6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA-R01-OAR-2025-0142; FRL-12778-01-R1]

Air Plan Approval; Vermont; Regional Haze State Implementation Plan for the Second Implementation Period

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) is proposing to approve the Regional Haze State Implementation Plan (SIP) revision submitted by Vermont on July 1, 2024, as satisfying applicable requirements under the Clean Air Act (CAA) and EPA's Regional Haze Rule for the program's second implementation period. Vermont's SIP submission addresses the requirement that states must periodically revise their long-term strategies for making reasonable progress towards the national goal of preventing any future, and remedying any existing, anthropogenic impairment of visibility, including regional haze, in mandatory Class I Federal areas. The SIP submission also addresses other applicable requirements for the second implementation period of the regional haze program. The EPA is taking this action pursuant to sections 110 and 169A of the Clean Air Act.

DATES: Written comments must be received on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: Submit your comments, identified by Docket ID No. **EPA-R01-OAR-2025-0142** at *https://www.regulations.gov,* or via email to martinelli.ayla@epa.gov. For comments submitted at Regulations.gov, follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from Regulations.gov. For either manner of submission, the EPA may publish any comment

received to its public docket. Do not submit electronically any information you consider to be confidential business information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, please contact the person identified in the "For Further Information Contact" section. For the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *https://www.epa.gov/dockets/commenting-epa-dockets*. Publicly available docket materials are available at *https://www.regulations.gov* or at the U.S. Environmental Protection Agency, EPA Region 1 Regional Office, Air and Radiation Division, 5 Post Office Square – Suite 100, Boston, MA. EPA requests that if at all possible, you contact the contact listed in the **FOR FURTHER INFORMATION CONTACT** section to schedule your inspection. The Regional Office's official hours of business are Monday through Friday, 8:30 a.m. to 4:30 p.m., excluding legal holidays and facility closures due to COVID-19.

FOR FURTHER INFORMATION CONTACT: Ayla Martinelli, Air Quality Branch, U.S. Environmental Protection Agency, EPA Region 1, 5 Post Office Square - Suite 100, (Mail code 5-MI), Boston, MA 02109 - 3912, tel. (617) 918-1057, email martinelli.ayla@epa.gov.

SUPPLEMENTARY INFORMATION:

Throughout this document whenever ''we,'' ''us,'' or ''our'' is used, we mean EPA.

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I. What Action is the EPA Proposing?

On July 1, 2024, the Vermont Department of Environmental Conservation (VT DEC) submitted a revision to its SIP to address regional haze for the second implementation period. VT DEC made this SIP submission to satisfy the requirements of the CAA's regional haze program pursuant to CAA sections 169A and 169B and 40 CFR 51.308. The EPA is proposing to find that the Vermont regional haze SIP submission for the second implementation period meets the applicable statutory and regulatory requirements and thus proposes to approve Vermont's submission into its SIP.

II. Background and Requirements for Regional Haze Plans

A detailed history and background of the regional haze program is provided in

multiple prior EPA proposal actions.[1] For additional background on the 2017 RHR revisions, please refer to Section III. Overview of Visibility Protection Statutory Authority, Regulation, and Implementation of "Protection of Visibility: Amendments to Requirements for State Plans" of the 2017 RHR.[2] The following is an abbreviated history and background of the regional haze program and 2017 Regional Haze Rule as it applies to the current action.

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] CAA 169A. The CAA establishes as a national goal the "prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution." CAA 169A(a)(1). 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 (NOx), and, in some cases, volatile organic compounds (VOC) and ammonia (NH3)). Fine particle precursors react in the atmosphere to form fine particulate matter (PM2.5), which impairs visibility by scattering and absorbing light. Visibility impairment reduces the perception of clarity and color, as well as visible distance.[4]

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[1] *See* 90 FR 13516 (March 24, 2025).
[2] *See* 82 FR 3078 (January 10, 2017).
[3] 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] 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

To address regional haze visibility impairment, the 1999 RHR established an iterative planning process that requires both states in which Class I areas are located and states "the emissions from which may reasonably be anticipated to cause or contribute to any impairment of visibility" in a Class I area to periodically submit SIP revisions to address such impairment. CAA 169A(b)(2);[5] *see also* 40 CFR 51.308(b), (f) (establishing submission dates for iterative regional haze SIP revisions); 64 FR at 35768 (July 1, 1999).

On January 10, 2017, the EPA promulgated revisions to the RHR, 82 FR 3078 (January 10, 2017), that apply for the second and subsequent implementation periods. The 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).

B. Roles of Agencies in Addressing Regional Haze

Because the air pollutants and pollution affecting visibility in Class I areas can be transported over long distances, successful implementation of the regional haze program requires long-term, regional coordination among multiple jurisdictions and agencies that have responsibility for Class I areas and the emissions that impact visibility in those areas. In order to address regional haze, states need to develop strategies in coordination with one another, considering the effect of emissions from one jurisdiction on the air quality in another. Five regional planning organizations (RPOs), 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

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light extinction (b^{ext}) is a metric used to for expressing visibility and is measured in inverse megameters (Mm-1). The formula for the deciview is 10 ln (b^{ext})/10 Mm−1). 40 CFR 51.301.

[5] 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).

reduce emissions of particulate matter and other pollutants leading to regional haze, and help states meet the consultation requirements of the RHR.

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

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

Under the CAA and EPA's regulations, all 50 states, the District of Columbia, and the U.S. Virgin Islands are required to submit regional haze SIPs satisfying the applicable requirements for the second implementation period of the regional haze program by July 31, 2021. Each state's SIP must contain a long-term strategy for making reasonable progress toward meeting the national goal of remedying any existing and preventing any future anthropogenic visibility impairment in Class I areas. CAA 169A(b)(2)(B). To this end, 40 CFR 51.308(f) lays out the process by which states determine what constitutes their long-term strategies, with the order of the requirements in 40 CFR sections 51.308(f)(1) through (f)(3) generally mirroring the order of the steps in the reasonable progress analysis[6] and (f)(4) through (f)(6) containing additional, related requirements. Broadly speaking, a state first must identify the Class I areas within the state and

[6] 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).

determine the Class I areas outside the state in which visibility may be affected by emissions from the state. These are the Class I areas that must be addressed in the state's long-term strategy. *See* 40 CFR 51.308(f), (f)(2). For each Class I area within its borders, a state must then calculate the baseline (five-year average period of 2000-2004), current, and natural visibility conditions (*i.e.*, visibility conditions without anthropogenic visibility impairment) for that area, as well as the visibility improvement made to date and the "uniform rate of progress" (URP). The URP is the linear rate of progress needed to attain natural visibility conditions, assuming a starting point of baseline visibility conditions in 2004 and ending with natural conditions in 2064. This linear interpolation is 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. *See* 40 CFR 51.308(f)(1). Each state having a Class I area and/or emissions that may affect visibility in a Class I area must then develop a long-term strategy that includes the enforceable emission limitations, compliance schedules, and other measures that are necessary to make reasonable progress in such areas. A reasonable progress determination is based on applying the four factors in CAA section 169A(g)(1) to sources of visibility-impairing pollutants that the state has selected to assess for controls for the second implementation period. *See* 40 CFR 51.308(f)(2). Additionally, as further explained below, the RHR at 40 CFR 51.308(f)(2)(iv) separately provides five "additional factors"[7] that states must consider in developing their long-term strategies. A state evaluates potential emission reduction measures for those selected sources and determines which are necessary to make reasonable progress. Those measures are then incorporated into the state's long-term strategy. After a state has developed its long-term strategy, it then establishes RPGs for each Class I area within its borders by modeling the visibility impacts of all

[7] 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.

reasonable progress controls at the end of the second implementation period, i.e., in 2028, as well as the impacts of other requirements of the CAA. The RPGs include reasonable progress controls not only for sources in the state in which the Class I area is located, but also for sources in other states that contribute to visibility impairment in that area. The RPGs are then compared to the baseline visibility conditions and the URP to ensure that progress is being made towards the statutory goal of preventing any future and remedying any existing anthropogenic visibility impairment in Class I areas. 40 CFR 51.308(f)(2)-(3). There are additional requirements in the rule, including FLM consultation, that apply to all visibility protection SIPs and SIP revisions. *See e.g.*, 40 CFR 51.308(i).

A. Long-Term Strategy for Regional Haze

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.[8] This is accomplished by considering the four factors—"the costs of compliance, the time necessary for compliance, and the energy and nonair quality environmental impacts of compliance, and the remaining useful

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

life of any existing source subject to such requirements." CAA 169A(g)(1). The EPA has explained that the four-factor analysis is an assessment of potential emission reduction measures (i.e., control options) for sources; "use of the terms 'compliance' and 'subject to such requirements' in section 169A(g)(1) can be read that Congress intended the relevant determination to be the requirements with which sources would have to comply in order to satisfy the CAA's reasonable progress mandate." 82 FR at 3091. Thus, for each source it has selected for four-factor analysis,[9] a state must consider a "meaningful set" of technically feasible control options for reducing emissions of visibility impairing pollutants. *Id.* at 3088.

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.[10] Ultimately, while states have discretion to reasonably weigh the factors and to determine what level of control is needed, 40 CFR 51.308(f)(2)(i) provides that a state "must include in its implementation plan a description of . . . how the four factors were taken into consideration in selecting the measure for inclusion in its long-term strategy."

As explained above, 40 CFR 51.308(f)(2)(i) requires states to determine the emission reduction measures for sources that are necessary to make reasonable progress by considering the four factors. Pursuant to 40 CFR 51.308(f)(2), measures that are necessary to make reasonable progress towards the national visibility goal must be included in a state's long-term strategy and in its SIP.[11] If the outcome of a four-factor

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[9] "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.

[10] *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.

[11] 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. For example, states with smoke management programs may choose to submit their smoke management plans to EPA for inclusion in their

analysis is that an emissions reduction measure is necessary to make reasonable progress towards remedying existing or preventing future anthropogenic visibility impairment, that measure must be included in the SIP.

The characterization of information on each of the factors is also subject to the documentation requirement in 40 CFR 51.308(f)(2)(iii). The reasonable progress analysis is a technically complex exercise, and also a flexible one that provides states with bounded discretion to design and implement approaches appropriate to their circumstances. Given this flexibility, 40 CFR 51.308(f)(2)(iii) plays an important function in requiring a state to document the technical basis for its decision making so that the public and the EPA can comprehend and evaluate the information and analysis the state relied upon to determine what emission reduction measures must be in place to make reasonable progress. The technical documentation must include the modeling, monitoring, cost, engineering, and emissions information on which the state relied to determine the measures necessary to make reasonable progress.

Additionally, the RHR at 40 CFR 51.3108(f)(2)(iv) separately provides five "additional factors"[12] that states must consider in developing their long-term strategies: (1) Emission reductions due to ongoing air pollution control programs, including measures to address reasonably attributable visibility impairment; (2) measures to reduce the impacts of construction activities; (3) source retirement and replacement schedules; (4) basic smoke management practices for prescribed fire used for agricultural and wildland vegetation management purposes and smoke management programs; and (5) the anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions over the period addressed by the long-term strategy.

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).

[12] 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.

Because the air pollution that causes regional haze crosses state boundaries, 40 CFR 51.308(f)(2)(ii) requires a state to consult with other states that also have emissions that are reasonably anticipated to contribute to visibility impairment in a given Class I area. If a state, pursuant to consultation, agrees that certain measures (e.g., a certain emission limitation) are necessary to make reasonable progress at a Class I area, it must include those measures in its SIP. 40 CFR 51.308(f)(2)(ii)(A). Additionally, the RHR requires that states that contribute to visibility impairment at the same Class I area consider the emission reduction measures the other contributing states have identified as being necessary to make reasonable progress for their own sources. 40 CFR 51.308(f)(2)(ii)(B). If a state has been asked to consider or adopt certain emission reduction measures, but ultimately determines those measures are not necessary to make reasonable progress, that state must document in its SIP the actions taken to resolve the disagreement. 40 CFR 51.308(f)(2)(ii)(C). Under all circumstances, a state must document in its SIP submission all substantive consultations with other contributing states. 40 CFR 51.308(f)(2)(ii)(C).

B. Reasonable Progress Goals

Reasonable progress goals "measure the progress that is projected to be achieved by the control measures states have determined are necessary to make reasonable progress based on a four-factor analysis." 82 FR at 3091. For the second implementation period, the RPGs are set for 2028. Reasonable progress goals are not enforceable targets. 40 CFR 51.308(f)(3)(iii). While states are not legally obligated to achieve the visibility conditions described in their RPGs, 40 CFR 51.308(f)(3)(i) requires that "[t]he long-term strategy and the reasonable progress goals must provide for an improvement in visibility for the most impaired days since the baseline period and ensure no degradation in visibility for the clearest days since the baseline period."

RPGs may also serve as a metric for assessing the amount of progress a state is

making towards the national visibility goal. To support this approach, 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 line (i.e., if visibility conditions are improving more slowly than the rate described by the URP line), each state that contributes to visibility impairment in the Class I area must demonstrate, based on the four-factor analysis required under 40 CFR 51.308(f)(2)(i), that no additional emission reduction measures would be reasonable to include in its long-term strategy. 40 CFR 51.308(f)(3)(ii). To this end, 40 CFR 51.308(f)(3)(ii) requires that each state contributing to visibility impairment in a Class I area that is projected to improve more slowly than the URP provide "a robust demonstration, including documenting the criteria used to determine which sources or groups [of] sources were evaluated and how the four factors required by paragraph (f)(2)(i) were taken into consideration in selecting the measures for inclusion in its long-term strategy."

C. Monitoring Strategy and Other State Implementation Plan Requirements

Section 51.308(f)(6) requires states to have certain strategies and elements in place for assessing and reporting on visibility. Individual requirements under this subsection apply either to states with Class I areas within their borders, states with no Class I areas but that are reasonably anticipated to cause or contribute to visibility impairment in any Class I area, or both. Compliance with the monitoring strategy requirement may be met through a state's participation in the Interagency Monitoring of Protected Visual Environments (IMPROVE) monitoring network, which is used to measure visibility impairment caused by air pollution at the 156 Class I areas covered by the visibility program. 40 CFR 51.308(f)(6), (f)(6)(i), (f)(6)(iv).

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, as well as a statewide inventory documenting such emissions. 40 CFR 51.308(f)(6)(ii), (iii), (v). All states' SIPs must also provide for any other elements, including reporting, recordkeeping, and other measures, that are necessary for states to assess and report on visibility. 40 CFR 51.308(f)(6)(vi).

D. Requirements for Periodic Reports Describing Progress Towards the Reasonable Progress Goals

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

E. Requirements for State and Federal Land Manager Coordination

Clean Air Act section 169A(d) requires that before a state holds a public hearing on a proposed regional haze SIP revision, it must consult with the appropriate FLM or FLMs; pursuant to that consultation, the state must include a summary of the FLMs'

conclusions and recommendations in the notice to the public. Consistent with this statutory requirement, the RHR also requires that states "provide the [FLM] with an opportunity for consultation, in person and at a point early enough in the State's policy analyses of its long-term strategy emission reduction obligation so that information and recommendations provided by the [FLM] can meaningfully inform the State's decisions on the long-term strategy." 40 CFR 51.308(i)(2). For the EPA to evaluate whether FLM consultation meeting the requirements of the RHR has occurred, the SIP submission should include documentation of the timing and content of such consultation. The SIP revision submitted to the EPA must also describe how the state addressed any comments provided by the FLMs. 40 CFR 51.308(i)(3). Finally, a SIP revision must provide procedures for continuing consultation between the state and FLMs regarding the state's visibility protection program, including development and review of SIP revisions, five-year progress reports, and the implementation of other programs having the potential to contribute to impairment of visibility in Class I areas. 40 CFR 51.308(i)(4).

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

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

VT DEC submitted its first implementation period regional haze SIP to the EPA on August 31, 2009, with a supplemental submittal on January 3, 2012. The EPA approved Vermont's first implementation period regional haze SIP submission on May 22, 2012. 77 FR 30212. EPA's approval included, but was not limited to, the portions of the plan that address the reasonable progress requirements such as Vermont's implementation of Maximum Achievable Control Technology (MACT) on eligible sources, Vermont's maintenance of non-EGU point source controls, as well as Vermont's low sulfur fuel program, Section 5-221 of the VT SIP, "Prohibition of Potentially Polluting Materials in Fuel." Pursuant to 40 CFR 51.308(g), Vermont was also

responsible for submitting a five-year progress report as a SIP revision for the first implementation period, which it did on February 29, 2016. The EPA approved the progress report into the Vermont SIP on December 18, 2017. 82 FR 59969.

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

In accordance with CAA section 169A and the RHR at 40 CFR 51.308(f), on July 3, 2024, VT DEC submitted a revision to the Vermont SIP to address its regional haze obligations for the second implementation period, which runs through 2028. A draft of Vermont's Regional Haze SIP submission was available for public comment on April 18, 2024, until June 1, 2024. A public hearing was also held on May 22, 2024. VT DEC only received comments from EPA, which are included in the SIP submission.

The following sections describe Vermont's SIP submission, including analyses conducted by MANEVU and Vermont's determinations based on those analyses, Vermont's assessment of progress made since the first implementation period in reducing emissions of visibility impairing pollutants, and improvements to visibility at its Class I area and nearby Class I areas in other states. This notice also contains EPA's evaluation of Vermont'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 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.

Vermont has one mandatory Class I Federal area within its borders, the Lye Brook Wilderness area. Visibility monitoring in this area is accomplished with instruments located at a single site at Mount Snow in West Dover, Vermont. This monitoring station represents the Class I wilderness area. For the second implementation period, MANEVU performed technical analyses[13] to help assess source and state-level contributions to visibility impairment and the need for interstate consultation. MANEVU used the results of these analyses to determine which states' emissions "have a high likelihood of affecting visibility in MANEVU's Class I areas."[14] Similar to metrics used in the first implementation period,[15] MANEVU used a greater than 2 percent of sulfate plus nitrate emissions contribution criterion to determine whether emissions from individual jurisdictions within the region affected visibility in any Class I areas. The MANEVU analyses for the second implementation period used a combination of data analysis techniques, including emissions data, distance from Class I areas, wind trajectories, and CALPUFF dispersion modeling. Although many of the analyses focused only on SO_2 emissions and resultant particulate sulfate contributions to visibility impairment, some also incorporated NOx emissions to estimate particulate nitrate contributions.

One MANEVU analysis used for contribution assessment was CALPUFF air dispersion modeling. The CALPUFF model was used to estimate sulfate and nitrate formation and transport in MANEVU and nearby regions originating from large electric generating unit (EGU) point sources and other large industrial and institutional sources in the eastern and central United States. Information from an initial round of CALPUFF

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[13] The contribution assessment methodologies for MANEVU Class I areas are summarized in appendix E of the docket. "Selection of States for MANEVU Regional Haze Consultation (2018)"
[14] *Id.*
[15] MANEVU supporting materials can be found in the docket of this proposed rulemaking.

modeling was collated for the 444 EGUs that were determined to warrant further scrutiny based on their emissions of SO_2 and NOx. The list of EGUs was based on an enhanced "Q/d" analysis[16] that considered recent SO_2 emissions in the eastern United States and an analysis that adjusted previous 2002 MANEVU CALPUFF modeling by applying a ratio of 2011 to 2002 SO_2 emissions. This list of sources was then enhanced by including the top five SO_2 and NOx emission sources for 2011 for each state included in the modeling domain. A total of 311 EGU stacks (as opposed to individual units) were included in the CALPUFF modeling analysis. Initial information was also collected on the 50 industrial and institutional sources that, according to 2011 Q/d analysis, contributed the most to visibility impact in each Class I area. The ultimate CALPUFF modeling run included a total of 311 EGU stacks and 82 industrial facilities. The summary report for the CALPUFF modeling included the top 10 most impacting EGUs and the top 5 most impacting industrial/institutional sources for each Class I area and compiled those results into a ranked list of the most impacting EGUs and industrial sources at MANEVU Class I areas.[17] Overall, MANEVU found that emission sources located close to Class I areas typically show higher visibility impacts than similarly sized facilities further away. However, visibility degradation appears to be dominated by the more distant emission sources due to their larger emissions. The CALPUFF modeling did not include any individual EGU or industrial/institutional point sources in Vermont because the state's SO_2 and NOx emissions were much lower than the other regional sources considered in the CALPUFF modeling analysis.

The second MANEVU contribution analysis used a meteorologically weighted Q/d calculation to assess states' contributions to visibility impairment at MANEVU Class

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[16] "Q/d" is emissions (Q) in tons per year, typically of one or a combination of visibility-impairing pollutants, divided by distance to a class I area (d) in kilometers. The resulting ratio is commonly used as a metric to assess a source's potential visibility impacts on a particular class I area.

[17] See appendix C in the Docket, "2016 MANEVU Source Contribution Modeling Report, CALPUFF Modeling of Large Electrical Generating Units and Industrial Sources" and Appendix D "MANEVU Updated Q/d*C Contribution Assessment."

I areas.[18] This analysis focused predominantly on SO_2 emissions and used cumulative SO_2 emissions from a source and a state for the variable "Q," and the distance of the source or state to the IMPROVE monitor receptor at a Class I area as "d." The result is then multiplied by a constant (C_i), which is determined based on the prevailing wind patterns. MANEVU selected a meteorologically weighted Q/d analysis as an inexpensive initial screening tool that could easily be repeated to determine which states, sectors, or sources have a larger relative impact and warrant further analysis. Although MANEVU did not originally estimate nitrate impacts, the MANEVU Q/d analysis was subsequently extended to account for nitrate contributions from NOx emissions and to approximate the nitrate impacts from area and mobile sources. MANEVU therefore developed a ratio of nitrate to sulfate impacts based on the previously described CALPUFF modeling and applied those to the sulfate Q/d results in order to derive nitrate contribution estimates. Several states, such as Vermont, did not have CALPUFF nitrate to sulfate ratio results, however, because there was no point sources modeled with CALPUFF.

In order to develop a final set of contribution estimates, MANEVU weighted the results from both the Q/d and CALPUFF analyses. The MANEVU mass-weighted sulfate and nitrate contribution results were reported for the MANEVU Class I areas. (The Q/d summary report included results for several non-MANEVU areas as well). If a state's contribution to sulfate and nitrate concentrations at a particular Class I area was 2 percent or greater, MANEVU regarded that state as contributing to visibility impairment in that area. According to MANEVU's analyses, Vermont's highest percent mass-weighted sulfate and nitrate contribution was estimated to be 2.1% at New Hampshire's two Class I areas, with contributions ranging from 0.3% to 0.8% at the other nearby Class I areas.

The EPA concluded in the 1999 RHR that "all [s]tates contain sources whose emissions are reasonably anticipated to contribute to regional haze in a Class I area," 64

[18] See appendix D, "MANEVU Updated Q/d*C Contribution Assessment."

FR at 35721, and this determination was not changed in the 2017 RHR. Critically, the statute and regulation both require that the cause-or-contribute assessment consider all emissions of visibility-impairing pollutants from a state, as opposed to emissions of a particular pollutant or emissions from a certain set of sources. The screening analyses on which MANEVU relied are useful for certain purposes. MANEVU used information from its technical analysis to rank the largest contributing states to sulfate and nitrate impairment in the seven Class I areas in the MANEVU region and three additional, nearby Class I areas.[19] The rankings were used to determine upwind states that MANEVU deemed important to include in state-to-state consultation (based on an identified visibility impact screening threshold). Additionally, large individual source impacts were used to target MANEVU control analysis "Asks"[20] of states and sources both within and upwind of MANEVU.[21] The EPA finds the nature of the analyses generally appropriate to support decisions on states with which to consult.

With regard to the analysis and determinations regarding Vermont's contribution to visibility impairment at out-of-state Class I areas, the MANEVU technical work focuses on the magnitude of visibility impacts from certain Vermont emissions on its Class I area and other nearby Class I areas. The MANEVU contribution screening results estimate Vermont's highest percent mass-weighted sulfate and nitrate contribution to be 2.1% at Great Gulf Wilderness and the Presidential Range-Dry River Wilderness in New Hampshire, with progressively lower contributions at Moosehorn Wilderness Area in Maine and Roosevelt-Campobello International Park in New Brunswick (0.8%), Acadia

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[19] The Class I areas analyzed were Acadia National Park in Maine, Brigantine Wilderness in New Jersey, Great Gulf Wilderness and Presidential Range – Dry River Wilderness in New Hampshire, Lye Brook Wilderness in Vermont, Moosehorn Wilderness in Maine, Roosevelt-Campobello International Park in New Brunswick, Shenandoah National Park in Virginia, James River Face Wilderness in Virginia, and Dolly Sods/Otter Creek Wildernesses in West Virginia.

[20] As explained more fully in Section IV.E.a of this proposed rulemaking, MANEVU refers to each of the components of its overall strategy as an "Ask "of its member states.

[21] The MANEVU consultation report (Appendix G) explains that "[t]he objective of this technical work was to identify states and sources from which MANEVU will pursue further analysis. This screening was intended to identify which states to invite to consultation, not a definitive list of which states are contributing."

National Park in Maine (0.6%), Lye Brook Wilderness Area in Vermont (0.3%), and Brigantine Wilderness Area in New Jersey (0.2%). However, the analyses did not account for all emissions and all components of visibility impairment (e.g., primary PM emissions, and impairment from fine PM, elemental carbon, and organic carbon). In addition, Q/d analyses with a relatively simplistic accounting for wind trajectories and CALPUFF applied to a very limited set of EGUs and major industrial sources of SO_2 and NOx are not scientifically rigorous tools capable of evaluating contribution to visibility impairment from *all* emissions in a state. The EPA acknowledges that the contribution to visibility impairment from Vermont's emissions at Class I areas is significantly smaller than that from numerous other MANEVU states.[22] And while some MANEVU states noted that the contributions from several states outside the MANEVU region are significantly larger than its own, each state is obligated under the CAA and RHR to address regional haze visibility impairment resulting from emissions from within the state, irrespective of whether another state's contribution is greater.. Additionally, we note that the 2 percent or greater sulfate-plus-nitrate threshold used to determine whether Vermont emissions contribute to visibility impairment at a particular Class I area may be higher than what EPA believes is an "extremely low triggering threshold" intended by the statute and regulations. In sum, based on the information provided, it is clear that emissions from Vermont contribute to visibility impairment in the Class I areas in New Hampshire and otherwise have relatively small contributions to the other nearby Class I areas. However, due to the low triggering threshold implied by the Rule and the lack of rigorous modeling analyses, we do not necessarily agree with the level of the State's 2% contribution threshold.

Regardless, we note that Vermont did determine that sources and emissions

[22] Because MANEVU did not include all Vermont's emissions or contributions to visibility impairment in its analysis, we cannot definitively state that Vermont's contribution to visibility impairment is not the most significant. However, that is very likely the case.

within the state, largely from the inclusion of state-wide NOx emissions from the mobile source sector and area sources into the modeling, contribute to a 2.1% visibility impairment at NH Class I sites. Furthermore, pursuant to the regulatory requirements, Vermont took part in the emission control strategy consultation process as a member of MANEVU. As part of that process, MANEVU developed a set of emissions reduction measures identified as being necessary to make reasonable progress in the seven MANEVU Class I areas. This strategy consists of six "Asks" for states within MANEVU and five Asks for states outside the region that were found to impact visibility at Class I areas within MANEVU.[23] Vermont's submission discusses each of the Asks and explains why or why not each is applicable and how it has complied with the relevant components of the emissions control strategy MANEVU has laid out for its states. Vermont worked with MANEVU to determine potential reasonable measures that could be implemented by 2028, considering the cost of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts, and the remaining useful life of any potentially affected sources. As discussed in further detail below, the EPA is proposing to find that Vermont has submitted a regional haze plan that meets the requirements of 40 CFR 51.308(f)(2) related to the development of a long-term strategy. Thus, we propose to find that Vermont has satisfied the applicable requirements for making reasonable progress towards natural visibility conditions in Class I areas that may be affected by emissions from the state.

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

Section 51.308(f)(1) requires states to determine the following for "each mandatory Class I Federal area located within the State": baseline visibility conditions for the most impaired and clearest days, natural visibility conditions for the most impaired

[23] *See* Appendix G "MANEVU Regional Haze Consultation Report and Consultation Documentation."

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

The Lye Brook Wilderness area has 2000-2004 baseline visibility conditions of 6.37 deciviews on the 20% clearest days and 23.57 deciviews on the 20% most impaired days.[24] Vermont calculated an estimated natural background visibility of 2.79 deciviews on the 20% clearest days and 10.24 deciviews on the 20% most impaired days for the Lye Brook Wilderness area.[25] The current visibility conditions, which are based on 2015-2019 monitoring data, were 4.88 deciviews on the clearest days and 14.06 deciviews on the most impaired days,[26] which represents an improvement from the baseline period of 1.49 deciviews on the 20% clearest days and 9.51 deciviews on the 20% most impaired days.[27] In addition, current visibility conditions are 2.09 and 3.82 deciviews greater than natural conditions on the respective sets of days.[28] For the second implementation period, Vermont calculated an annual URP of 0.222 deciviews needed to reach natural visibility on the 20% most impaired days.[29] Vermont noted that current visibility conditions on the most impaired days in the Lye Brook Wilderness Area, at 14.06 deciviews, are already below the 2028 URP glidepath of 18.24 deciviews for the end of the second SIP planning

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[24] *See* VT Regional Haze SIP Submission, Table 4-1, "Baseline Visibility for the 20% Baseline visibility for the 20% most impaired days and 20% clearest days (2000-2004) in MANEVU mandatory Class I Federal areas."
[25] *See id.*, Table 4-2 "Visibility under natural conditions and difference between baseline and natural conditions for the 20% most impaired days and 20% clearest days in MANEVU mandatory Class I Federal areas."
[26] *See id*., Table 4-3: "Baseline, current, and reasonable progress goal haze index levels for Class I areas in or adjacent to the MANEVU Region."
[27] *Id.* at 32.
[28] *Id.*
[29] *Id*, at 33.

period.[30] Vermont has not proposed any adjustments to the URP to account for impacts from anthropogenic sources outside the United States or from wildland prescribed fires. EPA is proposing to find that Vermont has submitted a regional haze plan that meets the requirements of 40 CFR 51.308(f)(1) related to the calculations of baseline, current, and natural visibility conditions; progress to date; and the uniform rate of progress for the second implementation period.

E. Long-Term Strategy for Regional Haze

a. Vermont's Response to the Six MANEVU Asks

Each state having a Class I area within its borders or emissions that may affect visibility in a Class I area must develop a long-term strategy for making reasonable progress towards the national visibility goal. CAA 169A(b)(2)(B). After considering the four statutory factors, all measures that are determined to be necessary to make reasonable progress must 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 (i.e., subjected to four-factor analysis) for the second implementation period and how the four factors were taken into consideration in selecting the emission reduction measures for inclusion in the long-term strategy. 40 CFR 51.308(f)(2)(iii).

The following section summarizes how Vermont addresses the requirements of section 51.308(f)(2)(i), including a discussion of the six Asks developed by MANEVU and how Vermont addressed each. The regulations Vermont identifies as a result of its responses to the six Asks comprise Vermont's long-term strategy for the second planning period to address regional haze visibility impairment for each mandatory Class I Federal area that may be affected by emissions from Vermont. In Section IV.E.b. of the NPRM,

[30] *Id,* at 32-33.

EPA evaluates Vermont's compliance with the requirements of 40 CFR 51.308(f)(2)(i).

States may rely on technical information developed by the RPOs of which they are members to select sources for four-factor analysis and to conduct that analysis, as well as to satisfy the documentation requirements under 40 CFR 51.308(f). Where an RPO has performed source selection and/or four-factor analyses (or considered the five additional factors in 40 CFR 51.308(f)(2)(iv)) for its member states, those states may rely on the RPO's analyses for the purpose of satisfying the requirements of 40 CFR 51.308(f)(2)(i) so long as the states have a reasonable basis to do so and all state participants in the RPO process have approved the technical analyses. 40 CFR 51.308(f)(2)(iii). States may also satisfy the requirement of 40 CFR 51.308(f)(2)(ii) to engage in interstate consultation with other states that have emissions that are reasonably anticipated to contribute to visibility impairment in a given Class I area under the auspices of intra- and inter-RPO engagement.

Vermont is a member of the MANEVU RPO and participated in the RPO's regional approach to developing a strategy for making reasonable progress towards the national visibility goal in the MANEVU Class I areas. MANEVU's strategy includes a combination of: (1) Measures for certain source sectors and groups of sectors that the RPO determined were reasonable for states to pursue, and (2) a request for member states to conduct four-factor analyses for individual sources that it identified as contributing to visibility impairment. MANEVU refers to each of the components of its overall strategy as an "Ask" of its member states. On August 25, 2017, the Executive Director of MANEVU, on behalf of the MANEVU states and tribal nations, signed a statement that identifies six emission reduction measures that comprise the Asks for the second implementation period.[31] The Asks were "designed to identify reasonable emission reduction strategies that must be addressed by the states and tribal nations of MANEVU

[31] *See* Appendix G "MANEVU Regional Haze Consultation Report and Consultation Documentation."

through their regional haze SIP updates."[32] The statement explains that "[i]f any State cannot agree with or complete a Class I State's Asks, the State must describe the actions taken to resolve the disagreement in the Regional Haze SIP."[33]

MANEVU's recommendations as to the appropriate control measures were based on technical analyses documented in the RPO's reports and included as appendices to or referenced in Vermont's regional haze SIP submission. One of the initial steps of MANEVU's technical analysis was to determine which visibility-impairing pollutants should be the focus of its efforts for the second implementation period. In the first implementation period, MANEVU determined that sulfates were the most significant visibility impairing pollutant at the region's Class I areas. To determine the impact of certain pollutants on visibility at Class I areas for the purpose of second implementation period planning, MANEVU conducted an analysis comparing the pollutant contribution on the clearest and most impaired days in the baseline period (2000-2004) to the most recent period (2012-2016)[34] at MANEVU and nearby Class I areas. MANEVU found that while SO_2 emissions were decreasing and visibility was improving, sulfates still made up the most significant contribution to visibility impairment at MANEVU and nearby Class I areas. According to the analysis, NO_X emissions have begun to play a more significant role in visibility impacts in recent years as SO_2 emissions have decreased. The technical analyses used by Vermont are included in their submission and are as follows:

- 2016 Updates to the Assessment of Reasonable Progress for Regional Haze in MANEVU Class I Areas (Appendix L);
- Impact of Wintertime SCR/SNCR Optimization on Visibility Impairing Nitrate Precursor Emissions. November 2017. (Appendix Q);

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[32] *Id.*
[33] *Id.*
[34] The period of 2012-2016 was the most recent period for which data were available at the time of analysis. VT also included 2015-2019 data, discussed above in part D of this section.

- High Electric Demand Days and Visibility Impairment in MANEVU. December 2017. (Appendix R);
- Benefits of Combined Heat and Power Systems for Reducing Pollutant Emissions in MANEVU States. March 2016. (Appendix S);
- 2016 MANEVU Source Contribution Modeling Report – CALPUFF Modeling of Large Electrical Generating Units and Industrial Sources April 4, 2017 (Appendix C);
- Contribution Assessment Preliminary Inventory Analysis. October 10, 2016. (Appendix H);
- Four-Factor Data Collection Memo. March 2017. (Appendix K);
- Status of the Top 167 Stacks from the 2008 MANEVU Ask. July 2016. (Appendix M).

MANEVU gathered information on each of the four statutory factors for six source sectors it determined, based on an examination of annual emission inventories, "had emissions [of SO_2 and/or NOx] that were reasonabl[y] anticipated to contribute to visibility degradation in MANEVU:" electric generating units (EGUs), industrial/commercial/institutional boilers (ICI boilers), cement kilns, heating oil, residential wood combustion, and outdoor wood combustion.[35] MANEVU also collected data on individual sources within the EGU, ICI boiler, and cement kiln sectors.[36] Information for the six sectors included explanations of technically feasible control options for SO_2 or NO_X, illustrative cost-effectiveness estimates for a range of model units and control options, sector-wide cost considerations, potential time frames for compliance with control options, potential energy and non-air-quality environmental impacts of certain control options, and how the remaining useful lives of sources might

[35] See appendix K "MANEVU Four Factor Data Collection Memo at 1, March 30, 2017."
[36] See appendix L "2016 Updates to the Assessment of Reasonable Progress for Regional Haze in MANEVU Class I Areas, Jan. 31, 2016."

be considered in a control analysis.[37] Source-specific data included SO_2 emissions[38] and existing controls[39] for certain existing EGUs, ICI boilers, and cement kilns. MANEVU considered this information on the four factors as well as the analyses developed by the RPO's Technical Support Committee when it determined specific emission reduction measures that were found to be reasonable for certain sources within two of the sectors it had examined—EGUs and ICI boilers.[40] The Asks were based on this analysis and looked to optimize the use of existing controls, have states conduct further analysis on EGU or ICI boilers with considerable visibility impacts, implement low sulfur fuel standards, or lock-in lower emission rates.

MANEVU Ask 1 is "ensuring the most effective use of control technologies on a year-round basis" at EGUs with a nameplate capacity larger than or equal to 25 megawatts (MW) with already installed NOx and/or SO_2 controls in order to consistently minimize emissions of haze precursors or obtain equivalent alternative emission reductions.[41] MANEVU observed that EGUs often only run NOx emissions controls to comply with ozone season trading programs and consequently, NOx sources may be uncontrolled during the winter and non-peak summer days. MANEVU found that: (1) running existing installed controls [selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR)] is one of the most cost-effective ways to control NOx emissions from EGUs; and (2) that running existing controls year-round could substantially reduce the NOx emissions in many of the states upwind of Class I areas in MANEVU that lead to visibility impairment during the winter from nitrates.[42] MANEVU

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[37] *Id.*
[38] See appendix K "Four Factor Data Collection Memo."
[39] See appendix M "Status of the Top 167 Stacks from the 2008 MANEVU Ask. July 2016."
[40] See Appendix K "Four Factor Data Collection Memo"; Appendix L "2016 Updates to the Assessment of Reasonable Progress for Regional Haze in MANEVU Class I Areas."

[41] See Appendix G "MANEVU Regional Haze Consultation Report and Consultation Documentation – Final."
[42] See Appendix Q "Impact of Wintertime SCR/SNCR Optimization on Visibility Impairing Nitrate Precursor Emissions."

included this as an emission management strategy because large EGUs had already been identified as dominant contributors to visibility impairment and the low cost of running already installed controls made it reasonable. One EGU in Vermont was identified as meeting the criteria of Ask 1. This source is McNeil Generating Station of the Burlington Electric Department, a biomass-fired EGU that can also fire natural gas and oil.

McNeil Generating Station has a nameplate capacity of 50 MW and is the largest point source of NOx emissions in Vermont, at 130 tons per year (tpy). McNeil employs SCR as NOx Reasonably Available Control Technology (RACT) in order to qualify for Class I renewable energy credits in New England.[43] The facility also employs low NOx burners when firing natural gas. The facility's short-term NOx emissions limits are 0.23 lbs/MMBtu and 145 lbs/hr when burning wood, 0.23 lbs/MMBtu and 57.5 lbs/hr when firing oil, and 0.13 lbs/MMBtu and 88 lbs/hr for natural gas. To meet the NOx RACT requirement, the facility is also subject to a NOx limit of 0.075 lbs/MMBtu based on a calendar quarterly average. SO_2 emissions limitations are set at 0.0015 lbs/MMBtu for oil. Wood and natural gas have inherently low SO_2 emissions when burned for fuel. These limits were incorporated into the Title V operating permit, issued on June 14, 2018. These controls are also required to be run at all times, including periods of startup, shutdown, and malfunction, on a year-round basis. VT DEC also determined that the source effectively utilizes NOx and SO2 controls year-round. Since these controls are already in effect and are required to operate year-round, VT DEC concluded that it met the requirements of Ask 1.

MANEVU Ask 2 consists of a request that states "Emission sources modeled by MANEVU that have the potential for 3.0 Mm^{-1} or greater visibility impacts at any MANEVU Class I area, as identified by MANEVU contribution analyses . . .perform a

[43] Vermont's most recently revised NOx RACT program was approved into the SIP on 11/26/2019 (84 FR 65011).

four-factor analysis for reasonable installation or upgrade to emissions controls". MANEVU developed its Ask 2 list of sources for analysis by performing modeling and identifying facilities with the potential for 3.0 inverse megameters (Mm^{-1}) or greater impacts on visibility at any Class I area in the MANEVU region. For units identified for the Ask 2 analysis, MANEVU requested that states determine reasonable controls through the consideration of the four factors on a state-by-state and unit-by-unit basis. MANEVU's analysis for Ask 2 did not identify any units in Vermont with a potential impact of 3.0 Mm^{-1} or greater at any MANEVU Class I area. Based on the lack of identified sources at or above the 3.0 Mm^{-1} threshold, Vermont therefore concluded that it satisfied Ask 2.

Ask 3 is for each MANEVU state to pursue an ultra-low sulfur fuel oil standard if it has not already done so. The Ask includes percent by weight standards for #2 distillate oil (0.0015% sulfur by weight or 15 ppm), #4 residual oil (0.25-0.5% sulfur by weight), and #6 residual oil (0.3-0.5% sulfur by weight). Vermont adopted the MANEVU low-sulfur fuel oil strategy into Vermont's Air Pollution Control Regulations (VT APCR 5-221(1)) on September 28, 2011. Beginning in 2014, the first phase of limitations lowered the allowable concentration of sulfur in No.2 and lighter distillate fuels to 0.05% (500 ppm) by weight. In 2018, the beginning of the second implementation period, the second phase of limitations further lowered the limit to 0.0015% (15 ppm) by weight. In addition, the second phase also lowered the sulfur limit for No. 4 residual oils to 0.25% (2500 ppm) by weight, as well as for No. 5 and No. 6 residual oils, heavier residual oils, and used oils to 0.5% (5000 ppm) by weight. EPA approved APCR revised Section 5-221(1), "Prohibition of Potentially Polluting Materials in Fuel," into Vermont's SIP on May 22, 2012 [77 FR 30212]. Since Vermont has fully implemented an ultra-low sulfur fuel oil standard, the State therefore concluded that it met Ask 3.

MANEVU Ask 4 requests states to update permits to "lock in" lower emissions

rates for NOx, SO_2, and PM at emissions sources larger than 250 million British Thermal Units (MMBtu) per hour heat input that have switched to lower emitting fuels. The threshold of 250 MMBTU/hour was based on prior BART analysis. Because there aren't any large coal burning units in Vermont, this Ask pertains only to oil burning units. Vermont did not identify any dual/multi-fuel units larger than 250 MMBTU/hour that had made a physical change to switch to a cleaner fuel. All such dual/multi-fuel units are either continuing to burn a mix of fuels or are choosing to maintain their ability to do so in the future. Vermont submitted that there are no such facilities in the State and therefore concluded it met Ask 4.

Ask 5 requests that MANEVU states "control NOx emissions for peaking combustion turbines that have the potential to operate on high electric demand days" by either: (1) Meeting NOx emissions standards specified in the Ask for turbines that run on natural gas and fuel oil, (2) performing a four-factor analysis for reasonable installation of or upgrade to emission controls, or (3) obtaining equivalent emission reductions on high electric demand days.[44] The Ask requests states to strive for NOx emission standards of no greater than 25 ppm for natural gas and 42 ppm for fuel oil, or at a minimum, NOx emissions standards of no greater than 42 ppm for natural gas and 96 ppm at for fuel oil. The peaking combustion turbines located at Vermont stationary sources that were identified as meeting the criteria of Ask 5 are: Green Mountain Power (GMP) Unit No. 5 in Berlin, VT and Unit No. 16 in Colchester, VT (Gorge 16). Unit No. 5 is comprised of two combustion turbines (Berlin 5A and 5B) connected to a single electrical power generator. GMP provided VT DEC with four-factor analyses of these three turbines for installation or upgrade to NO_X emission controls. According to the analysis of calendar year 2019, Berlin 5A and 5B were operated 10.9 and 11.4 hours, respectively, with total NOx emissions equating to .91 tons and .71 tons, respectively. Gorge 16 was operated for

[44] See appendix G "MANEVU Regional Haze Consultation Report and Consultation Documentation."

28.9 hours and emitted 1.31 tons of NOx. GMP concluded there were no additional NO_X controls that GMP could employ on any of the combustion turbines that are both technically and economically feasible. GMP calculated the lowest cost effectiveness value for a control option to be over $38,000/ton of NOx removed. VT DEC acknowledged, however, that the year of emissions it asked GMP to use for the analyses, 2019, totaled the lowest emissions from the units for the period spanning 2014 to 2023. Thus, VT DEC recalculated the cost effectiveness of additional controls based on the median annual emissions for that ten-year period for each source because the median represents "typical" annual emissions better than each source's 2019 annual emissions do[45]. Berlin 5A, Berlin 5B and Gorge 16 emitted median annual emissions of 3.0, 2.8, and 2.9 tons per year, respectively. Based on these median annual emissions values, VT DEC calculates the cost effectiveness values for controls to range from $17,074/ton of NOx controlled for water injection to $48,842,067/ton of NOx for SCR. VT DEC concluded that requiring the installation of additional emissions controls at these turbines is unreasonable for the second planning period due to a combination of low hours of operation, low annual emissions generated, the limited life expectancy of the units (each unit is over 50 years old), possible non-air quality environmental effects of waste products from controls (for SCR), and the cost per ton of emissions reduced. Thus, VT DEC concurred with GMP's initial findings that controls on these three sources are not necessary to make reasonable progress. Vermont, based on the low usage, low overall emissions, and the four-factor analyses provided by GMP, concluded it met Ask 5.

Ask 6 requests MANEVU states to report in their regional haze SIPs about programs that decrease energy demand and increase the use of combined heat and power (CHP) and other distributed generation technologies such as fuel cells, wind and solar. Vermont has a Comprehensive Energy Plan which describes strategies to decrease energy

[45] VT Regional Haze Submission at 50.

demand via energy efficiency and modernize the electrical grid to handle distributed energy resources. [46] The Comprehensive Energy Plan explains, for example, that the State delivers electric efficiency programs and services primarily through Energy Efficiency Utilities (EEUs) that provide technical, financial, and educational services to improve the energy efficiency of homes, businesses, institutions, and municipal facilities.[47] Residential energy efficiency investments have been encouraged through rebates and technical assistance, thus far amounting to 13 million tons of decreased carbon dioxide emissions since 2000. More information can be found in Vermont's most recent Climate Action Plan.[48] In addition, Vermont participates in the Regional Greenhouse Gas Initiative (RGGI), a Northeast and Mid-Atlantic state initiative to reduce greenhouse gas emissions that contribute to global climate change. The initiative creates a market for emissions allowances through a regional cap-and-trade program for greenhouse gas emissions from area power plants. As a co-benefit of this program, emissions of particle producing pollutants are also reduced. Vermont emissions allowances are sold at auctions and the proceeds provide funding for the EEUs mentioned in the Comprehensive Energy Plan.[49] Vermont is also considering how best to address the implementation of the State's Global Warming Solutions Act, which is managed by Vermont's Agency of Natural Resources (ANR) Climate Office and is expected to further reduce greenhouse gas and, as a co-benefit, particle producing pollutants. Vermont concluded it meets Ask 6.

In sum, Vermont provided four-factor analyses and identified several SIP-approved mechanisms for controlling pollutants that impair visibility and that are

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[46] A copy of Vermont's most recent Comprehensive Energy Plan can be found in the docket of this proposed rulemaking and at: https://publicservice.vermont.gov/sites/dps/files/documents/2022VermontComprehensiveEnergyPlan_0.pdf .

[47] *See* Comprehensive Energy Plan at Section 7.5.

[48] Vermont's most recent Climate Action Plan can be found here: https://climatechange.vermont.gov/readtheplan.

[49] Information on Vermont's involvement in the RGGI can be found here: https://dec.vermont.gov/air-quality/climate-change/rggi.

necessary for reasonable progress – including its regulations limiting sulfur content in fuels and continued effective use of NOx controls. Vermont also considers its mobile source emission reduction strategies which reduce NOx emissions in the state to provide reasonable progress in improving visibility. Additionally, the projected 2028 visibility conditions for Class I areas in Vermont and influenced by emissions from Vermont sources are all below the URP.

b. The EPA's Evaluation of Vermont's Response to the Six MANEVU Asks and Compliance with section 51.308(f)(2)(i)

The EPA is proposing to find that Vermont has satisfied the requirements of section 51.308(f)(2)(i) related to evaluating sources and determining the emission reduction measures that are necessary to make reasonable progress by considering the four statutory factors. We are proposing to find that Vermont has satisfied the four-factor analysis requirement through its analysis and actions to address MANEVU Asks 3 and 5. Additionally, in line with recent proposals from the EPA[50], it is the Agency's policy that, where visibility conditions for a Class I area impacted by a State are below the URP and the State has considered the four statutory factors, the State will have presumptively demonstrated reasonable progress for the second planning period for that area.

As explained above, Vermont relied on MANEVU's technical analyses and framework (i.e., the Asks) to select sources and develop its long-term strategy. MANEVU conducted an inventory analysis to identify the source sectors that produced the greatest amount of SO_2 and NOx emissions in 2011; inventory data were also projected to 2018. Based on this analysis, MANEVU identified the top-emitting sectors for each of those two pollutants. For SO_2, those sources include coal-fired EGUs, industrial boilers, oil-fired EGUs, and oil-fired area sources including residential, commercial, and industrial sources. In Vermont, the largest sources of NOx include on-

[50] See proposed rulemakings published April 18, 2025 (90 FR 16478) and May 14, 2025 (90 FR 20425).

road vehicles, non-road vehicles, and EGUs.[51] The RPO's documentation explains that "[EGUs] emitting SO_2 and NOx and industrial point sources emitting SO_2 were found to be sectors with high emissions that warranted further scrutiny. Mobile sources were not considered in this analysis because any ask concerning mobile sources would be made to EPA and not during the intra-RPO and inter-RPO consultation process among the states and tribes."[52] EPA proposes to find that Vermont reasonably evaluated the two pollutants— SO_2 and NOx—that currently drive visibility impairment within the MANEVU region and that the State adequately explained and supported its decision to focus on these two pollutants through its reliance on the MANEVU technical analyses cited in its submission.

Section 51.308(f)(2)(i) requires states to evaluate sources or a group of sources and determine the emission reduction measures that are necessary to make reasonable progress by considering the four statutory factors. As explained previously, the MANEVU Asks are a mix of measures for sectors and groups of sources identified as reasonable for states to address in their regional haze plans. While MANEVU formulated the Asks to be "reasonable emission reduction strategies" to control emissions of visibility-impairing pollutants,[53] Vermont's responses, in two of the Asks in particular, engage with the requirement that States determine the emission reduction measures that are necessary to make reasonable progress through consideration of the four factors. As laid out in further detail below, the EPA is proposing to find that MANEVU's four-factor analysis conducted to support the emission reduction measures in Ask 3 (ultra-low sulfur fuel oil), in conjunction with Vermont's analysis and explanation of how it has complied with Ask 5 (perform four-factor analyses for measures to control NO_x emissions at certain peaking combustion turbines) satisfy the requirement of section 51.308(f)(2)(i).

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[51] See appendix H "Contribution Assessment."
[52] See appendix G, "MANEVU Regional Haze Consultation Report and Consultation Documentation."
[53] *Id*.

The emission reduction measures that are necessary to make reasonable progress must be included in the long-term strategy, i.e., in Vermont's SIP. 40 CFR 51.308(f)(2).

For Ask 1, Vermont included an analysis of its one EGU (McNeil Station) subject to the Ask (i.e., a generation capacity ≥ 25MW with operative NOx and/or SO_2 controls). Vermont asserted that it satisfies Ask 1 because McNeil's NOx and SO_2 emissions limits are based on the use of SCR, low NOx burners, low sulfur fuel and apply year-round. EPA thus agrees that Vermont satisfied Ask 1.

Ask 2 addresses the sources MANEVU determined have the potential for larger than, or equal to, 3.0 Mm^{-1} visibility impact at any MANEVU Class I area; the Ask requests MANEVU states to conduct four-factor analyses for the specified sources within their borders. This Ask explicitly engages with the statutory and regulatory requirement to determine the emission reduction measures necessary to make reasonable progress based on the four factors; MANEVU considered it "reasonable to have the greatest contributors to visibility impairment conduct a four-factor analysis that would determine whether emission control measures should be pursued and what would be reasonable for each source."[54]

The RHR recognizes that, due to the nature of regional haze visibility impairment, numerous and sometimes relatively small sources may need to be selected and evaluated for control measures in order to make reasonable progress.[55] In this case, applying the 3.0 Mm^{-1} threshold did not identify any sources in Vermont (and only 22 across the entire MANEVU region). We note, however, that the 3.0 Mm-1 threshold used in this Ask is only one part of the MANEVU source identification process and that being below this threshold did not necessarily exclude a source from additional review in connection with

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[54] *Id.*

[55] *See* 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 87-88.

another Ask.

EPA agrees that Vermont reasonably determined it has satisfied Ask 2. MANEVU's threshold did not identify any sources in Vermont for four-factor analysis. However, EPA notes that Vermont's point sources have very low NOx and SO_2 emissions overall. While Vermont did not provide light extinction estimates (Mm^{-1}) for its top-emitting sources, it did note that its top NOx point source emitter, McNeil Station, averages only about 130 tons of NOx emissions per year.[56] Vermont's next top four NOx emitters account for only about an additional 200 tons of NOx per year in total.[57] Similarly, Vermont estimates that its top five highest SO_2 emitters together account for less than 100 tons of SO_2 per year.[58] Furthermore, while Vermont did not consider the four statutory factors for any sources in response to Ask 2, it did do so in response to Ask 5, where it examined emissions reduction measures necessary for three combustion turbines associated with GMP Unit No. 5 and No. 16 as part of Ask 5.[59] EPA is basing this proposed finding on the state's examination of its largest operating point sources at the time of SIP submission, and on the emissions from and controls that apply to those sources, as well as on Vermont's existing SIP-approved NOx and SO_2 rules that effectively control emissions from the largest contributing stationary-source sectors.

Ask 3, which addresses the sulfur content of heating oil used in MANEVU states, is based on a four-factor analysis for the heating oil sulfur reduction regulations contained in that Ask;[60] specifically, for the control strategy of reducing the sulfur content of distillate oil to 15 ppm. The analysis started with an assessment of the costs of retrofitting refineries to produce 15 ppm heating oil in sufficient quantities to support

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[56] VT Regional Haze SIP Submission at 48.
[57] *Id*. at 47-48.
[58] *Id*.
[59] *See* Appendix T "Green Mountain Power, Regional Haze Reasonable Progress Four-Factor Analysis," Trinity Consultants (December 18, 2020); VT Regional Haze SIP Submission, at 49-50.
[60] *See* Appendix L "2016 Updates to the Assessment of Reasonable Progress for Regional Haze in MANEVU Class I Areas."

implementation of the standard, as well as the impacts of requiring a reduction in sulfur content on consumer prices. The analysis noted that, as a result of previous EPA rulemakings to reduce the sulfur content of on-road and non-road-fuels to 15 ppm, technologies are currently available to achieve sulfur reductions and many refiners are already meeting this standard, meaning that the capital investments for further reductions in the sulfur content of heating oil are expected to be relatively low compared to costs incurred in the past. The analysis also examined by way of example, the impacts of New York's existing 15 ppm sulfur requirements on heating oil prices and concluded that the cost associated with further reducing sulfur was relatively small in terms of the absolute price of heating oil compared to the magnitude of volatility in crude oil prices. It also noted that the additional marginal costs would be offset by cost savings due to the benefits of lower-sulfur fuels in terms of equipment life and maintenance and fuel stability. Consideration of the time necessary for compliance with a 15ppm sulfur standard was accomplished through a discussion of the amount of time refiners had needed to comply with the EPA's on-road and non-road fuel 15 ppm requirement, and the implications existing refinery capacity and distribution infrastructure may have for compliance times with a 15-ppm heating oil standard. The analysis concluded that with phased-in timing for states that have not yet adopted a 15 ppm heating oil standard there "appears to be sufficient time to allow refiners to add any additional heating oil capacity that may be required."[61] The analysis further noted the beneficial energy and non-air quality environmental impacts of a 15 ppm sulfur heating oil requirement and that reducing sulfur content may also have a salutary impact on the remaining useful life of residential furnaces and boilers.[62]

Vermont's limitations on sulfur in fuel took effect in two phases. The first phase,

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[61] *Id.* at 8-7.
[62] *Id.* at 8-8.

which began in 2014, lowered the concentration of sulfur in No. 2 and lighter distillate fuels to 500 ppm by weight, dropping to 15 ppm by weight during the second phase which took effect on July 1, 2018.[63] The allowable concentration of sulfur in No. 4 residual oils lowered to 2500ppm by weight during the second phase as well.[64] Additionally, Vermont limited the allowable concentration of sulfur in No. 5 and No. 6 residual oils, heavier residual oils, and used oils to 5000 ppm by weight.[65] EPA approved Vermont's sulfur in fuel regulation into the SIP in 2012.[66] EPA agrees that Vermont reasonably relied on MANEVU's four-factor analysis for a low-sulfur fuel oil regulation, which engaged with each of the statutory factors and explained how the information supported a conclusion that a 15 ppm-sulfur fuel oil standard for fuel oils is reasonable. Vermont's SIP-approved ultra-low sulfur fuel oil rule is consistent with Ask 3's sulfur content standards for the three types of fuel oils (distillate oil, #4 residual oil, #6 residual oil) and more. EPA therefore agrees that Vermont reasonably determined that it has satisfied Ask 3.

Vermont concluded that no additional updates were needed to meet Ask 4, which requests that MANEVU states pursue updating permits, enforceable agreements, and/or rules to lock in lower emission rates for sources larger than 250 MMBtu per hour that have switched to lower-emitting fuels. EPA acknowledges that Vermont does not contain any sources subject to this Ask.

Ask 5 addresses NO_X emissions from peaking combustion turbines that have the potential to operate on high electric demand days. Vermont identified the following combustion turbines in the State as meeting the criteria of this Ask: GMP gas turbines No. 5 (Berlin 5A and 5B), and GMP gas turbine No. 16 (Gorge 16). The Ask requests

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[63] VT APCR section 5-221(1)(a).
[64] *Id.*
[65] *Id*.
[66] *See* 77 FR 30212.

states to strive for certain NOx emission standards for such sources or to perform four-factor analyses for reasonable installation or upgrade to emission controls. Vermont has not adopted emission rules that meet the stringency of item 5.a. of the Ask. Therefore, Vermont requested four-factor analyses for Berlin 5A and 5B and Gorge 16. Each combustion turbine is owned by Green Mountain Power, was originally installed around the same time (1964-1972), has a similar unit rating (334 MMBtu/hr – 355.5 MMBtu/hr), and has NOx emissions ranging from 0.63 lbs/MMBtu to 0.88 lbs/MMBtu. The median annual NOx emissions for these sources were: GMP Berlin 5A – 3.0 tons, GMP Berlin 5B – 2.8 tons, and GMP Gorge 16 – 2.9 tons. As discussed previously, water injection (0.05 lb/MMBtu) was calculated to be the lowest-cost control option, but VT DEC determined that, at $17,074 per ton of NOx controlled, it is not cost effective. Additionally, if employed, this NOx control would yield an estimated 5 tons per year total reduction across all three units.[67] Thus, in addition to not being cost effective, employing this additional control would have only a very small impact on Vermont's annual NOx emissions. EPA agrees that Vermont reasonably concluded from the four-factor analyses that additional NOx controls for these sources are not necessary for reasonable progress, and that Vermont has met the requirements of Ask 5.

Finally, with regard to Ask 6, Vermont described the State's strategies to decrease air emissions by lowering energy demand via energy efficiency and modernizing the electrical grid to handle distributed energy resources, including in Vermont's Comprehensive Energy Plan. The EPA agrees that Vermont has satisfied Ask 6's request to consider and report in its SIP measures or programs related to energy efficiency, cogeneration, and other clean distributed generation technologies.

In sum, Vermont identified several mechanisms for controlling pollutants that

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[67] *See* Appendix T "Green Mountain Power, Regional Haze Reasonable Progress Four-Factor Analysis", Trinity Consultants, December 18, 2020.

impair visibility – including its regulations limiting sulfur content in fuels (which are in Vermont's SIP), as well as the continued implementation of NOx RACT for point sources. EPA proposes to find that Vermont has reasonably concluded that these measures are necessary to make reasonable progress for the second planning period.

In addition to these SIP-approved measures, Vermont also identified other federally enforceable and permanent controls, including its mobile source control measures, as key emission reduction strategies. On-road mobile emissions reductions are due in part to Vermont's adoption of amendments to the Low Emission Vehicle (LEV) and Zero Emission Vehicle (ZEV) rules, which incorporate by reference California's motor vehicle emission standard regulations.[68] These standards ensure that vehicles sold in the state meet increasingly stringent emissions requirements through time. Vermont has also adopted California's Advanced Clean Cars II, Advanced Clean Trucks, Low NOx Heavy-Duty Omnibus and the Phase 2 Greenhouse Gas rules.[69] Other efforts to reduce air pollution from on-road mobile sources include adoption of inspection and maintenance of vehicle emissions control systems, enhancement of emissions control technology, upgrading programs for diesel engines, and participation in regional and state-specific efforts to build and incentivize zero emission vehicle infrastructure and ownership.[70] Vermont states that it is committed to reducing mobile source emissions to reduce visibility impairment, both in Vermont and in other impacted states.[71]

EPA is therefore proposing to find the state's approach meets the statutory and regulatory requirements for several reasons. Specifically, EPA is proposing to find—based on Vermont's participation in the MANEVU planning process, how it has addressed the Asks, and the EPA's assessment of Vermont's emissions and point

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[68] *See* https://dec.vermont.gov/air-quality/laws-and-regulations/recently-adopted-and-proposed-regulations.
[69] *Id.*
[70] VT Regional Haze SIP Submission at 56.
[71] *Id*. at 46.

sources—that Vermont has complied with the requirements of section 51.308(f)(2)(i). Vermont's application of MANEVU Asks 3 and 5 engages with the requirement that states evaluate and determine the emission reduction measures necessary to make reasonable progress by considering the four statutory factors.

In determining the emissions reduction measures necessary to make reasonable progress, Vermont reasonably evaluated and explained its decision to focus on SO_2 and NO_x to address visibility impairment within the MANEVU region. Vermont adequately supported that decision through reasonable reliance on the MANEVU technical analyses cited in its submission. EPA notes that MANEVU concluded that sulfates from SO_2 emissions were still the primary driver of visibility impairment in the second implementation period and that MANEVU conducted a four-factor analysis (included with the State's submittal) to support Ask 3, which addresses SO_2 emissions by requesting that states pursue ultra-low sulfur fuel oil standards. Vermont's EPA-approved sulfur fuel oil rule is included in the State's Long-Term Strategy and sets stringent limits for sulfur content and SO_2 emissions for fuels used for heating and power generation.[72] Vermont's rule controls SO_2 emissions from area and point sources by limiting the sulfur content of No. 2 and lighter distillate oils to 0.0015% and the sulfur content of No. 4 residual oil and No. 5 and 6 residual oils to 0.25% and 0.5%, respectively.[73] EPA previously approved these requirements into Vermont's SIP,[74] and they went into effect in July 2018.[75] Vermont's submittal also includes four-factor analyses for three NOx sources and demonstrates that these and other sources of SO_2 and NOx within the state have very small emissions of NOx and SO_2, and are already subject to stringent emission control measures. For instance, while the state contains no ozone nonattainment areas,

[72]VT APCR 5-221(1).
[73] *Id.*
[74] *See* 77 FR 30212.
[75] VT APCR 5-221(1).

Vermont nonetheless applies NOx RACT to certain sources owing to its location within the Ozone Transport Region. EPA approved Vermont's latest NOx RACT rule in 2019, which has been employed on Vermont's highest NOx emitting point source, McNeil Generating Station, among others. Vermont estimates point source emissions of NOx amounted to only 2% of all NOx emissions in the State.[76] In addition, and as noted earlier, Vermont estimates that its top five NOx-emitting point sources together accounted for only about 330 tons of NOx per year on average, based on 2013-2017 emissions information.[77] Similarly, NEI data indicate a steady decline in point source emissions of NOx in Vermont, with the 2017 NEI estimating point source NOx emissions at just 393 tpy[78] and the 2020 NEI at 330 tpy.[79] Similarly, Vermont estimates its top five SO_2 emitting sources together contributed a total of less than 100 tpy over the 2013-2017 period.[80] As discussed previously, continued implementation of federal mobile source programs will provide further reductions in NOx emissions from Vermont. Moreover, EPA notes that the FLMs did not identify any additional sources in Vermont for four-factor analysis or request any revisions or other analyses.[81] In particular, the US Forest Service—the FLM for the Class I areas most impacted by Vermont—stated that it was "satisfied" with Vermont's plan and offered "no suggestions for change."[82] Similarly, the National Park Service commended Vermont on its draft submission and had "no further comments at this time."[83] In short, Vermont's SO_2 and NOx emissions are already quite low, are controlled by EPA-approved limits in the SIP (as a result of Regional Haze and other CAA requirements) and have overall small contributions to visibility impairment in

[76] VT Regional Haze SIP Submission at 46.
[77] *Id.* at 47-48.
[78] *Id*. at 62.
[79] The final 2020 NEI is available here https://www.epa.gov/air-emissions-inventories/2020-air-emissions-data.
[80] VT Regional Haze SIP Submission at 62.
[81] *See* Appendix X "Federal Land Manger Responses."
[82] *Id.*
[83] *Id.*

Class I areas. In conclusion, the projected 2028 visibility conditions for Class I areas influenced by emissions from Vermont sources are all below the URP, and EPA proposes to find that Vermont's SIP submittal satisfies the requirements that states determine the emission reduction measures that are necessary to make reasonable progress by considering the four factors, and that their long-term strategies include the enforceable emission limitations, compliance schedules, and other measures necessary to make reasonable progress.

c. Additional Long-Term Strategy Requirements

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 coordinated emission management strategies containing the emission reductions necessary to make reasonable progress. Section 51.308(f)(2)(ii)(A) and (B) respectively require states to include in their SIPs measures agreed to during state-to-state consultations or a regional planning process and to consider the emission reduction measures identified by other states as necessary for reasonable progress. Section 51.308(f)(2)(ii)(C) speaks to what happens if states cannot agree on what measures are necessary to make reasonable progress.

Vermont participated in and provided documentation of the MANEVU intra- and inter-RPO consultation processes, which included consulting with both MANEVU and non-MANEVU states about emissions reasonably anticipated to contribute to visibility impairment in Vermont's Class I area and emissions from Vermont reasonably anticipated to contribute to visibility impairment in other Class I areas. The consultations addressed developing coordinated emission management strategies containing the emission reductions necessary to make reasonable progress at the Class I areas. Vermont addressed impacts to the MANEVU Class I areas by providing information on the

measures it has in place that satisfy each MANEVU Ask.[84] Vermont included in its Regional Haze SIP submittal all measures agreed to during state-to-state consultations and emission reduction measures identified by other states. While Vermont did not receive any comments from non-MANEVU states during its public comment period to consider additional measures to address visibility impairment in Class I areas outside MANEVU, MANEVU documented issues some non-MANEVU states raised about MANEVU's analyses during consultation. For instance, MANEVU noted in its Consultation Report that upwind states expressed concern regarding the analyses the RPO used for the selection of states for the consultation. MANEVU agreed that these tools, as all models, have their limitations, but nonetheless deemed them appropriate. Additionally, there were several comments regarding the choice of the 2011 modeling base year. MANEVU agreed that the choice of base year is critical to the outcome of the study. MANEVU acknowledged that there were newer versions of the emission inventories and the need to use the best available inventory for each analysis. MANEVU, however, concluded that the selected inventories were appropriate for the analysis. Additionally, upwind states noted that they would not be able to address the MANEVU Asks until they finalize their SIPs. MANEVU believed the assumption of the implementation of the Asks from upwind states in its 2028 control case modeling was reasonable, and Vermont included both the 2028 base case and control case modeling results in its SIP, representing visibility conditions at the Class 1 areas in the MANEVU States assuming upwind states do not and do implement the Asks, respectively.

In sum, Vermont participated in the MANEVU intra- and inter-RPO consultation and included in its SIP submittal the measures identified and agreed to during those consultations, thereby satisfying section 51.308(f)(2)(ii)(A) and (B). Vermont satisfied section 51.308(f)(2)(ii)(C) by participating in MANEVU's consultation process, which

[84] *See* appendix G "MANEVU Regional Haze Consultation Report and Consultation Documentation."

documented the disagreements between the upwind states and the MANEVU states and explained the latter's reasoning on each of the disputed issues. Based on the entirety of MANEVU's intra- and inter-RPO consultation, including the MANEVU responses to other states' concerns and various technical analyses in the SIP submission, we propose to determine that Vermont has satisfied the consultation requirements of section 51.308(f)(2)(ii).

The documentation requirement of 40 CFR 51.308(f)(2)(iii) provides that states may meet their obligations to document the technical bases on which they are relying to determine the emission reductions measures that are necessary to make reasonable progress through an RPO, as long as the process has been "approved by all State participants." As explained above, Vermont chose to rely on MANEVU's technical information, modeling, and analysis to support development of its long-term strategy. The MANEVU technical analyses on which Vermont relied are listed in the state's SIP submission and include source contribution assessments, information on each of the four factors and visibility modeling information for certain EGUs, and evaluations of emission reduction strategies for specific source categories. Vermont also provided information to further demonstrate the technical bases and emission information it relied on to determine the emission reductions measures that are necessary to make reasonable progress. Based on the documentation provided by the state, we propose to find Vermont satisfies the requirements of section 51.308(f)(2)(iii).

Section 51.308(f)(2)(iii) also requires that the emissions information considered to determine the measures that are necessary to make reasonable progress include information on emissions for the most recent year for which the state has submitted triennial emissions data to the EPA (or a more recent year), with a 12-month exemption period for newly submitted data. Vermont drafted the plan using the 2017 National Emissions Inventory (NEI). The SIP submission included 2017 NEI emission data for

NOx, SO_2, PM, VOCs and NH_3. Additionally, Vermont relied on NOx emissions data through 2023 in its assessment of measures necessary for reasonable progress of Ask 5 sources as well as 2016-2019 Air Markets Program Data (AMPD) emissions for NOx and SO_2. Though Vermont provided the section's analysis using 2017 NEI data, the 2020 NEI shows a continued decline in Vermont's NOx, and VOC point source emissions. Using 2020 NEI data would not have affected the State's source selection or analysis.[85] For instance, NOx point source emissions in Vermont totaled 393 tons in 2017 and were reduced to 330 tons in 2020. A portion of this reduction came from Vermont's top NOx emitter, McNeil Station, with NOx emissions falling from 133 tpy in 2017, to 118 tpy in 2020. Additionally, SO_2 emissions from point sources did not increase, and remained level from 2017 to 2020.Thus, based on Vermont's consideration and analysis of the emission data in their submittal as well as the 2020 NEI data for the state, EPA proposes to find that Vermont has satisfied the emissions information requirement in 51.308(f)(2)(iii).

We also propose to find that Vermont reasonably considered the five additional factors in section 51.308(f)(2)(iv) in developing its long-term strategy. Pursuant to section 51.308(f)(2)(iv)(A), Vermont noted that existing and ongoing state and federal emission control programs that contribute to emission reductions through 2028 would impact emissions of visibility impairing pollutants from point and nonpoint sources in the second implementation period. Vermont included in its SIP a list of control measures with their effective dates, pollutants addressed, and corresponding State regulations.[86] These measures include SIP approved revisions such as NOx RACT, which has been employed on the largest NOx emitter in the state, McNeil Electric Generating Station, and requires the year-round use of SCR at that facility. Additionally, Vermont notes that

[85] The final 2020 NEI is available here https://www.epa.gov/air-emissions-inventories/2020-air-emissions-data.
[86] *See* Section 5.7 of the VT Regional Haze SIP Submission.

its limitations on sulfur in fuel address residential combustion of fuel oil, a significant contributor to SO_2 emissions in the state. Additionally, as discussed previously, Vermont has adopted the California Advanced Clean Cars II, Advanced Clean Trucks, Low NOx Heavy-Duty Omnibus and the Phase 2 Greenhouse Gas rules and recently amended its Low Emission Vehicle (LEV) and Zero Emission Vehicle (ZEV) rules, to remain consistent with California's motor vehicle emission standards MANEVU modeling estimated that Vermont NOx emissions from the mobile source sector contribute to Vermont's impact to visibility impairment at New Hampshire's Class I areas, and Vermont's adoption of these rules should address some of that impact.

Vermont's consideration of measures to mitigate the impacts of construction activities as required by section51.308(f)(2)(iv)(B) includes recognition that federal regulations require the reduction of SO_2 from construction vehicles and that crustal material plays a very small role in visibility impairment in Lye Brook Wilderness. For these reasons, Vermont deferred evaluation of further controls to mitigate the impacts of construction activities.

Pursuant to section 51.308(f)(2)(iv)(C), Vermont noted that while any source retirements or replacements will result in local benefits, any resultant emissions reductions will not have a significant impact on Class I areas in MANEVU given the state's already small amount of point source emissions.

In considering smoke management as required in 40 CFR 51.308(f)(2)(iv)(D), Vermont explained that fine particulate matter associated with wood smoke in the State comes largely from residential and industrial/commercial/institutional wood combustion, as well as open burning. Currently, Lye Brook Wilderness and other MANEVU Class I areas are impacted most by wildfire smoke emissions from other regions, such as the numerous western and Canadian wildfires. Vermont stated that it will continue to review the impacts of fine particulate matter from agricultural use of fire and prescribed fire for

forest and ecosystem management and that, if the impacts become important in maintaining reasonable progress, future revisions to the SIP will include a smoke management plan. Additionally, Vermont will continue to consult with the U.S. Forest Service regarding potential impacts of prescribed fire on visibility in the Lye Brook Wilderness.

Vermont considered the anticipated net effect of projected changes in emissions as required by 51.308(f)(2)(iv)(E) by discussing the new mobile source regulations and The Global Warming Solutions Act. Vermont anticipates, as the mobile source regulations go into effect, that emissions of NOx will decrease by 2028. In addition, The Global Warming Solutions will impact emissions from area sources. Together, these reductions will provide further progress in improving visibility in downwind states.

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

F. Reasonable Progress Goals

Section 51.308(f)(3) contains the requirements pertaining to RPGs for each Class I area. Because Vermont is host to a Class I area, it is subject to both section 51.308(f)(3)(i) and, potentially, (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 emission limitations, compliance schedules and other measures required under paragraph (f)(2) to be in states' long-term strategies, as well as implementation of other CAA requirements. The long-term strategies as reflected by the RPGs must provide for an improvement in visibility on the most impaired days relative to the baseline period and ensure no degradation on the clearest days relative to the baseline period. Section 51.308(f)(3)(ii) applies in circumstances in which a Class I

area's RPG for the most impaired days represents a slower rate of visibility improvement than the uniform rate of progress calculated 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 emission reduction measures for anthropogenic sources or groups of sources in the state that would be reasonable to include in its long-term strategy. Section 51.308(f)(3)(ii)(B) requires that if a state contains sources that are reasonably anticipated to contribute to visibility impairment in a Class I area in *another* state, and the RPG for the most impaired days in that Class I area is above the URP, the upwind state must provide the same demonstration.

Table 6-1 of Vermont's SIP submittal summarizes baseline visibility conditions (i.e., visibility conditions during the baseline period of 2000-2004) for the most impaired and clearest days and the 2028 RPG for the most impaired days for Vermont's Class I areas, as well as information on natural visibility conditions, the rate of progress described by the URP in 2028, and the modeled 2028 base case (representing visibility conditions in 2028 with existing controls). Baseline visibility conditions at Vermont's Class I areas were 6.37 and 23.57 deciviews for the clearest and most impaired days, respectively. By comparison, Vermont has established 2028 RPGs for the clearest and most impaired days of 3.90 and 13.89 deciviews.[87]

Vermont's 2028 most impaired base case of 13.89 deciviews reflects the visibility conditions that are projected to be achieved based on states' existing measures. As such, EPA was considers the 2028 modeled base case value of 13.89 deciviews to be the appropriate estimate of the RPG for the 20% most impaired visibility days (as opposed to

[87] See Table 8-1 of the VT Regional Haze SIP Submission. These values were modeled not including the MANEVU Asks. EPA supports these values as the 2028 RPGs. The values for the clearest and most impaired days including the Asks were 3.86 and 13.68 deciviews, respectively.

the 13.68 deciviews value that includes measures from the MANEVU Asks). EPA expects that the observed deciview value in 2028 will be equal to or lower than the 13.89 deciview estimate. Even the conservative estimate of 13.89 deciviews on the most impaired days in 2028 constitutes improvement over the baseline visibility conditions of 23.57 deciviews. Therefore, the long-term strategy and the reasonable progress goals 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. 40 CFR 51.308(f)(3)(i).

As noted in the RHR at 40 CFR 51.308(f)(3)(iii), the reasonable progress goals are not directly enforceable but will be considered by the Administrator in evaluating the adequacy of the measures in the implementation plan in providing for reasonable progress towards achieving natural visibility conditions at that area. The 2028 RPG for the most impaired days of 13.89 deciviews fulfills the regulatory purpose of the RPGs because visibility conditions at Vermont's Class I area have improved since the baseline period. EPA is therefore proposing to find that Vermont's RPGs satisfy the applicable requirements and provide for reasonable progress towards achieving natural conditions.

Table 6-1 of Vermont's submission shows the URP glidepath value for Vermont's Class I area in 2028 as 18.24 deciviews. Vermont's RPG is well below the glidepath value. Therefore, the demonstration requirement under section 51.308(f)(3)(ii)(A) is not triggered. Nor has the demonstration requirement under section 51.308(f)(3)(ii)(B) been triggered. Under paragraph (B), a state that contains sources that are reasonably anticipated to contribute to visibility impairment in a Class I area in another state for which a demonstration by the other state is required under 51.308(f)(3)(ii)(A) must demonstrate that there are no additional emission reduction measures that would be reasonable to include in its long-term strategy. Vermont's SIP revision included the

modeled MANEVU 2028 visibility projections at nearby Class I areas.[88] While these projections may not represent the final RPGs for these Class I areas, all of the base case 2028 projections for the most impaired days at these areas (Acadia, Brigantine, Campobello, Lye Brook, Moosehorn, Dolly Sods, James River Face, Otter Creek, and Shenandoah) are well below the respective 2028 points on the URPs. Therefore, we propose it is reasonable to assume that the demonstration requirement under section 51.308(f)(3)(ii)(B) as it pertains to these areas will not be triggered for Vermont. We propose to find that Vermont has satisfied (f)(3).

G. Monitoring Strategy and Other Implementation Plan Requirements

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

The IMPROVE monitor for the Lye Brook Wilderness, indicated as LYEB1 in the IMPROVE monitoring network database, is located on the northern slope of Mount Snow. The monitor site lies in West Dover, Vermont, near Lye Brook, at elevation 1093 meters, latitude 42.57˚, and longitude -72.54˚. This monitor is operated and maintained by the U.S. Forest Service.[89]

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

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[88] *See* Appendix B "Mid-Atlantic/Northeast U.S. Visibility Data 2004-2019 (2nd RH SIP Metrics)".
[89] *See* Vermont's 2023 Annual Network Plan which can be found in the docket of this proposed rulemaking.

goals to address regional haze for all mandatory Class I Federal areas within the state are being achieved. Vermont has not received any recommendations or advice from EPA or the U.S. Forest Service that additional monitoring is required pursuant to 40 CFR 51.308(f)(4). Therefore, Vermont has no current plans to alter the current strategy as long as this monitoring continues to be federally supported.

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. Vermont relied on the MANEVU contribution assessment analysis.[90] The analysis included Eulerian (grid-based) source models, Lagrangian (air parcel-based) source dispersion models, as well as a variety of data analysis techniques that include source apportionment models, back trajectory calculations, and the use of monitoring and inventory data.

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

Section 51.308(f)(6)(iv) requires the SIP to provide for the reporting of all visibility monitoring data to the Administrator at least annually for each Class I area in the state. As noted above, the Lye Brook Wilderness IMPROVE monitor is operated and maintained by the U.S. Forest Service. The monitoring strategy for Vermont relies upon the continued availability of the IMPROVE network. Thus, Vermont supports the continued operation of the IMPROVE network through both state and Federal funding mechanisms.

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

[90] *See* appendix G "MANEVU Regional Haze Consultation Report and Consultation Documentation."

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

Section 8 of Vermont's submission includes tables of NEI data. The source categories of the emissions inventories included are: (1) Point sources, (2) nonpoint sources, (3) non-road mobile sources, and (4) on-road mobile sources. The point source category is further divided into Air Markets Program Data (AMPD) point sources and non-AMPD point sources.[91] Vermont included NEI emissions inventories for the following years: 2002 (one of the regional haze program baseline years), 2008, 2011, 2014, and 2017; and for the following pollutants: SO_2, NOx, PM10, PM 2.5, VOCs, CO, and NH3. Vermont also provided a summary of SO_2 and NOx emissions for AMPD sources for the years of 2016, 2017, 2018, and 2019. Consideration of 2020 NEI data shows level and declining point source emissions of SO_2 and NOx respectively and would not have affected the State's source selection or analysis.

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. Vermont relied on the MANEVU 2028 emissions projections for MANEVU states. MANEVU completed two 2028 projected emissions modeling cases—a 2028 base case

[91] AMPD sources are facilities that participate in EPA's emission trading programs. The majority of AMPD sources are electric generating units (EGUs).

that considers only on-the-books controls and a 2028 control case that considers implementation of the MANEVU Asks.[92] Vermont's SIP submittal also includes a commitment to update the statewide emissions inventory periodically.[93]

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

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

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

[92] *See* "OTC MANEVU 2011 Based Modeling Platform Support Document October 2018 – Final." Which can be found in the docket of this proposed rulemaking.
[93] *See* VT Regional Haze SIP Submission at 82.

period addressed by the first implementation period progress report. This provision further specifies the year or years through which the analysis must extend depending on the type of source and the platform through which its emission information is reported. Finally, 40 CFR 51.308(g)(5), which also applies to all states, requires an assessment of any significant changes in anthropogenic emissions within or outside the state that 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.

Vermont's submission describes the status of measures of the long-term strategy from the first implementation period. As a member of MANEVU, Vermont considered the MANEVU Asks and adopted corresponding measures into its long-term strategy for the first implementation period. The MANEVU Asks were: (1) Timely implementation of Best Available Retrofit Technology (BART) requirements; (2) EGU controls including Controls at 167 Key Sources that most affect MANEVU Class I areas; (3) Low sulfur fuel oil strategy; and (4) Continued evaluation of other control measures. Vermont met all the identified reasonable measures requested during the first implementation period. During the first planning period for regional haze, programs that were put in place focused on reducing sulfur dioxide (SO_2) emissions. The reductions achieved led to vast improvements in visibility at the MANEVU Federal Class I Areas due to reduced sulfates formed from SO_2 emissions. Vermont lists in its submission an expansive list of control measures that help control the emissions of VOCs, NOx, PM and SO_2 from a wide range of sources.[94] Vermont's SIP submission includes emission data demonstrating the reductions achieved throughout the state through implementation of the measures mentioned. The state included periodic emission data that demonstrate a decrease in VOCs, NOx, PM and SO_2 emissions throughout the state.

[94] See Section 8.2 of the VT Regional Haze SIP Submission.

The EPA proposes to find that Vermont 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.

Vermont's SIP submission includes the assessments of visibility conditions and changes at the State's class I areas, expressed in terms of 5-year averages, required by section 51.308(g)(3). In particular, Vermont's submission reports current (2015-2019) visibility conditions for the most impaired and clearest days of 14.06 and 4.88 deciviews, respectively, indicating that haze index levels have decreased by 9.51 deciviews on the most impaired days and 1.49 deciviews on the clearest days from baseline visibility conditions (2000-2004).[95] The SIP submission also indicates that, since the period addressed in Vermont's previous progress report (2010-2014), haze index levels have decreased by 4.44 and 0.22 deciviews on the most impaired and clearest days, respectively. EPA therefore proposes to find that Vermont has satisfied the requirements of 40 CFR 51.308(g)(3).

Pursuant to section 51.308(g)(4), Vermont provided a summary of emissions of NOx, SO_2, PM10, PM2.5, VOCs, and NH3 from all sources and activities, including from point, nonpoint, non-road mobile, and on-road mobile sources, for the time period from 2002 to 2017, based on emission inventory information submitted pursuant to the AERR in 40 CFR part 51, subpart A. With respect to sources that report directly to the EPA, Vermont also included AMPD data for SO_2 and NOx emissions for 2016 through 2019.

The reductions achieved by Vermont's emission control measures are seen in the emissions inventory. Based on Vermont's SIP submission, NOx emissions have continuously declined in Vermont from 2002 through 2017, especially in the onroad

[95] *Id.* at Section 8.3.

mobile sector. Vermont considers its mobile source emission reduction strategies as the most viable way to reduce NOx emissions in the state that may be impacting New Hampshire's Class I area. As discussed previously, Vermont's adoption of California standards for on-road vehicles drives emissions reductions in the on- road sector. Initiatives in Vermont to reduce on-road NOx emissions include projects using the funding from the Volkswagen Environmental Mitigation trust such as a pilot project for electrifying school and transit buses, the installation of electric vehicle supply equipment to help support and accelerate electric vehicle adoption, and several ongoing heavy-duty vehicle electrification projects. Additionally, there are a wide range of federal rules which reduce emissions from non-road vehicles and equipment.[96] NOx emissions are expected to continue to decrease as fleet turnover occurs and the older more polluting vehicles and equipment are replaced by newer, cleaner ones. Vermont sources that report to the EPA's AMPD showed a decline in NOx emissions in the period since the last progress report (167 tons in 2016 and 133 tons in 2019).[97]

Emissions of SO_2 have shown a steady significant decline in Vermont over the period 2002 to 2017, across all sectors. Large decreases are attributable to Vermont's adoption of the MANEVU low sulfur fuel strategy.[98] Since some components of the low sulfur fuel strategy have milestones of 2014, 2016 and 2018, and as MANEVU states continue to adopt rules to implement the strategy, additional SO_2 emissions reductions have likely been obtained since 2017 and are expected to continue into the future. Other SO_2 emissions decreases are due to fuel switching due to the availability of less expensive natural gas in recent years, and source shutdowns.

Vermont's submission analyzes the change in PM10 emissions from all NEI

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[96] *See* 69 FR 38958 (June 29, 2004), 73 FR 37096 (June 30, 2008), 73 FR 59034 (October 8, 2008)
[97] See VT Regional Haze SIP Submission at Figure 8-5 "NOx Emissions for all Data Categories, 2002 – 2017 (tpy) in Vermont", and Figure 8-8: "NOx Emissions from AMPD sources in MANEVU States, 2016–2019 (tpy)."
[98] *Id.* at 72 (Figure 8-16); *see also id.* at 55-56.

point, nonpoint, non-road, and onroad data categories in Vermont, noting that PM10 emissions have steadily declined, particularly between the 2002 inventory to the 2014 inventory.[99] However, the 2017 inventory shows an increase in PM10 emissions. Vermont attributes this increase to the unpaved road dust sector, where the calculation methodology related to the allocation of vehicle miles travelled (VMT) to unpaved roads used for the 2017 inventory differed from what was used for the 2014 inventory. Vermont's 2017 inventory reports that the second largest PM10 source in the state, emissions from residential wood combustion, actually declined.

Vermont also analyzes PM2.5 emissions from all NEI data categories for the period from 2002 to 2017, noting that they have steadily decreased in Vermont.[100] Overall, there is a minor decrease reported from 2002 to 2017 in PM2.5 emissions across all NEI categories due to Federal and State regulations. Particulate matter emissions are difficult to determine a reliable trend for, due to changes in methodology between inventories and the uncertainty with vehicle miles traveled data and residential wood combustion estimates. For these reasons, there is significant variation in both particulate matter estimates in the emission inventories.

Figure 8-21 of Vermont's submission shows VOC emissions from all NEI data categories for the period 2002 to 2017 in Vermont. VOC emissions have shown a decline in the state over this time period. However, the sharp decline in nonpoint VOC since 2002 is partly attributable to revised methodology for residential wood combustion, resulting in an overstated decrease. Much of the reduction seen in the nonroad sector for 2017 is likely attributable to changes in methodology, incorporation of the EPA MOVES model between the 2014 and 2017 NEIs, as well as updated vehicle populations and emission factors. VOC emissions from non-road and on-road mobile sources are expected

[99] *Id.* at 67 (Figure 8-10).
[100] *Id.* at 69 (Figure 8-13).

to continue to decrease as older, more polluting vehicles are replaced by newer, cleaner ones.

Figure 8-24 of Vermont's submission shows ammonia (NH_3) emissions from all NEI data categories for the period 2002 to 2017. The figure displays a general downward trend in Vermont, with some year-to-year variability. The figure displays a sharp reduction in ammonia emissions in 2014. This rapid decline could be due to changes in the calculation methodology for agricultural livestock waste, which is the largest contributor to ammonia emissions. Further decreases in ammonia emissions were achieved in the onroad sectors due to federal engine standards for vehicles and equipment. For many MANEVU states, ammonia emissions for 2014 and 2017 are lower than they were for earlier years. Vermont, like most MANEVU states, saw increases in 2017 relative to 2014, which Vermont states could likely be the result of estimation methodology changes. Emissions from 2002-2008 are not comparable to post-2008 emissions due to methodology changes.

The EPA is proposing to find that Vermont has satisfied the requirements of section 51.308(g)(4) by providing emissions information for NOx, SO_2, PM10, PM2.5, VOCs, and NH3 broken down by type of source.

The emissions trend data in the SIP submission[101] support Vermont's assessment that no significant increase of haze-causing pollutant emissions has occurred in the state during the reporting period and that changes in emissions have not limited or impeded progress in reducing pollutant emissions and improving visibility. Vermont notes that, both within and outside the State, there has been a shift to cleaner generation of electricity using natural gas in place of fuels such as coal or oil that has contributed to reduced emissions of haze-causing pollutants. The EPA is proposing to find that Vermont has met the requirements of section 51.308(g)(5).

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[101] *Id*. at Section 8 "Progress Report and Periodic Reports."

I. Requirements for State and Federal Land Manager Coordination

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

The states in the MANEVU RPO conducted FLM consultation early in the planning process concurrent with the state-to-state consultation that formed the basis of the RPO's decision making process. As part of the consultation, the FLMs were given the opportunity to review and comment on the technical documents developed by MANE–VU. The FLMs were invited to attend the intra- and inter-RPO consultations calls among states and at least one FLM representative was documented to have attended seven intra-RPO meetings and all inter-RPO meetings. Vermont participated in these consultation meetings and calls.[102]

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[102] *See* Appendix G "MANEVU Regional Haze Consultation Report and Consultation Documentation."

As part of this early engagement with the FLMs, on April 12, 2018, the U.S National Park Service (NPS) sent letters to the MANEVU states requesting that they consider specific individual sources in their long-term strategies.[103] NPS used an analysis of emissions divided by distance (Q/d) to estimate the impact of MANEVU facilities. To select the facilities, NPS first summed 2014 NEI NO_X, PM10, SO_2, and SO4 emissions and divided by the distance to a specified NPS mandatory Class I Federal area. NPS summed the Q/d values across all MANEVU states relative to Acadia, Mammoth Cave and Shenandoah National Parks, ranked the Q/d values relative to each Class I area, created a running total, and identified those facilities contributing to 80% of the total impact at each NPS Class I area. NPS merged the resulting lists of facilities and sorted them by their states. NPS suggested that a state consider those facilities comprising 80% of the Q/d total, not to exceed the 25 top ranked facilities. The NPS did not identify any facilities in Vermont in this letter.[104]

On October 11, 2022, the NPS sent a summary of their review of the draft Regional Haze SIP via email, stating that the NPS "commend[s] Vermont for doing a good job outlining and incorporating the technical analyses produced by MANE-VU" and that "NPS has no further comments at this time."[105] On September 20, 2022, the U.S. Forest Service indicated by letter that it was "satisfied with the document as provided and offer[ed] no suggestions for change."[106] In accordance with CAA section 169A(d) and 40 CFR 51.308(i)(3), Vermont included summaries of the consultation and copies of the FLM correspondence in appendices G and X of the SIP submission.

Vermont held a public comment period and public hearing for this Regional Haze SIP Revision. On April 19, 2024, VT DEC published a notice in the Vermont

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[103] *Id.*
[104] *Id.*
[105] *See* Appendix X "Federal Land Manager Responses".
[106] *Id.*

Environmental Notice Bulletin announcing the public hearing and the opportunity to submit written comments on the SIP revision until June 1, 2024.[107] EPA provided written comments on May 30, 2024.[108] Vermont did not receive any other comments.[109] VT DEC held a public hearing in Montpelier, VT on May 22, 2024.[110] No one attended the meeting.[111]

For the reasons stated above, the EPA proposes to find that Vermont has satisfied the requirements under CAA section 169A(d) and 40 CFR 51.308(i) regarding consultation with the FLMs on its regional haze SIP for the second implementation period.

J. Other Required Commitments

Vermont's July 1, 2024, SIP submission includes a commitment to revise and submit a subsequent regional haze SIP when due. The state's commitment includes submitting periodic progress reports in accordance with section 51.308(f) and a commitment to evaluate progress towards the reasonable progress goal for each mandatory Class I Federal area located within the state and in each mandatory Class I Federal area located outside the state that may be affected by emissions from within the state in accordance with section 51.308(g).[112]

V. Proposed Action

The EPA is proposing to approve Vermont's July 1, 2024, SIP submission as satisfying the regional haze requirements for the second implementation period contained in 40 CFR 51.308(f).

VI. Statutory and Executive Order Reviews

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[107] *See* VT DEC, "Notice of Intent to submit the State Implementation Plan for Regional Haze Second Implementation Period."
[108] *See* Appendix Y "EPA Comments for Vermont Proposed Regional Haze State Implementation Plan."
[109] See Section 10 of the VT Regional Haze SIP Submission.
[110] *Id*.
[111] *Id.*
[112] *Id.* at Section 1.2.3 and Section 8.

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

- Is not a significant regulatory action subject to review by the Office of Management and Budget under Executive Orders 12866 (58 FR 51735, October 4, 1993);
- Is not subject to Executive Order 14192 (90 FR 9065, February 6, 2025) because SIP actions are exempt from review under Executive Order 12866;
- Does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq*.);
- Is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq*.);
- Does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Public Law 104-4);
- Does not have federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);
- Is not subject to Executive Order 13045 (62 FR 19885, April 23, 1997) because it approves a state program;
- Is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001); and
- Is not subject to requirements of Section 12(d) of the National Technology

Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the Clean Air Act.

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

List of Subjects in 40 CFR Part 52

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

Dated: May 14, 2025.

Mark Sanborn,
Regional Administrator,
EPA Region 1.

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