under 51.308(f)(3), the EPA is also proposing to disapprove the Plan with respect to the FLM consultation requirements under 51.308(i). While Arizona did take administrative steps to provide the FLMs the requisite opportunity to review and provide feedback on the state's initial draft plan, the EPA cannot approve the requirements under

[228] 2022 Arizona Regional Haze Plan, Chapter 5.

[229] Letter dated November 22, 2023, from Hether Krause, Deputy Assistant Director, ADEQ Air Quality Division, to Martha Guzman, Regional Administrator, EPA Region IX (submitted electronically November 22, 2023).

[230] 2023 Arizona Regional Haze Technical Supplement, Section 3.

[231] 40 CFR 51.308(f) (''. . . The [regional haze SIP] revision due on or before July 31, 2021, must include a commitment by the State to meet the requirements of paragraph (g) of this section. . . .''

[232] 2022 Arizona Regional Haze Plan, Chapter 11.4.

[233] 2022 Arizona Regional Haze Plan, Chapter 2.4.2 and Table 2–2.

[234] 2022 Arizona Regional Haze Plan, Chapter 2.4.

51.308(f)(i) because Arizona's consultation was based on a SIP revision that did not meet the required statutory and regulatory requirements of the CAA and the RHR, respectively. Additionally, we note that ADEQ did not indicate whether the 2023 Arizona Regional Haze Rules Supplement went through the FLM 60-day review period pursuant to 40 CFR 51.308(i)(2). In addition, if the EPA finalizes the partial approval and partial disapproval of the Plan, as proposed in this document, in the process of correcting the deficiencies outlined above with respect to the RHR and statutory requirements, the state (or the EPA in the case of an eventual FIP) will be required to again satisfy the FLM consultation requirement under 51.308(i). Therefore, we are proposing to disapprove Section 2.4 (''Consultation with Federal Land Managers'') and Appendix L of the 2022 Arizona Regional Haze Plan for not meeting the requirements under 40 CFR 51.308(i) as outlined in this section.

V. Prong 4 (Visibility) of the 2012 $PM_{2.5}$ NAAQS and 2015 Ozone NAAQS Infrastructure SIPs

A. Infrastructure SIPs

Under CAA sections 110(a)(1) and 110(a)(2), each state is required to submit a SIP that provides for the implementation, maintenance, and enforcement of each primary or secondary NAAQS. Moreover, CAA section 110(a)(1) and section 110(a)(2) require each state to make this new SIP submission within three years (or less, if the Administrator so prescribes) after promulgation of a new or revised NAAQS. This type of SIP submission is commonly referred to as an ''infrastructure SIP.'' The overall purpose of the infrastructure SIP requirements is to ensure that the necessary structural components of each state's air quality management program are adequate to meet the state's responsibilities for the new or revised NAAQS. Overall, the infrastructure SIP submission process provides an opportunity for the responsible air agency, the public, and the EPA to review the basic structural requirements of the air agency's air quality management program in light of each new or revised NAAQS.

Section 110(a)(2)(D) has two components: 110(a)(2)(D)(i) and 110(a)(2)(D)(ii). Section 110(a)(2)(D)(i) includes four distinct components, commonly referred to as ''prongs,'' that must be addressed in infrastructure SIP submissions. The first two prongs, which are codified in section 110(a)(2)(D)(i)(I), prohibit any source or other type of emissions activity in one state from contributing significantly to nonattainment of the NAAQS in another state (prong 1) and from interfering with maintenance of the NAAQS in another state (prong 2). The third and fourth prongs, which are codified in section 110(a)(2)(D)(i)(II), prohibit emissions activity in one state from interfering with measures required to prevent significant deterioration of air quality in another state (prong 3) or from interfering with measures to protect visibility in another state (prong 4).

B. Prong 4 Requirements

Section 110(a)(2)(D)(i)(II) requires SIPs to contain provisions prohibiting sources in that state from emitting pollutants in amounts that interfere with any other state's efforts to protect visibility under part C of the CAA (which includes sections 169A and 169B). The EPA issued guidance on infrastructure SIPs in a September 13, 2013 memorandum from Stephen D. Page titled ''Guidance on Infrastructure State Implementation Plan (SIP) Elements under Clean Air Act Sections 110(a)(1) and 110(a)(2)'' (''2013 Guidance''). The 2013 Guidance states that these prong 4 requirements can be satisfied by approved SIP provisions that the EPA has found to adequately address any contribution of that state's sources that impact the visibility program requirements in other states. The 2013 Guidance also states that the EPA interprets this prong to be pollutant-specific, such that the infrastructure SIP submission need only address the potential for interference with protection of visibility caused by the pollutant (including precursors) to which the new or revised NAAQS applies.

The 2013 Guidance lays out how a state's infrastructure SIP may satisfy prong 4. In the second planning period, confirmation that the state has a fully approved regional haze SIP that fully meets the requirements of 40 CFR 51.308 or 51.309 will satisfy the requirements of prong 4.[235] The regulations at 40 CFR 51.308 and 51.309 specifically require that a state participating in a regional planning process include all measures needed to achieve its apportionment of emission reduction obligations agreed upon through that process. A fully approved regional haze SIP[236] will ensure that emissions from sources under an air agency's jurisdiction are not interfering with measures required to be included in other air agencies' plans to protect visibility.

Through this action, the EPA is proposing to disapprove the prong 4 portion of Arizona's infrastructure SIP submissions for the 2012 $PM_{2.5}$ and 2015 ozone NAAQS. All other applicable infrastructure SIP requirements for these SIP submissions have been or will be addressed in separate rulemakings. A brief background regarding the NAAQS relevant to this proposal is provided in the following sections.

1. 2012 $PM_{2.5}$ NAAQS

On December 14, 2012, the EPA revised the annual primary $PM_{2.5}$ NAAQS to 12 $\mu g/m^3$.[237] States were required to submit infrastructure SIP submissions for the 2012 $PM_{2.5}$ NAAQS to the EPA within three years of promulgation of the revised NAAQS. Arizona submitted its infrastructure SIP for the 2012 $PM_{2.5}$ NAAQS on December 11, 2015 (''2015 $PM_{2.5}$ I–SIP submittal'').[238] This proposed rulemaking only addresses the prong 4 element of 2015 $PM_{2.5}$ I–SIP submittal.

2. 2015 Ozone NAAQS

On October 26, 2015, the EPA revised the 8-hour ozone NAAQS to 70 parts per billion.[239] States were required to submit infrastructure SIPs within three years of promulgation of the revised NAAQS. Arizona submitted its infrastructure SIP for the 2015 ozone NAAQS on September 24, 2018 (''2018 Ozone I–SIP submittal'').[240] This proposed rulemaking only addresses the prong 4 element of the 2018 Ozone I–SIP submittal.[241]

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[235] The EPA acknowledges that in the 2013 Guidance, we indicate that the EPA may find it appropriate to supplement the guidance regarding the relationship between regional haze SIPs and prong 4 after second planning SIPs become due, which occurred on July 31, 2021. After a review of the 2013 guidance and the second planning period regional haze requirements, the EPA maintains the interpretation that a fully approved regional haze SIP satisfies Prong 4 requirements in the second planning period.

[236] Since second planning period SIPs became due, a ''fully approved regional haze SIP'' would necessarily include fully approved first and second planning period regional haze SIPs.

[237] 78 FR 3086 (January 15, 2013).

[238] Letter dated December 11, 2015, from Eric Massey, Director, Air Quality Division, ADEQ, to Jared Blumenfeld, Regional Administrator, EPA Region IX.

[239] 80 FR 65292 (October 26, 2015).

[240] Letter dated September 24, 2018, from Timothy S. Franquist, Director, Air Quality Division, ADEQ, to Michael Stoker, Regional Administrator, EPA Region IX (submitted electronically September 24, 2018).

[241] The EPA proposed action on the rest of the 2018 Ozone I–SIP submittal in two separate rulemakings. See 87 FR 37776 (June 24, 2022) and 87 FR 74349 (December 5, 2022). On February 16, 2024, the EPA issued a supplemental proposal regarding transport prongs 1 and 2 (88 FR 12666). The EPA proposed to partially approve the 2018 Ozone I–SIP submittal with respect to Prong 1 and

C. Arizona's Prong 4 Elements

Arizona's 2018 Ozone I–SIP submittal and 2015 $PM_{2.5}$ I–SIP submittal acknowledge that Arizona does not currently have a fully approved Regional Haze SIP. They therefore rely, in part, on regulations imposed by FIPs during the first planning period to address visibility impairment in Class I Areas caused by NO_X, SO_2, and PM.[242] The FIPs include emissions limits for the following facilities: Freeport McMoran Miami Smelter,[243] Asarco Hayden Smelter,[244] Sundt Generating Station Unit 4,[245] Nelson Lime Plant Kilns 1 and 2,[246] CPC Rillito Kiln 4,[247] and PCC Clarkdale Kiln 4.[248] Emissions limits have been incorporated into the state SIP, replacing previous FIPs, at AEPCO Apache Generating Station Units 1, 2, and 3,[249] APS Cholla Power Plant Units 1–4,[250] and SRP Coronado Generating Station Units 1 and 2.[251]

D. The EPA's Evaluation of Arizona's Submittal

Because Arizona does not have a fully approved regional haze plan for the first or second planning period, it cannot rely on a fully approved regional haze SIP in order to fulfill the prong 4 requirements for the 2012 $PM_{2.5}$ and 2015 ozone NAAQS. Consequently, the EPA is proposing to disapprove the prong 4 portion of Arizona's 2018 Ozone I–SIP submittal and 2015 $PM_{2.5}$ I–SIP submittal.

VI. Proposed Action

For the reasons discussed in this notice, under CAA section 110(k)(3), the EPA is proposing to partially approve and partially disapprove the 2022 Arizona Regional Haze Plan. We propose to approve the following portions of the 2022 Arizona Regional Haze Plan:

- Chapter 5 and Appendix A of the 2022 Arizona Regional Haze Plan as meeting the 40 CFR 51.308(f)(1) requirements related to calculations of baseline, current, and natural visibility conditions, progress to date, and the uniform rate of progress;
- Chapters 4 and 6.4 of the 2022 Arizona Regional Haze Plan as meeting the 40 CFR 51.308(f)(4) requirements for additional monitoring to assess reasonably attributable visibility impairment, which is not applicable to Arizona;
- Chapter 11 of the 2022 Arizona Regional Haze Plan and the 2023 Arizona Regional Haze Technical Supplement as meeting the 40 CFR 51.308(f)(5) requirements for the plan to serve as a progress report;
- Chapters 4 and 6.4 of the Arizona Regional Haze Plan as meeting the 40 CFR 51.308(f)(6) monitoring strategy requirements; and
- Chapter 11 of the 2022 Arizona Regional Haze Plan and the 2023 Arizona Regional Haze Technical Supplement as meeting the 40 CFR 51.308 (g)(1)–(5) progress report requirements.

Additionally, the EPA is proposing to approve Chapters 1 (''Regional Haze Program Overview'') and 3 (''Description of Arizona Class I Federal Areas'') as supporting information. The EPA is excluding Appendix I (''Authorizing Statutes'') of the 2022 Arizona Regional Haze Plan, which provides information on the authorizing statutes in Arizona, from our action.

The EPA is proposing to disapprove the following portions of the 2022 Arizona Regional Haze Plan:

- Chapters 2, 6.1–6.3, 8, and 9 and Appendices B, C, E, F, G, H, and J of the 2022 Arizona Regional Haze Plan for not meeting the 40 CFR 51.308(f)(2) long-term strategy requirement;
- Chapters 7 and 10, and Appendix D of the 2022 Arizona Regional Haze Plan for not meeting the 40 CFR 51.308(f)(3) reasonable progress goals requirement;
- Chapter 2.4 (''Consultation with Federal Land Managers'') and Appendix L of the 2022 Arizona Regional Haze Plan for not meeting the 40 CFR 51.308(i)(2)–(4) FLM consultation requirements.

Further, the EPA is proposing to disapprove the interstate transport requirements of CAA section 110(a)(2)(D)(i)(II) prong 4 (visibility) for the 2018 Ozone I–SIP submittal and 2015 $PM_{2.5}$ I–SIP submittal.

Under section 179(a) of the CAA, final disapproval of a submittal that addresses a requirement of part D, title I of the CAA or is required in response to a finding of substantial inadequacy as described in CAA section 110(k)(5) (SIP Call) starts a sanctions clock. Arizona's 2022 Regional Haze Plan, 2018 Ozone I–SIP submittal, and 2015 $PM_{2.5}$ I–SIP submittal were not submitted to meet any of these requirements. Therefore, if finalized, these disapprovals would not trigger any offset or highway sanctions clocks. Disapproving a SIP submission also establishes a two-year deadline for the EPA to promulgate a FIP to address the relevant requirements under CAA section 110(c), unless the EPA approves a subsequent SIP submission that meets these requirements. We anticipate that, if these disapprovals are finalized, any SIP or FIP that remedies the disapprovals with respect to Regional Haze requirements, would also, in conjunction with the existing Arizona Regional Haze FIP, remedy the disapproval for the interstate transport visibility requirement of CAA section 110(a)(2)(D)(i)(II) for the 2018 Ozone I–SIP submittal and 2015 $PM_{2.5}$ I–SIP submittal.

VII. Statutory and Executive Order Reviews

Under the CAA, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable federal regulations. 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, the EPA's role is to review state choices, and approve those choices if they meet the minimum criteria of the Act. Accordingly, this proposed rulemaking proposes to partially approve and partially disapprove state law as meeting federal requirements and does not impose additional requirements beyond those imposed by state law.

Additional information about these statutes and Executive Orders can be found at *https://www.epa.gov/laws-regulations/laws-and-executive-orders.*

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a significant regulatory action and was therefore not submitted to the Office of Management and Budget (OMB) for review.

B. Paperwork Reduction Act (PRA)

This action does not impose an information collection burden under the PRA because this action does not impose additional requirements beyond those imposed by state law.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This action will not impose any requirements on small entities beyond those imposed by state law.

to partially disapprove the 2018 Ozone I–SIP submittal with respect to Prong 2.

[242] Arizona Infrastructure SIP for the 2012 $PM_{2.5}$ NAAQS, p. 11; Arizona Infrastructure SIP for the 2015 Ozone NAAQS, pp. 15–16.

[243] 79 FR 52420 (September 3, 2014).

[244] Id.

[245] Id. Sundt Generating Station is also known as Irvington Generating Station.

[246] Id.

[247] 81 FR 83144 (November 21, 2016).

[248] Id.

[249] 80 FR 19220 (April 10, 2015).

[250] 82 FR 15139 (March 27, 2017).

[251] 82 FR 46903 (October 10, 2017).

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain any unfunded mandate as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. This action does not impose additional requirements beyond those imposed by state law. Accordingly, no additional costs to state, local, or Tribal governments, or to the private sector, will result from this action.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Coordination With Indian Tribal Governments

This action does not have Tribal implications, as specified in Executive Order 13175, because the SIP 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, and will not impose substantial direct costs on Tribal governments or preempt Tribal law. Thus, Executive Order 13175 does not apply to this action.

G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of ''covered regulatory action'' in section 2–202 of the Executive Order. Therefore, this action is not subject to Executive Order 13045 because it merely proposes to partially approve and partially disapprove state law as meeting federal requirements. Furthermore, the EPA's Policy on Children's Health does not apply to this action.

H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act (NTTAA)

Section 12(d) of the NTTAA directs the EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. The EPA believes that this action is not subject to the requirements of section 12(d) of the NTTAA because application of those requirements would be inconsistent with the CAA.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Population

Executive Order 12898 (Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629, Feb. 16, 1994) directs Federal agencies to identify and address ''disproportionately high and adverse human health or environmental effects'' of their actions on minority populations and low-income populations to the greatest extent practicable and permitted by law. 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.''

The State did not evaluate environmental justice considerations as part of its SIP submittals; the CAA and applicable implementing regulations neither prohibit nor require such an evaluation. The EPA did not perform an EJ analysis and did not consider EJ in this action. Due to the nature of the action being taken here, if finalized, this action is expected to have a neutral to positive impact on the air quality of the affected area. Consideration of EJ is not required as part of this action, and there is no information in the record inconsistent with the stated goal of E.O. 12898 of achieving environmental justice for people of color, low-income populations, and Indigenous peoples.

List of Subjects in 40 CFR Part 52

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

Dated: May 23, 2024.

Martha Guzman Aceves,

Regional Administrator, Region IX.

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