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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

EPA-R08-OAR-2012-0026, FRL9905-42-R08

Approval, Disapproval and Promulgation of Implementation Plans; State of Wyoming; Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) is partially approving and partially disapproving a State Implementation Plan (SIP) submitted by the State of Wyoming on January 12, 2011, that addresses regional haze. This SIP was submitted to address the requirements of the Clean Air Act (CAA or "the Act") and rules that require states to address in specific ways any existing anthropogenic impairment of visibility in mandatory Class I areas caused by emissions of air pollutants from numerous sources located over a wide geographic area (also referred to as the "regional haze program"). States are required to assure reasonable progress toward the national goal of achieving natural visibility conditions in Class I areas. EPA is approving several aspects of Wyoming's regional haze SIP that we had proposed to disapprove in our June 10, 2013 proposed rule in light of public comments and newly available information indicating the adequacy of the SIP with respect to those aspects. EPA is also approving some aspects of the State's SIP that we proposed to approve. EPA is promulgating a Federal Implementation Plan (FIP) to address some of the deficiencies identified in our proposed partial disapproval of Wyoming's regional haze SIP issued on June 10, 2013. EPA is taking this action pursuant to sections 110 and 169A of the CAA.

DATES: This final rule is effective March 3, 2014.

ADDRESSES: EPA has established a docket for this action under Docket ID No. EPA–R08–OAR–2012–0026. All documents in the docket are listed on the www.regulations.gov Web site. Publicly available docket materials are available either electronically through www.regulations.gov, or in hard copy at the Air Program, Environmental Protection Agency (EPA), Region 8, 1595 Wynkoop Street, Denver, Colorado 80202–1129. EPA requests that if, at all possible, you contact the individual listed in the **FOR FURTHER INFORMATION CONTACT** section to view the hard copy of the docket. You may view the hard copy of the docket Monday through Friday, 8 a.m. to 4 p.m., excluding Federal holidays.

FOR FURTHER INFORMATION CONTACT: Laurel Dygowski, Air Program, Mailcode 8P–AR, Environmental Protection Agency, Region 8, 1595 Wynkoop Street, Denver, Colorado 80202–1129, (303) 312–6144, dygowski.laurel@epa.gov

SUPPLEMENTARY INFORMATION:

Definitions

For the purpose of this document, we are giving meaning to certain words or initials as follows:

i. The words or initials Act or CAA mean or refer to the Clean Air Act, unless the context indicates otherwise.

ii. The initials AFUDC mean or refer to Allowance for Funds Utilized During Construction.

iii. The initials APA mean or refer to the Administrative Procedures Act.

iv. The initials AQRV mean or refer to Air Quality Related Value.

v. The initials BACT mean or refer to Best Available Control Technology.

vi. The initials BART mean or refer to Best Available Retrofit Technology.

vii. The initials CAMD mean or refer to Clean Air Markets Division.

viii. The initials CAMx mean or refer to Comprehensive Air Quality Model.

ix. The initials CCM mean or refer to EPA's Control Cost Manual.

x. The initials CLRC mean or refer to the Construction Labor Research Council.

xi. The initials CMAQ mean or refer to Community Multi-Scale Air Quality modeling system.

xii. The initials CSAPR mean or refer to the Cross-State Air Pollution Rule.

xiii. The initial DEQ mean or refer to the Wyoming Department of Environmental Quality

xiv. The initials EGUs mean or refer to Electric Generating Units.

xv. The initials EIS mean or refer to Environmental Impact Statement.

xvi. The words EPA, we, us or our mean or refer to the United States Environmental Protection Agency.

xvii. The initials ESP mean or refer to electrostatic precipitator.

xviii. The initials FIP mean or refer to Federal Implementation Plan.

xix. The initials FLM mean or refer to Federal Land Managers.

xx. The initials FR mean or refer to the Federal Register.

xxi. The initials GAQM mean or refer to Guidance on Air Quality Models.

xxii. The initials IMPROVE mean or refer to Interagency Monitoring of Protected Visual Environments monitoring network.

xxiii. The initials IPM mean or refer to Integrated Planning Model.

xxiv. The initials IWAQM mean or refer to Interagency Workgroup on Air Quality Modeling.

xxv. The initials LNB mean or refer to low NO_x burners.

xxvi. The initials LRS mean or refer to Laramie River Station.

xxvii. The initials LTS mean or refer to long term strategy.

xxviii. The initials MATS mean or refer to the Mercury and Air Toxics Standard.

xxix. The initials MW mean or refer to megawatts.

xxx. The initials NAAQS mean or refer to National Ambient Air Quality Standards.

xxxi. The initials NEPA mean or refer to National Environmental Policy Act.

xxxii. The initials NH_3 mean or refer to ammonia.

xxxiii. The initials NO_x mean or refer to nitrogen oxides.

xxxiv. The initials OFA mean or refer to overfire air.

xxxv. The initials PM mean or refer to particulate matter.

xxxvi. The initials $PM_{2.5}$ mean or refer to particulate matter with an aerodynamic diameter of less than 2.5 micrometers.

xxxvii. The initials PM_{10} mean or refer to particulate matter with an aerodynamic diameter of less than 10 micrometers.

xxxviii. The initials PTE mean or refer to potential to emit.

xxxix. The initials RAVI mean or refer to reasonably attributable visibility impairment.

xl. The initials RHR mean or refer to the Regional Haze Rule.

xli. The initials RIS mean or refer to Regulatory Impact Statement.

xlii. The initials RPG mean or refer to reasonable progress goals.

xliii. The initials RPO mean or refer to Regional Planning Organization.

xliv. The initials SCR mean or refer to selective catalytic reduction.

xlv. The initials SIP mean or refer to State Implementation Plan.

xlvi. The initials SNCR mean or refer to selective non-catalytic reduction.

xlvii. The initials SO_2 mean or refer to sulfur dioxide.

xlviii. The initials SOFA mean or refer to separated overfire air.

xlix. The initials UMRA mean or refer to the Unfunded Mandates Reform Act.

l. The initials URP mean or refer to Uniform Rate of Progress.

li. The initials VOC mean or refer to volatile organic compounds.

lii. The initials WAQSR mean or refer to the Wyoming Air Quality Standards and Regulations.

liii. The initials WRAP mean or refer to the Western Regional Air Partnership.

liv. The words Wyoming and State mean the State of Wyoming.

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I. Background

The CAA requires each state to develop plans, referred to as SIPs, to meet various air quality requirements. A state must submit its SIP and SIP revisions to us for approval. Once approved, a SIP is enforceable by EPA and citizens under the CAA, also known as being federally enforceable. If a state fails to make a required SIP submittal or if we find that a state's required submittal is incomplete or unapprovable, then we must promulgate a FIP to fill this regulatory gap. CAA section 110(c)(1). This action involves the requirement that states have SIPs that address regional haze.

Few states submitted a regional haze SIP prior to the December 17, 2007 deadline, and on January 15, 2009, EPA found that 37 states, including Wyoming,[1] the District of Columbia, and the Virgin Islands, had failed to submit SIPs addressing the regional haze requirements. 74 FR 2392. Once EPA has found that a state has failed to make a required submission, EPA is required to promulgate a FIP within two years unless the state submits a SIP and the Agency approves it within the two-year period. CAA section 110(c)(1). Wyoming subsequently submitted a SIP addressing regional haze on January 12, 2011.

States in the west were given the option to meet the requirements of the RHR either under 40 CFR 51.309 or 40 CFR 51.308. Wyoming chose to adopt the requirements of 40 CFR 51.309. Section 309 requires states to adopt regional haze strategies that are based on recommendations from the Grand Canyon Visibility Transport Commission for protecting the 16 Class I areas in the Colorado Plateau area, including a sulfur dioxide (SO_2) backstop cap and trade program, SO_2 milestones, and other requirements such as smoke management, a program to address mobile sources, and pollution prevention. Also, section 309(g) includes requirements for SIP provisions, including NO_x BART, to address visibility impairment at other Class I areas. On December 12, 2012, we finalized approval of Wyoming's 309 regional haze SIP for the requirements relating to the SO_2 backstop cap and trade program, milestones and the other requirements.[2] Today's action addresses the remaining portion of Wyoming's SIP, including the

[1] We issued a finding of failure to submit for Wyoming only for the requirements of 40 CFR 51.309(g)) regarding required SIP provisions, including NO_x BART, to address visibility at Class I areas other than the 16 areas covered by the Grand Canyon Visibility Transport Commission Report. Wyoming had submitted a SIP for the rest of the requirements under 40 CFR 51.309 prior to our January 15, 2009 finding.
[2] 77 FR 73926 (Dec. 12, 2012).

Best Available Retrofit Technology (BART) determinations for nitrogen oxides (NO_x) and particulate matter (PM).

In a lawsuit in the U.S. District Court for the District of Colorado, environmental groups sued EPA for our failure to take timely action with respect to the regional haze requirements of the CAA and our regulations.[3] In particular, the lawsuits alleged that we had failed to promulgate FIPs for these requirements within the two-year period allowed by CAA section 110(c) or, in the alternative, fully approve SIPs addressing these requirements.

As a result of these lawsuits, we entered into a consent decree. The consent decree requires that we sign a notice of final rulemaking addressing the regional haze requirements for Wyoming by January 10, 2014.[4] We are meeting that requirement with the signing of this final rule

A. Regional Haze

Regional haze is visibility impairment that is produced by a multitude of sources and activities which are located across a broad geographic area and emit fine particles ($PM_{2.5}$) (e.g., sulfates, nitrates, organic carbon (OC), elemental carbon (EC), and soil dust), and their precursors (e.g., sulfur dioxide (SO_2), NO_x, and in some cases, ammonia (NH_3) and volatile organic compounds (VOC)). Fine particle precursors react in the atmosphere to form $PM_{2.5}$, which impairs visibility by scattering and absorbing light. Visibility impairment reduces the clarity, color, and visible distance that one can see. $PM_{2.5}$ can also cause serious health effects and mortality in humans and contributes to environmental effects such as acid deposition and eutrophication.

[3] *WildEarth Guardians v. Jackson*, 1:11-cv-CMA-MEH (D. Colo.).
[4] *WildEarth Guardians v. Jackson*, 1:11-cv-CMA-MEH (D. Colo.)(Dkt. Nos. 73, 74).

Data from the existing visibility monitoring network, the "Interagency Monitoring of Protected Visual Environments" (IMPROVE) monitoring network, show that visibility impairment caused by air pollution occurs virtually all the time at most national park and wilderness areas. The average visual range[5] in many Class I areas (i.e., national parks and memorial parks, wilderness areas, and international parks meeting certain size criteria) in the western United States is 100-150 kilometers, or about one-half to two-thirds of the visual range that would exist without anthropogenic air pollution. In most of the eastern Class I areas of the United States, the average visual range is less than 30 kilometers, or about one-fifth of the visual range that would exist under estimated natural conditions. 64 FR 35715 (July 1, 1999).

i. Requirements of the CAA and EPA's Regional Haze Rule (RHR)

In section 169A of the 1977 Amendments to the CAA, Congress created a program for protecting visibility in the nation's national parks and wilderness areas. This section of 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[6] which impairment results from manmade air pollution." On December 2, 1980, EPA promulgated regulations to address

[5] Visual range is the greatest distance, in kilometers or miles, at which a dark object can be viewed against the sky.

[6] Areas designated as mandatory Class I Federal areas consist of national parks exceeding 6000 acres, wilderness areas and national memorial parks exceeding 5000 acres, and all international parks that were in existence on August 7, 1977. 42 U.S.C. 7472(a). In accordance with section 169A of the CAA, EPA, in consultation with the Department of Interior, promulgated a list of 156 areas where visibility is identified as an important value. 44 FR 69122 (November 30, 1979). The extent of a mandatory Class I area includes subsequent changes in boundaries, such as park expansions. 42 U.S.C. 7472(a). Although states and tribes may designate as Class I additional areas which they consider to have visibility as an important value, the requirements of the visibility program set forth in section 169A of the CAA apply only to ''mandatory Class I Federal areas." Each mandatory Class I Federal area is the responsibility of a ''Federal Land Manager.'' 42 U.S.C. 7602(i). When we use the term "Class I area" in this action, we mean a "mandatory Class I Federal area."

visibility impairment in Class I areas that is "reasonably attributable" to a single source or small group of sources, i.e., "reasonably attributable visibility impairment." 45 FR 80084. These regulations represented the first phase in addressing visibility impairment. EPA deferred action on regional haze that emanates from a variety of sources until monitoring, modeling and scientific knowledge about the relationships between pollutants and visibility impairment were improved.

Congress added section 169B to the CAA in 1990 to address regional haze issues. EPA promulgated a rule to address regional haze on July 1, 1999. 64 FR 35714 (July 1, 1999), codified at 40 CFR part 51, subpart P. The RHR revised the existing visibility regulations to integrate into the regulation provisions addressing regional haze impairment and established a comprehensive visibility protection program for Class I areas. The requirements for regional haze, found at 40 CFR 51.308 and 51.309, are included in EPA's visibility protection regulations at 40 CFR 51.300-51.309. Some of the main elements of the regional haze requirements are summarized in section III of this preamble. The requirement to submit a regional haze SIP applies to all 50 states, the District of Columbia and the Virgin Islands. 40 CFR 51.308(b) requires states to submit the first implementation plan addressing regional haze visibility impairment no later than December 17, 2007.[7]

Few states submitted a regional haze SIP prior to the December 17, 2007 deadline, and on January 15, 2009, EPA found that 37 states (including Wyoming), the District of Columbia, and the Virgin Islands, had failed to submit SIPs addressing the regional haze requirements. 74 FR 2392. Once EPA has found that a state has failed to make a required submission, EPA is

[7] EPA's regional haze regulations require subsequent updates to the regional haze SIPs. 40 CFR 51.308(g) – (i).

required to promulgate a FIP within two years unless the state submits a SIP and the Agency approves it within the two-year period. CAA section110(c)(1).

ii. Roles of Agencies in Addressing Regional Haze

Successful implementation of the regional haze program will require long-term regional coordination among states, tribal governments, and various federal agencies. As noted above, pollution affecting the air quality in Class I areas can be transported over long distances, even hundreds of kilometers. Therefore, to effectively address the problem of visibility impairment in Class I areas, states need to develop strategies in coordination with one another, taking into account the effect of emissions from one jurisdiction on the air quality in another.

Because the pollutants that lead to regional haze can originate from sources located across broad geographic areas, EPA has encouraged the states and tribes across the United States to address visibility impairment from a regional perspective. Five regional planning organizations (RPOs) were developed to address regional haze and related issues. The RPOs first evaluated technical information to better understand how their states and tribes impact Class I areas across the country, and then pursued the development of regional strategies to reduce emissions of pollutants that lead to regional haze.

The Western Regional Air Partnership (WRAP) RPO is a collaborative effort of state governments, tribal governments, and various federal agencies established to initiate and coordinate activities associated with the management of regional haze, visibility and other air quality issues in the western United States. WRAP member state governments include: Alaska, Arizona, California, Colorado, Idaho, Montana, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming. Tribal members include Campo Band of Kumeyaay Indians, Confederated Salish and Kootenai Tribes, Cortina Indian Rancheria, Hopi Tribe,

Hualapai Nation of the Grand Canyon, Native Village of Shungnak, Nez Perce Tribe, Northern Cheyenne Tribe, Pueblo of Acoma, Pueblo of San Felipe, and Shoshone-Bannock Tribes of Fort Hall.

B. Requirements for Regional Haze SIPs

The following is a summary of the requirements of the RHR. See 40 CFR 51.308 for further detail regarding the requirements of the rule.

i. The CAA and the Regional Haze Rule

Regional haze SIPs must assure reasonable progress towards the national goal of achieving natural visibility conditions in Class I areas. Section 169A of the CAA and EPA's implementing regulations require states to establish long-term strategies for making reasonable progress toward meeting this goal. Implementation plans must also give specific attention to certain stationary sources that were in existence on August 7, 1977, but were not in operation before August 7, 1962, and require these sources, where appropriate, to install BART controls for the purpose of eliminating or reducing visibility impairment. The specific regional haze SIP requirements are discussed in further detail below.

ii. Determination of Baseline, Natural, and Current Visibility Conditions

The RHR establishes the deciview as the principal metric or unit for expressing visibility. *See* 70 FR 39104, 39118. This visibility metric expresses uniform changes in the degree of haze in terms of common increments across the entire range of visibility conditions, from pristine to extremely hazy conditions. Visibility expressed in deciviews is determined by using air quality measurements to estimate light extinction and then transforming the value of light extinction using a logarithmic function. The deciview is a more useful measure for tracking progress in improving visibility than light extinction itself because each deciview change is an equal

incremental change in visibility perceived by the human eye. Most people can detect a change in visibility at one deciview.[8]

The deciview is used in expressing RPGs (which are interim visibility goals towards meeting the national visibility goal), defining baseline, current, and natural conditions, and tracking changes in visibility. The regional haze SIPs must contain measures that ensure "reasonable progress" toward the national goal of preventing and remedying visibility impairment in Class I areas caused by anthropogenic air pollution by reducing anthropogenic emissions that cause regional haze. The national goal is a return to natural conditions, i.e., anthropogenic sources of air pollution would no longer impair visibility in Class I areas.

To track changes in visibility over time at each of the 156 Class I areas covered by the visibility program (40 CFR 81.401-437), and as part of the process for determining reasonable progress, states must calculate the degree of existing visibility impairment at each Class I area at the time of each regional haze SIP submittal and periodically review progress every five years midway through each 10-year implementation period. To do this, the RHR requires states to determine the degree of impairment (in deciviews) for the average of the 20 percent least impaired ("best") and 20 percent most impaired ("worst") visibility days over a specified time period at each of their Class I areas. In addition, states must also develop an estimate of natural visibility conditions for the purpose of comparing progress toward the national goal. Natural visibility is determined by estimating the natural concentrations of pollutants that cause visibility impairment and then calculating total light extinction based on those estimates. We have provided guidance to states regarding how to calculate baseline, natural and current visibility

[8] The preamble to the RHR provides additional details about the deciview. 64 FR 35714, 35725 (July 1, 1999).

conditions.[9]

For the first regional haze SIPs that were due by December 17, 2007, "baseline visibility conditions" were the starting points for assessing "current" visibility impairment. Baseline visibility conditions represent the degree of visibility impairment for the 20 percent least impaired days and 20 percent most impaired days for each calendar year from 2000 to 2004. Using monitoring data for 2000 through 2004, states are required to calculate the average degree of visibility impairment for each Class I area, based on the average of annual values over the five-year period. The comparison of initial baseline visibility conditions to natural visibility conditions indicates the amount of improvement necessary to attain natural visibility, while the future comparison of baseline conditions to the then current conditions will indicate the amount of progress made. In general, the 2000 - 2004 baseline period is considered the time from which improvement in visibility is measured.

iii. Determination of Reasonable Progress Goals

The vehicle for ensuring continuing progress towards achieving the natural visibility goal is the submission of a series of regional haze SIPs from the states that establish two RPGs (i.e., two distinct goals, one for the "best" and one for the "worst" days) for every Class I area for each (approximately) 10-year implementation period. *See* 40 CFR 51.308(d), (f). The RHR does not mandate specific milestones or rates of progress, but instead calls for states to establish goals that provide for "reasonable progress" toward achieving natural visibility conditions. In setting

[9] *Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule*, September 2003, EPA-454/B-03-005, *available* at http://www.epa.gov/ttncaaa1/t1/memoranda/ Regional Haze _envcurhr_gd.pdf, (hereinafter referred to as "our 2003 Natural Visibility Guidance"); and *Guidance for Tracking Progress Under the Regional Haze Rule*,(September 2003, EPA-454/B-03-004, available at http://www.epa.gov/ttncaaa1/t1/memoranda/rh_tpurhr_gd.pdf, (hereinafter referred to as our "2003 Tracking Progress Guidance").

RPGs, states must provide for an improvement in visibility for the most impaired days over the (approximately) 10-year period of the SIP, and ensure no degradation in visibility for the least impaired days over the same period. *Id.*

In establishing RPGs, states are required to consider the following factors established in section 169A of the CAA and in our RHR at 40 CFR 51.308(d)(1)(i)(A): (1) the costs of compliance; (2) the time necessary for compliance; (3) the energy and non-air quality environmental impacts of compliance; and (4) the remaining useful life of any potentially affected sources. States must demonstrate in their SIPs how these factors are considered when selecting the RPGs for the best and worst days for each applicable Class I area. In setting the RPGs, states must also consider the rate of progress needed to reach natural visibility conditions by 2064 (referred to as the "uniform rate of progress" (URP) or the "glidepath") and the emission reduction measures needed to achieve that rate of progress over the 10-year period of the SIP. Uniform progress towards achievement of natural conditions by the year 2064 represents a rate of progress, which states are to use for analytical comparison to the amount of progress they expect to achieve. In setting RPGs, each state with one or more Class I areas ("Class I state") must also consult with potentially "contributing states," i.e., other nearby states with emission sources that may be affecting visibility impairment at the state's Class I areas. 40 CFR 51.308(d)(1)(iv). In determining whether a state's goals for visibility improvement provide for reasonable progress toward natural visibility conditions, EPA is required to evaluate the demonstrations developed by the state pursuant to paragraphs 40 CFR 51.308(d)(1)(i) and (d)(1)(ii). 40 CFR 51.308(d)(1)(iii).

iv. Best Available Retrofit Technology

Section 169A of the CAA directs states to evaluate the use of retrofit controls at certain larger, often uncontrolled, older stationary sources in order to address visibility impacts from these sources. Specifically, section 169A(b)(2)(A) of the CAA requires states to revise their SIPs to contain such measures as may be necessary to make reasonable progress towards the natural visibility goal, including a requirement that certain categories of existing major stationary sources[10] built between 1962 and 1977 procure, install, and operate the "Best Available Retrofit Technology" as determined by the state. Under the RHR, states are directed to conduct BART determinations for such "BART-eligible" sources that may be anticipated to cause or contribute to any visibility impairment in a Class I area. Rather than requiring source-specific BART controls, states also have the flexibility to adopt an emissions trading program or other alternative program as long as the alternative provides greater reasonable progress towards improving visibility than BART.

On July 6, 2005, EPA published the *Guidelines for BART Determinations Under the Regional Haze Rule* at appendix Y to 40 CFR part 51 (hereinafter referred to as the "BART Guidelines") to assist states in determining which of their sources should be subject to the BART requirements and in determining appropriate emission limits for each applicable source. 70 FR 39104. In making a BART determination for a fossil fuel-fired electric generating plant with a total generating capacity in excess of 750 megawatts (MW), a state must use the approach set forth in the BART Guidelines. Generally, a state is encouraged, but not required, to follow the BART Guidelines in making BART determinations for other types of sources. Regardless of source size or type, a state must meet the requirements of the CAA and our regulations for

[10] The set of "major stationary sources" potentially subject-to-BART is listed in CAA section 169A(g)(7).

selection of BART, and the state's BART analysis and determination must be reasonable in light of the overarching purpose of the regional haze program.

The process of establishing BART emission limitations can be logically broken down into three steps: first, states identify those sources which meet the definition of "BART-eligible source" set forth in 40 CFR 51.301;[11] second, states determine which of such sources "emits any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility in any such area" (a source which fits this description is "subject to BART"); and third, for each source subject-to-BART, states then identify the best available type and level of control for reducing emissions.

States must address all visibility-impairing pollutants emitted by a source in the BART determination process. The most significant visibility impairing pollutants are SO_2, NO_x, and PM. EPA has stated that states should use their best judgment in determining whether VOC or NH_3 emissions impair visibility in Class I areas.

Under the BART Guidelines, states may select an exemption threshold value for their BART modeling, below which a BART-eligible source would not be expected to cause or contribute to visibility impairment in any Class I area. The state must document this exemption threshold value in the SIP and must state the basis for its selection of that value. Any source with emissions that model above the threshold value would be subject to a BART determination review. The BART Guidelines acknowledge varying circumstances affecting different Class I areas. States should consider the number of emission sources affecting the Class I areas at issue

[11] BART-eligible sources are those sources that have the potential to emit 250 tons or more of a visibility-impairing air pollutant, were not in operation prior to August 7, 1962, but were in existence on August 7, 1977, and whose operations fall within one or more of 26 specifically listed source categories. 40 CFR 51.301.

and the magnitude of the individual sources' impacts. Any exemption threshold set by the state should not be higher than 0.5 deciview. 40 CFR part 51, appendix Y, section III.A.1.

In their SIPs, states must identify the sources that are subject-to-BART and document their BART control determination analyses for such sources. In making their BART determinations, section 169A(g)(2) of the CAA requires that states consider the following factors when evaluating potential control technologies: (1) the costs of compliance; (2) the energy and non-air quality environmental impacts of compliance; (3) any existing pollution control technology in use at the source; (4) the remaining useful life of the source; and (5) the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

A regional haze SIP must include source-specific BART emission limits and compliance schedules for each source subject-to-BART. Once a state has made its BART determination, the BART controls must be installed and in operation as expeditiously as practicable, but no later than five years after the date of EPA approval of the regional haze SIP. CAA section 169(g)(4) and 40 CFR 51.308(e)(1)(iv). In addition to what is required by the RHR, general SIP requirements mandate that the SIP must also include all regulatory requirements related to monitoring, recordkeeping, and reporting for the BART controls on the source. See e.g. CAA section 110(a). As noted above, the RHR allows states to implement an alternative program in lieu of BART so long as the alternative program can be demonstrated to achieve greater reasonable progress toward the national visibility goal than would BART.

v. Long-Term Strategy

Consistent with the requirement in section 169A(b) of the CAA that states include in their regional haze SIP a 10 to 15-year strategy for making reasonable progress, section 51.308(d)(3)

of the RHR requires that states include a LTS in their regional haze SIPs. The LTS is the compilation of all control measures a state will use during the implementation period of the specific SIP submittal to meet applicable RPGs. The LTS must include "enforceable emissions limitations, compliance schedules, and other measures as necessary to achieve the reasonable progress goals" for all Class I areas within, or affected by emissions from, the state. 40 CFR 51.308(d)(3).

When a state's emissions are reasonably anticipated to cause or contribute to visibility impairment in a Class I area located in another state, the RHR requires the impacted state to coordinate with the contributing states in order to develop coordinated emissions management strategies. 40 CFR 51.308(d)(3)(i). In such cases, the contributing state must demonstrate that it has included, in its SIP, all measures necessary to obtain its share of the emission reductions needed to meet the RPGs for the Class I area. *Id*. at (d)(3)(ii). The RPOs have provided forums for significant interstate consultation, but additional consultations between states may be required to sufficiently address interstate visibility issues. This is especially true where two states belong to different RPOs.

States should consider all types of anthropogenic sources of visibility impairment in developing their long-term strategy, including stationary, minor, mobile, and area sources. At a minimum, states must describe how each of the following seven factors listed below are taken into account in developing their LTS: (1) emission reductions due to ongoing air pollution control programs, including measures to address RAVI; (2) measures to mitigate the impacts of construction activities; (3) emissions limitations and schedules for compliance to achieve the RPG; (4) source retirement and replacement schedules; (5) smoke management techniques for agricultural and forestry management purposes including plans as currently exist within the state

for these purposes; (6) enforceability of emissions limitations and control measures; and (7) the anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions over the period addressed by the LTS. 40 CFR 51.308(d)(3)(v).

vi. Coordinating Regional Haze and Reasonably Attributable Visibility Impairment

As part of the RHR, EPA revised 40 CFR 51.306(c) regarding the LTS for RAVI to require that the RAVI plan must provide for a periodic review and SIP revision not less frequently than every three years until the date of submission of the state's first plan addressing regional haze visibility impairment, which was due December 17, 2007, in accordance with 40 CFR 51.308(b) and (c). On or before this date, the state must revise its plan to provide for review and revision of a coordinated LTS for addressing RAVI and regional haze, and the state must submit the first such coordinated LTS with its first regional haze SIP. Future coordinated LTS's, and periodic progress reports evaluating progress towards RPGs, must be submitted consistent with the schedule for SIP submission and periodic progress reports set forth in 40 CFR 51.308(f) and 51.308(g), respectively. The periodic review of a state's LTS must report on both regional haze and RAVI impairment and must be submitted to EPA as a SIP revision.

vii. Monitoring Strategy and Other Implementation Plan Requirements

Section 51.308(d)(4) of the RHR includes the requirement for a monitoring strategy for measuring, characterizing, and reporting of regional haze visibility impairment that is representative of all mandatory Class I Federal areas within the state. The strategy must be coordinated with the monitoring strategy required in section 51.305 for RAVI. Compliance with this requirement may be met through "participation" in the IMPROVE network, i.e., review and use of monitoring data from the network. The monitoring strategy is due with the first regional

haze SIP, and it must be reviewed every five years. The monitoring strategy must also provide for additional monitoring sites if the IMPROVE network is not sufficient to determine whether RPGs will be met.

The SIP must also provide for the following:

- Procedures for using monitoring data and other information in a state with mandatory Class I areas to determine the contribution of emissions from within the state to regional haze visibility impairment at Class I areas both within and outside the state;
- Procedures for using monitoring data and other information in a state with no mandatory Class I areas to determine the contribution of emissions from within the state to regional haze visibility impairment at Class I areas in other states;
- Reporting of all visibility monitoring data to the Administrator at least annually for each Class I area in the state, and where possible, in electronic format;
- Developing a statewide inventory of emissions of pollutants that are reasonably anticipated to cause or contribute to visibility impairment in any Class I area. The inventory must include emissions for a baseline year, emissions for the most recent year for which data are available, and estimates of future projected emissions. A state must also make a commitment to update the inventory periodically; and
- Other elements, including reporting, recordkeeping, and other measures necessary to assess and report on visibility.

The RHR requires control strategies to cover an initial implementation period extending to the year 2018, with a comprehensive reassessment and revision of those strategies, as appropriate, every 10 years thereafter. Periodic SIP revisions must meet the core requirements of section 51.308(d) with the exception of BART. The requirement to evaluate sources for BART

applies only to the first regional haze SIP. Facilities subject-to-BART must continue to comply with the BART provisions of section 51.308(e), as noted above. Periodic SIP revisions will assure that the statutory requirement of reasonable progress will continue to be met.

viii. Consultation with States and Federal Land Managers (FLMs)

The RHR requires that states consult with FLMs before adopting and submitting their SIPs. 40 CFR 51.308(i). States must provide FLMs an opportunity for consultation, in person and at least 60 days prior to holding any public hearing on the SIP. This consultation must include the opportunity for the FLMs to discuss their assessment of impairment of visibility in any Class I area and to offer recommendations on the development of the RPGs and on the development and implementation of strategies to address visibility impairment. Further, a state must include in its SIP a description of how it addressed any comments provided by the FLMs. Finally, a SIP 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.

C. Our Proposal

We signed our notice of proposed rulemaking on May 23, 2013[12], and it was published in the *Federal Register* on June 10, 2013 (78 FR 34738). In our 2013 proposal, we proposed to

[12] On May 15, 2012 the EPA signed the first proposed rule on the Wyoming Regional Haze SIP which proposed to partially approve and partially disapprove the Wyoming state plan. The EPA published the proposed rule in the *Federal Register* for public comment on June 4, 2012. This public *Federal Register* notice may be found at 77 FR 33022 (June 4, 2012). EPA then obtained an extension to the Consent Decree deadline in order to re-propose the Wyoming regional haze plan based on data generated after the conclusion of the original comment period. In this

approve many of Wyoming's regional haze SIP, including the State's identification of its BART sources, its identification of those BART sources that may be anticipated to cause or contribute to visibility impairment, and the State's BART determinations for PM. Because of deficiencies in the Wyoming's NO_x BART analyses, however, we proposed to disapprove the NO_x BART emissions limitations for a number of sources, as well as the reasonable progress goals and long-term strategy. We proposed to address the NO_x BART requirements for these sources and the other deficiencies in the Wyoming plan in a FIP, based on our analysis of the relevant factors. For several BART sources we also asked in the proposed rulemaking if interested parties had additional information regarding the BART factors and EPA's proposed determinations, for example our weighing of average costs, incremental costs, visibility improvement, and timing of installation of such controls, and in light of such information, whether the interested parties thought the Agency should consider another BART control technology option that could be finalized either instead of, or in conjunction with, BART as proposed.[13]

In our 2013 proposal we proposed to disapprove the following:

- The State's nitrogen oxides (NO_x) best available retrofit technology (BART) determinations for PacifiCorp Dave Johnston Units 3 and 4, PacifiCorp Naughton Units 1 and 2, PacifiCorp Wyodak Unit 1, and Basin Electric Laramie River Units 1, 2, and 3.

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document, all references to "proposal" or "proposal notice" refer to the notice published on June 10, 2013 unless otherwise stated.

[13] *E.g.*, 78 FR 34777. The proposed notice also explained that "[t]he Agency will take the comments and testimony received, as well as any further SIP revisions submitted by the State, into consideration in our final promulgation. Supplemental information received may lead the Agency to adopt final SIP and/or FIP regulations that reflect a different BART control technology option, or impact other proposed regulatory provisions, which differ from this proposal." 78 FR 34777.

- The State's NO_x reasonable progress determinations for PacifiCorp Dave Johnston Units 1 and 2.
- Wyoming's reasonable progress goals (RPGs).
- The State's monitoring, recordkeeping, and reporting requirements in Chapter 6.4 of the SIP.
- Portions of the State's long-term strategy (LTS) that rely on or reflect other aspects of the regional haze SIP that we are disapproving.
- The provisions necessary to meet the requirements for the coordination of the review of the reasonably attributable visibility impairment (RAVI) and the regional haze LTS.

We proposed the promulgation of a FIP to address the deficiencies in the Wyoming regional haze SIP that we identified in the proposed notice. The proposed FIP included the following elements:

- NO_x BART determinations and limits for PacifiCorp Dave Johnston Units 3 and 4, PacifiCorp Naughton Units 1 and 2, PacifiCorp Wyodak Unit 1, and Basin Electric Laramie River Units 1, 2, and 3.
- NO_x reasonable progress determinations and limits for PacifiCorp Dave Johnston Units 1 and 2.
- RPGs consistent with the SIP limits proposed for approval and the proposed FIP limits.
- Monitoring, recordkeeping, and reporting requirements applicable to all BART and reasonable progress sources for which there is a SIP or FIP emissions limit.

- LTS elements pertaining to emission limits and compliance schedules for the proposed BART and reasonable progress FIP emission limits.
- Provisions to ensure the coordination of the RAVI and regional haze LTS.

We also requested comment on an alternative proposal, related to the State's NO_x BART determinations, for PacifiCorp Jim Bridger Units 1 and 2, that would involve disapproval and the promulgation of a FIP.

D. Public Participation

We requested comments on all aspects of our proposed action. In our proposed rulemaking, we provided a 60-day comment period, with the comment period closing on August 9, 2013. We also held a public hearing on June 24, 2013, in Cheyenne, Wyoming. We received requests from Wyoming's governor, congressional delegation, and Department of Environmental Quality (DEQ), among others, for additional public hearings and an extended public comment period. As a result, we held two more public hearings. We held a hearing on July 17, 2013, in Cheyenne, Wyoming, and on July 26, 2013, in Casper, Wyoming. We also extended the comment period to August 26, 2013. We provided public notice of the additional hearings and extension of the public comment period on July 8, 2013. 78 FR 40654.

II. Final Action

Based upon comments received on our proposed action, in this final action we are partially approving and partially disapproving Wyoming's regional haze SIP submitted on January 12, 2011. We are approving the majority of the State's regional haze determinations. For the fifteen coal fired power plant units in Wyoming subject to the regional haze requirements, we are approving the State's NO_x emission control technology decisions for 10 of those units. We are also approving the State's plan for the non-power plant facilities subject to

regional haze requirements and the State's plan for control of PM. We are approving all aspects of Wyoming's SIP, except for the following elements which we are disapproving:

- The State's NO_x BART determinations for PacifiCorp Dave Johnston Unit 3, PacifiCorp Wyodak Unit 1, and Basin Electric Laramie River Units 1, 2, and 3.
- Wyoming's RPGs.
- The State's monitoring, recordkeeping, and reporting requirements in Chapter 6.4 of the SIP.
- Portions of the State's LTS that rely on or reflect other aspects of the regional haze SIP that we are disapproving.
- The provisions necessary to meet the requirements for the coordination of the review of the RAVI and the regional haze LTS.

The final FIP includes the following elements:

- NO_x BART determinations and emission limits for PacifiCorp Dave Johnston Unit 3, Wyodak Unit 1, and Basin Electric Laramie River Units 1, 2, and 3.
- RPGs consistent with the SIP emission limits finalized for approval and the finalized FIP emission limits.
- Monitoring, recordkeeping, and reporting requirements applicable to all BART sources for which there is a SIP or FIP emissions limit.
- LTS elements pertaining to emission limits and compliance schedules for the finalized FIP emission limits.
- Provisions to ensure the coordination of the RAVI and regional haze LTS.

Although we are promulgating a Federal plan, a state may always submit a new regional haze SIP to EPA for review and we would welcome such a submission. The CAA requires EPA

to take action on such a SIP submittal that is determined to be complete within 12 months. If the State were to submit a revision meeting the requirements of the CAA and the regional haze regulations, we would propose approval of the State's plan as expeditiously as practicable. We are mindful of the costs of our final action but have considered the costs and visibility improvement that other states and EPA have required for BART controls.

Table 1 shows the NO_x BART control technologies, associated cost, and emission reductions for each source that is subject to the FIP.

Table 1 – Control Technologies, Costs, Emission Limits, and Cost Effectiveness for Sources Subject to the FIP

Source	Technology *	Emission Limit – lb/MMBtu (30-day rolling average)	Total Capital Cost ($)	Total Annualized Cost ($)	Average Cost-Effectiveness ($/ton)
Dave Johnston Unit 3	New low-NOx burners (LNBs) with overfire air (OFA) and shut down in 2027; or new LNBs with OFA and selective catalytic reduction (SCR)**	0.28 (for LNBs with OFA)	$15,976,696 (for LNBs with OFA)	$1,828,137 (for LNBs with OFA)	$644 (for LNBs with OFA)
Laramie River Unit 1	New LNBs/OFA and SCR	0.07	$180,254,572	$21,770,134	$4,461
Laramie River Unit 2	New LNBs with OFA and SCR	0.07	$188,826,333	$22,691,467	$4,424
Laramie River Unit 3	New LNBs with OFA and SCR	0.07	$188,437,953	$22,666,982	$4,375

Wyodak Unit 1	New LNBs with OFA and SCR	0.07	$119,501,862	$12,714,153	$4,036

* The technology listed is the technology evaluated as BART, but sources can choose to use another technology or combination of technologies to meet established limits.
** As used in this and the following tables, "new" means replacing the control technology that was in place at the time of the State's BART analyses in May 2009 with new control technology, most of which was installed post-2009.

III. Changes from Proposed Rule and Reasons for Changes

A. Changes to Proposed Costs and Visibility Improvements

As described in this section and elsewhere in today's final rule, we have revised our cost of compliance analysis and visibility improvement modeling from our June 10, 2013 proposed action for all of the BART and reasonable progress electric generating units (EGUs).

EPA revised the cost analyses from those found in the proposed rule based upon input from various commenters. Some of factors that caused us to revise our cost estimates included accounting for site elevation in the SCR capital cost, change in SCR reagent to anhydrous ammonia from urea, change in auxiliary electrical cost from market price to generating cost, change in urea SNCR chemical utilization for some units due to high furnace temperatures, and consideration of shorter plant lifetimes in some instances. In addition, EPA incorporated some of the costs provided by commenters in their site specific cost estimates where we found those costs to be sufficiently supported. Per EPA's Control Cost Manual (CCM), use of site specific cost estimates is preferable to the use of generalized costs where those site specific costs can be supported and are appropriate.

EPA addressed comments on the visibility improvement modeling in the proposed rule by developing a new protocol that makes several improvements in the modeling, including the use of the current regulatory version of the CALPUFF model (version 5.8), the use of an improved method to assess the effects of pollutants on light scattering and visibility impairment

(Method 8), the use of lower background ammonia concentrations, and the use of an ammonia limiting correction for BART sources with multiple units. In particular, we have used new values for ammonia background that reflect robust monitoring data and the appropriate default concentrations for the geography in the state.

The results of our revised cost analysis, along with the revised visibility impacts, are presented in Tables 2 through 17 below and summarized for each source below the set of tables for that source. Details regarding our revised cost analysis and visibility improvement modeling can be found in the docket.[14,15]

Table 2 – Summary of EPA's Laramie River Unit 1 NO_x BART Analysis

Control Technology	Emission Rate (lb/MMBtu; Annual Average)	Emission Reduction (tpy)	Annualized Costs	Average Cost Effectiveness ($/ton)	Incremental Cost Effectiveness ($/ton)	Visibility Improvement (Delta deciview for the Maximum 98th Percentile Impact at Badlands National Park)
New LNBs with OFA	0.19	1,556	$2,268,806	$1,458	--	0.18
New LNBs with OFA and selective non-catalytic reduction (SNCR)	0.15	2,445	$8,554,896	$3,485	$6,993	0.28
New LNBs with OFA and SCR	0.05	4,880	$21,770,134	$4,461	$5,449	0.57

[14] Andover Technology Partners, "Cost of NO_x Controls on Wyoming EGUs", October 28, 2013; Wyoming EGU BART and Reasonable Progress Costs – 10/28/2013; Wyoming EGU BART and Reasonable Progress Costs for Jim Bridger – 10/28/2013.
[15] Air Quality Modeling Protocol: Wyoming Regional Haze Federal Implementation Plan, U.S. EPA, January, 2014.

Table 3 – Summary of EPA's Laramie River Unit 2 NO_x BART Analysis

Control Technology	Emission Rate (lb/MMBtu; Annual Average)	Emission Reduction (tpy)	Annualized Costs	Average Cost Effectiveness ($/ton)	Incremental Cost Effectiveness ($/ton)	Visibility Improvement (Delta deciview for the Maximum 98th Percentile Impact at Badlands National Park)
New LNBs with OFA	0.19	1823	$2,268,806	$1,244	--	0.18
New LNBs with OFA and SNCR	0.15	2,717	$8,531,631	$3,140	$7,006	0.27
New LNBs with OFA and SCR	0.05	5,129	$22,691,467	$4,424	$5,871	0.53

Table 4 – Summary of EPA's Laramie River Unit 3 NO_x BART Analysis

Control Technology	Emission Rate (lb/MMBtu; Annual Average)	Emission Reduction (tpy)	Annualized Costs	Average Cost Effectiveness ($/ton)	Incremental Cost Effectiveness ($/ton)	Visibility Improvement (Delta deciview for the Maximum 98th Percentile Impact at Badlands National Park)
New LNBs with OFA	0.19	1789	$2,268,806	$1,268	--	0.18
New LNBs with OFA and SNCR	0.15	2,706	$8,643,839	$3,194	$6,951	0.27
New LNBs with OFA and SCR	0.05	5,181	$22,666,982	$4,375	$5,667	0.52

EPA's January 2014 modeling protocol, Appendix H, shows the model predicted visibility improvement for each emissions control technology at each of the Class I areas that we

modeled in our analysis. For Laramie River we modeled visibility impairment at Badlands National Park, Wind Cave National Park, Rawah Wilderness Area, and Rocky Mountain National Park. At Laramie River Unit 1 the model visibility improvements with LNB/OFA/SCR were 0.57 deciviews at Badlands National Park, 0.47 deciviews at Wind Cave National Park, 0.25 deciviews at Rawah Wilderness Area, and 0.39 at Rocky Mountain National Park. At Laramie River Unit 2 the model visibility improvements with LNB/OFA/SCR were 0.53 deciviews at Badlands, 0.43 deciviews at Wind Cave, 0.26 deciviews at Rawah, and 0.31 at Rocky Mountain. At Laramie River Unit 3 the model visibility improvements with LNB/OFA/SCR were 0.52 deciviews at Badlands, 0.44 deciviews at Wind Cave, 0.23 deciviews at Rawah, and 0.28 at Rocky Mountain.

Table 5 – Summary of EPA's Jim Bridger Unit 1 NO_x BART Analysis

Control Technology	Emission Rate (lb/MMBtu; Annual Average)	Emission Reduction (tpy)	Annualized Costs	Average Cost Effectiveness ($/ton)	Incremental Cost Effectiveness ($/ton)	Visibility Improvement (Delta deciview for the Maximum 98th Percentile Impact at Bridger Wilderness Area) *
New LNBs with SOFA	0.18	4,558	$1,167,297	$256	--	0.17/*0.23*
New LNBs with SOFA and SNCR	0.14	5,332	$4,330,052	$812	$4,088	0.20/*0.27*
New LNBs with SOFA and SCR	0.05	7,352	$19,372,105	$2,635	$7,447	0.27/*0.37*

* Values shown are model results using ammonia based on monitoring and default data; values in straight font are model results using a monitored monthly varying concentration / *values in italics are model results using an IWAQM default 0.5 ppb background ammonia*.

Table 6 – Summary of EPA's Jim Bridger Unit 2 NO_x BART Analysis

Control	Emission	Emission	Annualized	Average Cost	Incremental	Visibility

Technology	Rate (lb/MMBtu; Annual Average)	Reduction (tpy)	Costs	Effectiveness ($/ton)	Cost Effectiveness ($/ton)	Improvement (Delta deciview for the Maximum 98th Percentile Impact at Bridger Wilderness Area) *
New LNBs with SOFA	0.19	3,787	$1,167,297	$308	--	0.16*/0.21*
New LNBs with SOFA and SNCR	0.15	4,545	$4,291,184	$944	$4,122	0.19*/0.25*
New LNBs with SOFA and SCR	0.05	6,554	$22,307,492	$3,403	$8,968	0.27*/0.36*

* Values shown are model results using ammonia based on monitoring and default data; values in straight font are model results using a monitored monthly varying concentration / *values in italics are model results using an IWAQM default 0.5 ppb background ammonia*.

Table 7 – Summary of EPA's Jim Bridger Unit 3 NO_x BART Analysis

Control Technology	Emission Rate (lb/MMBtu; Annual Average)	Emission Reduction (tpy)	Annualized Costs	Average Cost Effectiveness ($/ton)	Incremental Cost Effectiveness ($/ton)	Visibility Improvement (Delta deciview for the Maximum 98th Percentile Impact at Bridger Wilderness Area) *
New LNBs with SOFA	0.20	3,710	$1,167,297	$315	--	0.14*/0.19*
New LNBs with SOFA and SNCR	0.16	4,539	$4,458,776	$982	$3,972	0.17*/0.23*
New LNBs with SOFA and SCR	0.05	6,799	$22,573,920	$3,320	$8,015	0.26*/0.35*

* Values shown are model results using ammonia based on monitoring and default data; values in straight font are model results using a monitored monthly varying concentration / *values in italics are model results using an IWAQM default 0.5 ppb background ammonia*.

Table 8 – Summary of EPA's Jim Bridger Unit 4 NO_x BART Analysis

Control Technology	Emission Rate	Emission Reduction	Annualized Costs	Average Cost Effectiveness	Incremental Cost	Visibility Improvement

	(lb/MMBtu; Annual Average)	(tpy)		($/ton)	Effectiveness ($/ton)	(Delta deciview for the Maximum 98th Percentile Impact at Rawah Wilderness Area) *
New LNBs with SOFA	0.19	4,161	$1,167,297	$281	--	0.25*/0.23*
New LNBs with SOFA and SNCR	0.15	4,956	$4,372,457	$882	$4,035	0.30*/0.28*
New LNBs with SOFA and SCR	0.05	7,108	$19,494,417	$2,743	$7,027	0.45*/0.42*

* Values shown are model results using ammonia based on monitoring and default data; values in straight font are model results using a monitored monthly varying concentration / *values in italics are model results using an IWAQM default 0.5 ppb background ammonia*.

EPA's January 2014 modeling protocol, Appendix H, shows the model predicted visibility improvement for each emissions control technology at each of the Class I areas that we modeled in our analysis of Jim Bridger. Model simulations were performed using a monthly varying background ammonia concentration and using the IWAQM default concentration for forested areas of 0.5 ppb. For Jim Bridger we modeled visibility impairment at Bridger Wilderness Area, Fitzpatrick Wilderness Area, Mt Zirkel Wilderness Area, Rawah Wilderness Area, Rocky Mountain National Park, Grand Teton National Park, Teton Wilderness Area, Washakie Wilderness Area and Yellowstone National Park. Under the State's LTS, LNB/OFA/SCR would be required on Jim Bridger Units 1 and 2 in 2022 and 2021. Under the State's LTS, LNB/OFA/SCR would be required on Jim Bridger Units 3 and 4 in 2015 and 2016.

For Jim Bridger Unit 1, using monthly varying ammonia concentrations, model visibility improvements with LNB/OFA/SCR were: 0.37 deciviews at Bridger; 0.26 deciviews at Fitzpatrick; 0.29 deciviews at Mt Zirkel; 0.35deciviews at Rawah; 0.36 deciviews at Rocky

Mountain; 0.17 deciviews at Grand Teton; 0.14 deciviews at Teton; 0.19 deciviews at Washakie; and 0.15 deciviews at Yellowstone.

For Jim Bridger Unit 1, using a constant 0.5 ppb ammonia concentration, model visibility improvements with LNB/OFA/SCR were: 0.37 deciviews at Bridger; 0.26 deciviews at Fitzpatrick; 0.29 deciviews at Mt Zirkel; 0.35 deciviews at Rawah; 0.36 deciviews at Rocky Mountain; 0.17 deciviews at Grand Teton; 0.14 deciviews at Teton; 0.19 deciviews at Washakie; and 0.15 deciviews at Yellowstone.

For Jim Bridger Unit 2, using monthly varying ammonia concentrations, model visibility improvements with LNB/OFA/SCR were: 0.36 deciviews at Bridger; 0.26 deciviews at Fitzpatrick; 0.28 deciviews at Mt Zirkel; 0.35 deciviews at Rawah; 0.36 deciviews at Rocky Mountain; 0.16 deciviews at Grand Teton; 0.14 deciviews at Teton; 0.19 deciviews at Washakie; and 0.14 deciviews at Yellowstone.

For Jim Bridger Unit 2, using a constant 0.5 ppb ammonia concentration, model visibility improvements with LNB/OFA/SCR were: 0.36 deciviews at Bridger; 0.26 deciviews at Fitzpatrick; 0.28 deciviews at Mt Zirkel; 0.35 deciviews at Rawah; 0.36 deciviews at Rocky Mountain; 0.16 deciviews at Grand Teton; 0.14 deciviews at Teton; 0.19 deciviews at Washakie; and 0.14 deciviews at Yellowstone.

For Jim Bridger Unit 3, using monthly varying ammonia concentrations, model visibility improvements with LNB/OFA/SCR were: 0.35 deciviews at Bridger; 0.25 deciviews at Fitzpatrick; 0.28 deciviews at Mt Zirkel; 0.33 deciviews at Rawah; 0.34 deciviews at Rocky Mountain; 0.16 deciviews at Grand Teton; 0.14 deciviews at Teton; 0.18 deciviews at Washakie; and 0.14 deciviews at Yellowstone.

For Jim Bridger Unit 3, using a constant 0.5 ppb ammonia concentration, model visibility improvements with LNB/OFA/SCR were: 0.35 deciviews at Bridger; 0.25 deciviews at Fitzpatrick; 0.28 deciviews at Mt Zirkel; 0.33 deciviews at Rawah; 0.34 deciviews at Rocky Mountain; 0.16 deciviews at Grand Teton; 0.14 deciviews at Teton; 0.18 deciviews at Washakie; and 0.14 deciviews at Yellowstone.

For Jim Bridger Unit 4, using monthly varying ammonia concentrations, model visibility improvements with LNB/OFA/SCR were: 0.38 deciviews at Bridger; 0.28 deciviews at Fitzpatrick; 0.19 deciviews at Mt Zirkel; 0.42 deciviews at Rawah; 0.38 deciviews at Rocky Mountain; 0.32 deciviews at Grand Teton; 0.15 deciviews at Teton; 0.30 deciviews at Washakie; and 0.16 deciviews at Yellowstone.

For Jim Bridger Unit 4, using a constant 0.5 ppb ammonia concentration, model visibility improvements with LNB/OFA/SCR were: 0.38 deciviews at Bridger; 0.28 deciviews at Fitzpatrick; 0.27 deciviews at Mt Zirkel; 0.42 deciviews at Rawah; 0.38 deciviews at Rocky Mountain; 0.32 deciviews at Grand Teton; 0.15 deciviews at Teton; 0.30 deciviews at Washakie; and 0.16 deciviews at Yellowstone.

Table 9 – Summary of EPA's Dave Johnston Unit 3 NO_x BART Analysis (9 Year Remaining Useful Life)

Control Technology	Emission Rate (lb/MMBtu; Annual Average)	Emission Reduction (tpy)	Annualized Costs	Average Cost Effectiveness ($/ton)	Incremental Cost Effectiveness ($/ton)	Visibility Improvement (Delta deciview for the Maximum 98th Percentile Impact at Wind Cave National Park)
New LNBs with OFA	0.22	2,837	$1,828,137	$644	--	0.33
New LNBs with OFA and SNCR	0.16	3,356	$3,898,930	$1,162	$3,988	0.39
New LNBs	0.05	4,433	$16,591,006	$3,742	$11,781	0.51

with OFA and SCR						

Table 10 – Summary of EPA's Dave Johnston Unit 3 NO_x BART Analysis (20 Year Remaining Useful Life)

Control Technology	Emission Rate (lb/MMBtu; Annual Average)	Emission Reduction (tpy)	Annualized Costs	Average Cost Effectiveness ($/ton)	Incremental Cost Effectiveness ($/ton)	Visibility Improvement (Delta deciview for the Maximum 98th Percentile Impact at Wind Cave National Park)
New LNBs with OFA	0.22	2,837	$1,699,807	$599	--	0.33
New LNBs with OFA and SNCR	0.16	3,356	$3,510,589	$1,046	$3,488	0.39
New LNBs with OFA and SCR	0.05	4,433	$11,680,144	$2,635	$7,583	0.51

Table 11 – Summary of EPA's Dave Johnston Unit 4 NO_x BART Analysis

Control Technology	Emission Rate (lb/MMBtu; Annual Average)	Emission Reduction (tpy)	Annualized Costs	Average Cost Effectiveness ($/ton)	Incremental Cost Effectiveness ($/ton)	Visibility Improvement (Delta deciview for the Maximum 98th Percentile Impact at Wind Cave National Park)
New LNBs with OFA	0.14	3,114	$767,342	$246	--	0.41
New LNBs with OFA and SNCR	0.11	3,505	$2,541,600	$725	$4,535	0.46
New LNBs with OFA and SCR	0.05	4,377	$14,158,899	$3,235	$13,312	0.57

EPA's January 2014 modeling protocol, Appendix H, shows the model predicted visibility improvement for each emissions control technology at each of the Class I areas that we modeled in our analysis of Dave Johnston. For Dave Johnston we modeled visibility impairment at Badlands National Park, Wind Cave National Park, Mt Zirkel Wilderness Area, Rawah Wilderness Area, and Rocky Mountain National Park. At Dave Johnston Unit 3 the model visibility improvements with LNB/OFA/SCR were 0.47 deciviews at Badlands National Park, 0.51 deciviews at Wind Cave National Park, 0.20 deciviews at Mt Zirkel Wilderness Area, 0.40 deciviews at Rawah Wilderness Area, and 0.28 at Rocky Mountain National Park. At Dave Johnston Unit 4 the model visibility improvements with LNB/OFA were 0.55 deciviews at Badlands National Park, 0.57 deciviews at Wind Cave National Park, 0.24 deciviews at Mt Zirkel Wilderness Area, 0.34 deciviews at Rawah Wilderness Area, and 0.33 deciviews at Rocky Mountain National Park.

Table 12 – Summary of EPA's Naughton Unit 1 NO_x BART Analysis

Control Technology	Emission Rate (lb/MMBtu; Annual Average)	Emission Reduction (tpy)	Annualized Costs	Average Cost Effectiveness ($/ton)	Incremental Cost Effectiveness ($/ton)	Visibility Improvement (Delta deciview for the Maximum 98th Percentile Impact at Bridger Wilderness Area)*
New LNBs with OFA	0.21	2,100	$932,466	$444	--	0.22 /*0.26*
New LNBs with OFA and SNCR	0.16	2,463	$2,234,827	$907	$3,584	0.26 / *0.30*
New LNBs with OFA and SCR	0.05	3,209	$9,974,616	$3,109	$10,384	0.33 / *0.39*

* Values shown are model results using ammonia based on monitoring and default data; values in straight font are model results using a monitored monthly varying concentration / *values in italics are model results using an IWAQM default 0.5 ppb background ammonia*.

Table 13 – Summary of EPA's Naughton Unit 2 NO_x BART Analysis

Control Technology	Emission Rate (lb/MMBtu; Annual Average)	Emission Reduction (tpy)	Annualized Costs	Average Cost Effectiveness ($/ton)	Incremental Cost Effectiveness ($/ton)	Visibility Improvement (Delta deciview for the Maximum 98th Percentile Impact at Bridger Wilderness Area)*
New LNBs with OFA	0.21	2,586	$883,900	$342	--	0.28 / *0.32*
New LNBs with OFA and SNCR	0.16	3,024	$2,480,832	$820	$3,647	0.34 / *0.38*
New LNBs with OFA and SCR	0.05	3,922	$10,062,750	$2,566	$8,440	0.42 / *0.46*

* Values shown are model results using ammonia based on monitoring and default data; values in straight font are model results using a monitored monthly varying concentration / *values in italics are model results using an IWAQM default 0.5 ppb background ammonia*. .

Table 14 – Summary of EPA's Naughton Unit 3 NO_x BART Analysis

(In lieu of conversion of Naughton Unit 3 to natural gas per PacifiCorp request)

Control Technology	Emission Rate (lb/MMBtu; Annual Average)	Emission Reduction (tpy)	Annualized Costs	Average Cost Effectiveness ($/ton)	Incremental Cost Effectiveness ($/ton)	Visibility Improvement (Delta deciview for the Maximum 98th Percentile Impact at Bridger Wilderness Area)*
Existing LNBs with OFA**	0.33	442	$106,393	$240	--	0.05 / *0.07*
Existing LNBs with OFA and SNCR	0.23	1,673	$3,852,377	$2,303	$3,045	0.20 / *0.29*
Existing LNBs with OFA and SCR	0.05	3,922	$13,604,702	$3,469	$4,335	0.49 / *0.60*

* Values shown are model results using ammonia based on monitoring and default data; values in straight font are model results using a monitored monthly varying concentration / *values in italics are model results using an IWAQM default 0.5 ppb background ammonia*.
** As used in this table, "existing" means the control technology that was in place at the time of the State's BART analyses in May 2009.

EPA's January 2014 modeling protocol, Appendix H, shows the model predicted visibility improvement for each emissions control technology at each of the Class I areas that we modeled in our analysis of Naughton. For Naughton we modeled visibility impairment at Bridger Wilderness Area, Fitzpatrick Wilderness Area, North Absaroka Wilderness Area, Washakie Wilderness Area, Teton Wilderness Area, Grand Teton National Park and Yellowstone National Park. Model simulations were performed using a monthly varying background ammonia concentration and using the IWAQM default concentration for forested areas of 0.5 ppb.

For Naughton Unit 1 model visibility improvements, using monthly varying ammonia concentrations, with LNB/OFA and LNB/OFA/SCR were, respectively: 0.22 and 0.33 deciviews at Bridger; 0.19 and 0.29 deciviews at Fitzpatrick; 0.10 and 0.14 at North Absaroka; 0.10 and 0.15 deciviews at Washakie; 0.10 and 0.16 deciviews at Teton; 0.15 and 0.23 deciviews at Grand Teton; and 0.12 and 0.18 deciviews at Yellowstone.

For Naughton Unit 1 model visibility improvements, using a constant 0.5 ppb ammonia concentration, with LNB/OFA and LNB/OFA/SCR were, respectively: 0.26 and 0.39 deciviews at Bridger; 0.22 and 0.30 deciviews at Fitzpatrick; 0.10 and 0.14 at North Absaroka; 0.12 and 0.17 deciviews at Washakie; 0.13 and 0.19 deciviews at Teton; 0.19 and 0.29 deciviews at Grand Teton; and 0.13 and 0.19 deciviews at Yellowstone.

For Naughton Unit 2 model visibility improvements, using monthly varying ammonia concentrations, with LNB/OFA and LNB/OFA/SCR were, respectively: 0.28 and 0.42

deciviews at Bridger; 0.25 and 0.36 deciviews at Fitzpatrick; 0.12 and 0.17 at North Absaroka; 0.15 and 0.22 deciviews at Washakie; 0.14 and 0.21 deciviews at Teton; 0.18 and 0.28 deciviews at Grand Teton; and 0.16 and 0.22 deciviews at Yellowstone.

For Naughton Unit 2 model visibility improvements, using a constant 0.5 ppb ammonia concentration, with LNB/OFA and LNB/OFA/SCR were, respectively: 0.32 and 0.46 deciviews at Bridger; 0.26 and 0.38 deciviews at Fitzpatrick; 0.12 and 0.17 at North Absaroka; 0.16 and 0.22 deciviews at Washakie; 0.17 and 0.25 deciviews at Teton; 0.25 and 0.38 deciviews at Grand Teton; and 0.17 and 0.24 deciviews at Yellowstone.

For Naughton Unit 3 model visibility improvements, using monthly varying ammonia concentrations, with LNB/OFA and LNB/OFA/SCR were, respectively: 0.05 and 0.49 deciviews at Bridger; 0.05 and 0.42 deciviews at Fitzpatrick; 0.03 and 0.24 at North Absaroka; 0.05 and 0.37 deciviews at Washakie; 0.04 and 0.38 deciviews at Teton; 0.04 and 0.38 deciviews at Grand Teton; and 0.04 and 0.39 deciviews at Yellowstone.

For Naughton Unit 3 model visibility improvements, using a constant 0.5 ppb ammonia concentration, with LNB/OFA and LNB/OFA/SCR were, respectively: 0.07 and 0.60 deciviews at Bridger; 0.05 and 0.44 deciviews at Fitzpatrick; 0.03 and 0.24 at North Absaroka; 0. and 0. deciviews at Washakie; 0.05 and 0.39 deciviews at Teton; 0.06 and 0.41 deciviews at Grand Teton; and 0.05 and 0.40 deciviews at Yellowstone.

Table 15 – Summary of EPA's Wyodak NO_x BART Analysis

Control Technology	Emission Rate (lb/MMBtu; Annual Average)	Emission Reduction (tpy)	Annualized Costs	Average Cost Effectiveness ($/ton)	Incremental Cost Effectiveness ($/ton)	Visibility Improvement (Delta deciview for the Maximum 98th Percentile Impact at Wind Cave National

						Park)
New LNBs with OFA	0.19	1,239	$1,272,427	$1,027	--	0.21
New LNBs with OFA and SNCR	0.15	1,914	$3,726,573	$1,947	$3,635	0.32
New LNBs with OFA and SCR	0.05	3,735	$15,073,502	$4,036	$6,233	0.61

EPA's January 2014 modeling protocol, Appendix H, shows the model predicted visibility improvement for each emissions control technology at each of the Class I areas that we modeled in our analysis of Wyodak . For Wyodak we modeled visibility impairment at Badlands National Park and Wind Cave National Park. At Wyodak Unit 1 the model visibility improvements with LNB/OFA/SCR were 0.61 deciviews at Wind Cave and 0.38 deciviews at Badlands National Park.

Table 16 – Summary of EPA's Dave Johnston Unit 1 NO_x Reasonable Progress Analysis

Control Technology	Emission Rate (lb/MMBtu; Annual Average)	Emission Reduction (tpy)	Annualized Costs	Average Cost Effectiveness ($/ton)	Incremental Cost Effectiveness ($/ton)	Visibility Improvement (Delta deciview for the Maximum 98th Percentile Impact at Wind Cave National Park)
LNBs with OFA*	0.20	1,226	$1,214,000	$990	--	0.12
LNBs with OFA and SNCR	0.15	1,466	$2,096,430	$1,430	$3,670	0.14
LNBs with OFA and SCR	0.05	1,947	$6,808,374	$3,496	$9,798	0.18

* As used in this and the following tables, control technology that is not preceded by either "new" or "existing" (as in the above tables) means the control technology will be installed for the first time.

Table 17 – Summary of EPA's Dave Johnston Unit 2 NO_x Reasonable Progress Analysis

Control Technology	Emission Rate	Emission Reduction	Annualized Costs	Average Cost Effectiveness	Incremental Cost	Visibility Improvement

	(lb/MMBtu; Annual Average)	(tpy)		($/ton)	Effectiveness ($/ton)	(Delta deciview for the Maximum 98th Percentile Impact at Wind Cave National Park)
LNBs with OFA	0.20	1,180	$1,441,146	$1,221	--	0.11
LNBs with OFA and SNCR	0.15	1,425	$2,335,022	$1,638	$3,645	0.14
LNBs with OFA and SCR	0.05	1,916	$7,037,969	$3,673	$9,588	0.18

B. Changes to Our Proposed Determinations

1. Dave Johnston Unit 3

We proposed to require PacifiCorp Dave Johnston Unit 3 to meet a FIP emission limit of 0.07 lb/MMBtu (30-day rolling average) for NO_x BART (assumes the installation of LNBs/OFA plus SCR). Based on our revised costs of compliance and visibility impacts, we would still conclude that NO_x BART is an emission limit of 0.07 lb/MMBtu (30-day rolling average). PacifiCorp submitted comments on our proposed rulemaking on August 26, 2013. In those comments, PacifiCorp indicated in various places (e.g., page 37) that instead of installing SCR, it would shut down Dave Johnston Unit 3 in 2027. Our regulatory language now provides PacifiCorp two alternative paths to compliance with the FIP. The first path includes a requirement for Dave Johnston Unit 3 to cease operation by December 31, 2027. For this path, we are requiring Dave Johnston Unit 3 to meet a FIP limit of 0.28 lb/MMBtu (30-day rolling average) no later than five years after the date of our final action. This emission limit assumes the installation of LNBs/OFA. The second compliance path gives PacifiCorp the option to

instead meet a 0.07 lb/MMBtu emission limit (assumes installation of SCR) within five years of our final action with no requirement for shut down.

EPA met with PacifiCorp on October 31, 2013, to clarify the comments submitted by PacifiCorp (see October 31, 2013 memo to docket). Specifically, EPA asked if, in lieu of a requirement for SCR, PacifiCorp was asking for EPA to include an enforceable requirement in the FIP for Dave Johnston Unit 3 to shut down in 2027, and for EPA to make a BART determination based on that limited remaining useful life. PacifiCorp confirmed that it did want EPA to include an enforceable requirement in the FIP for PacifiCorp to shut down Dave Johnston Unit 3 by December 31, 2027, and to make a BART determination accordingly. As detailed in the following section, we determined that if the unit shuts down by December 31, 2027, SCR would no longer be NO_x BART.

Generally, EPA does not interpret the regional haze rule to provide us with authority to make a BART determination that requires the shutdown of a source. In other states, we have approved state-adopted requirements for the shutdown of a source, which have usually been negotiated between the source operator and the state, and we have accordingly approved BART determinations that took into account the resulting shorter useful life of the affected source. In the case of Dave Johnson Unit 3, the State has not submitted a SIP revision to require the shutdown that PacifiCorp intends to implement, so there is no enforceable shutdown commitment that we can approve. We believe that without an enforceable requirement for the shutdown, we cannot make a BART determination that reflects the shorter planned useful life of the unit. Therefore, we are incorporating the shutdown requirement into one of the two compliance paths available to PacifiCorp, in order to allow it to only be required to install and maintain the less expensive LNBs/OFA emission controls rather than the more expensive SCR

controls. We welcome a SIP revision that would make the shutdown requirement State law, and we would withdraw the shutdown requirement from the SIP upon approving such a SIP revision.

2. Dave Johnston Unit 4

We proposed to require PacifiCorp Dave Johnston Unit 4 to meet a FIP emission limit of 0.12 lb/MMBtu (30-day rolling average) for NO_x BART (assuming the installation of LNBs/OFA with SNCR). Based on our revised costs of compliance and visibility impacts, we no longer conclude that NO_x BART is an emission limit of 0.12 lb/MMBtu (30-day rolling average). Based on our new cost and visibility improvement numbers, we conclude that NO_x BART is represented by the SIP emission limit of 0.15 lb/MMBtu (30-day rolling average) for this unit. This emission limit assumes the installation of LNBs/OFA. As such, we are approving Wyoming's NO_x BART determination for Dave Johnston Unit 4.

3. Naughton Units 1 and 2

We proposed to require PacifiCorp Naughton Units 1 and 2 to meet a FIP emission limit of 0.07 lb/MMBtu (30-day rolling average) for NO_x BART (assuming the installation of LNBs/OFA with SCR). As detailed in the next section, based on our revised costs of compliance and visibility impacts, we no longer conclude that NO_x BART is an emission limit of 0.07 lb/MMBtu (30-day rolling average). Based on our new cost and visibility improvement numbers, we conclude that NO_x BART is represented by the SIP emission limit of 0.26 lb/MMBtu (30-day rolling average) for each unit. This emission limit assumes the installation of LNBs/OFA. As such, we are approving Wyoming's NO_x BART determination for Naughton Units 1 and 2.

4. Naughton Unit 3

We proposed to approve the State's NO_x BART determination for Naughton Unit 3, which was an emission limit of 0.07 lb/MMBtu (30-day rolling average) (assumes the installation of LNBs/OFA with SCR). PacifiCorp submitted comments on our proposed rulemaking on August 26, 2013. In those comments, PacifiCorp indicated (page 72) that instead of installing SCR as required by the SIP, it plans to convert Naughton Unit 3 to natural gas in 2018 without installation of any post-combustion control of NO_x emissions. Conversion to natural gas in this manner can be expected to result in NO_x emissions that are higher than the 0.07 lb/MMBtu limit in the SIP combined with much lower SO_2 and PM emissions, with a substantially lower overall remaining impact on visibility. On July 5, 2013, Wyoming issued Air Quality permit MD-14506 to PacifiCorp that reflects the conversion of Naughton Unit 3 to natural gas in June of 2018. EPA met with PacifiCorp on October 31, 2013, to clarify the comments submitted by PacifiCorp (see October 31, 2013 memo to docket). PacifiCorp requested that EPA include in its final action the emission limits for SO_2, PM, and NO_x that the State had in its permit MD-14506 that it issued to PacifiCorp. EPA supports PacifiCorp's conversion of Naughton Unit 3 to natural gas. However, we have the authority and obligation to take action on the SIP as submitted by the State, and there is no basis to disapprove the SIP. Since we are approving the SIP, we do not have authority to impose FIP limits even if independently requested by a source. Therefore, we cannot use the FIP to relieve Naughton Unit 3 of the obligation to achieve the 0.07 lb/MMBtu NO_x emission limit in the SIP nor to impose emission limits for SO_2 and PM that reflect the planned conversion to natural gas. Under the terms of the SIP, the compliance deadlines for the emission limits in the SIP for Naughton Unit 3 do not become effective until five years after our final action. We understand that Wyoming intends to submit a revision to their regional haze SIP for Naughton Unit 3 that reflects the

BART NO_x emission limits in its permit MD-14506 as soon as practicable. EPA intends to act on this SIP revision in an expedited timeframe to reflect the conversion of Naughton Unit 3 to natural gas and a revised BART NO_x limit. In our final action we are approving Wyoming's NO_x BART determination for Naughton Unit 3. Our regulatory language reflects the following emission limit for Naughton Unit 3 for NO_x: 0.07 lb/MMBtu (30-day rolling average).

5. Wyodak

We proposed to require PacifiCorp Wyodak Unit 1 to meet a FIP emission limit of 0.17 lb/MMBtu (30-day rolling average) for NO_x BART (assuming the installation of LNBs/OFA with SNCR). Based on our revised costs of compliance and visibility impacts, as well as comments received during the public comment period (see section V), we no longer conclude that NO_x BART is an emission limit of 0.17 lb/MMBtu (30-day rolling average). Based on our new cost and visibility improvement numbers, we conclude that NO_x BART is a FIP emission limit of 0.07 lb/MMBtu (30-day rolling average) for this unit. This emission limit assumes the installation of LNBs/OFA with SCR. As detailed in the next section, based on our weighing of the five factors, we find that the average cost-effectiveness of SCR ($4,036/ton) and the incremental cost-effectiveness ($6,233/ton), combined with a visibility improvement of 0.61 deciviews at the most impacted Class I area, makes the selection of SCR for BART reasonable.

6. Jim Bridger

In our proposal, we proposed to approve the State's NOx BART and LTS determinations for Jim Bridger Units 1 and 2. The State's BART determination required each unit to meet an emissions limit of 0.26 lb/MMBtu (30-day rolling average) within five years of our approval of the SIP, based on new LNB plus OFA. The LTS determination required each unit to meet an emission limit of 0.07 lb/MMBtu (30-day rolling average) by December 31, 2022, and December

31, 2021, respectively. EPA proposed to approve these compliance dates for numerous reasons as discussed in detail in our proposed rulemaking. 78 FR 34755. We also proposed an alternative FIP BART determination that would require Jim Bridger Units 1 and 2 to meet an emission limit of 0.07 lb/MMBtu (30-day rolling average) within five years of our final rulemaking. 78 FR 34780. We are finalizing our proposed approval of the State's BART and LTS determinations for Jim Bridger Units 1 and 2, although the reasons for our final action on Jim Bridger Units 1 and 2 have changed from our proposed action.

In our proposed rulemaking, we stated:

> EPA is proposing to determine that BART for all units at Jim Bridger would be SCR if the units were considered individually, based on the five factors, without regard for the controls being required at other units in the PacifiCorp system. However, when the cost of BART controls at other PacifiCorp owned EGUs is considered as part of the cost factor for the Jim Bridger Units, EPA is proposing that Wyoming's determination that NO_x BART for these units is new LNB plus OFA for is reasonable. Considering costs broadly, it would be unreasonable to require any further retrofits at this source within five years of our final action. We note that the CAA establishes five years at the longest period that can be allowed for compliance with BART emission limits." 78 FR 34756.

However, as discussed in detail in section V.D.2 below, we do not think PacifiCorp has presented ample evidence to show that it would be unreasonable or not feasible for them to install numerous SCRs within the five year BART period. Nonetheless, we are approving the State's BART determination and LTS for Jim Bridger Units 1 and 2 based on our consideration of the five factors, as detailed in the next section.

We are approving the State's SIP requirement that Jim Bridger Units 1 and 2 meet an emission limit of 0.07 lb/MMBtu (30-day rolling average) by 2022 and 2021, respectively. We are also approving the State's BART determination that requires Jim Bridger Units 1 and 2 to meet a NO_x emission limit of 0.26 lb/MMBtu (30-day rolling average) within five years of our final action.

For Jim Bridger Units 3 and 4 we proposed to approve the SIP with regard to the State's determination that the appropriate level of NO_x control for Units 3 and 4 for purposes of reasonable progress is the SCR-based emission limit in the SIP of 0.07 lb/MMBtu, with compliance dates of December 31, 2015 for Unit 3 and December 31, 2016 for Unit 4. In our proposal we noted that since the State is requiring PacifiCorp to install the LTS controls within the timeline that BART controls would have to be installed pursuant to 40 CFR 51.308(e)(iv), we proposed to approve the State's compliance schedule and emission limit of 0.07 lb/MMBtu for Jim Bridger Units 3 and 4 as meeting the BART requirements.

We are finalizing our proposed approval of the State's BART and LTS determinations for Jim Bridger Units 3 and 4, although, similar to Units 1 and 2, the reasons for our final action on Units 3 and 4 have changed from our proposed action.

7. Dave Johnston Units 1 and 2

We proposed to require PacifiCorp Dave Johnston Units 1 and 2 to meet a FIP emission limit of 0.22 lb/MMBtu (30-day rolling average) for NO_x under reasonable progress (assuming the installation of LNBs/OFA). As detailed in the next section, based on our revised costs and visibility impacts, we no longer conclude that an emission limit of 0.22 lb/MMBtu (30-day rolling average) is warranted. We are approving Wyoming's NOx reasonable progress determinations for Dave Johnston Units 1 and 2 (i.e., no controls).

IV. Basis for Our Final Action

We have fully considered all significant comments on our proposal and have concluded that no changes from our proposal other than those discussed in detail above are warranted. Our action is based on an evaluation of Wyoming's regional haze SIP against the regional haze requirements at 40 CFR 51.300–51.309 and CAA sections 169A and 169B. All general SIP requirements contained in CAA section 110, other provisions of the CAA, and our regulations applicable to this action were also evaluated. The purpose of this action is to ensure compliance with these requirements. Our authority for action on Wyoming's SIP submittal is based on CAA section 110(k). Our authority to promulgate a FIP is based on CAA section 110(c).

In our proposal, EPA asked interested parties to provide additional information on both our evaluation of the BART factors and our proposed determinations. 78 FR 38745. We provided notice that any supplemental information we received could lead us to select BART control technologies or compliance deadlines that differed from our proposal. In response to this request, we received extensive comments on the visibility modeling and cost estimates that we provided in the proposal for NO_x BART control technologies. As a result of these comments, we have revised our visibility modeling and cost estimates. The details of these changes and our reasons for making them are provided elsewhere in this document and in our responses to the comments. Based on these changes, we have reassessed our proposed action on the State's NO_x BART determinations for each of the subject-to-BART sources by re-evaluating the five statutory factors.[16] We have also reassessed our proposed action on the State's NO_x reasonable progress determination for Dave Johnston Units 1 and 2. In this section, we describe in detail our reassessment of the statutory factors for these sources based on our revised visibility

[16] We are finalizing our proposed approval of the State's PM BART determinations. We did not receive any adverse comments that were sufficient to convince us that reexamination of the State's control costs was warranted.

modeling and cost estimates. For two sources - Jim Bridger and Wyodak - we also received additional comments, explained below, that caused us to reconsider certain aspects of our decision for those sources.

EPA notes that, in considering the visibility improvements reflected in our revised modeling, EPA interprets the BART Guidelines to require consideration of the visibility improvement from BART applied to the entire BART-eligible source. The BART Guidelines explain that, "[i]f the emissions from the list of emissions units at a stationary source exceed a potential to emit of 250 tons per year for any visibility-impairing pollutant, then that collection of emissions units is a BART-eligible source." In other words, the BART-eligible source (the list of BART emissions units at a source) is the collection of units for which one must make a BART determination. The BART Guidelines state "you must conduct a visibility improvement determination for the source(s) as part of the BART determination." This requires consideration of the visibility improvement from BART applied to the BART-eligible source as a whole.

We note, however, that while our regulations require states and EPA to assess visibility improvement on a source-wide basis, they provide flexibility to also consider unit-specific visibility improvement in order to more fully inform the reasonableness of a BART determination, but that does not replace the consideration of visibility benefit from the source (facility) as a whole. In making the BART determinations in this final action we have considered visibility improvements at the source, and then also at the units that comprise the source.

As explained in more detail later in this decision, we received during the comment period significant input on expected costs associated with different control technologies. We discuss in the section above and in our response to comments, the changes we made in response to

comments received on costs of different control technologies. As discussed above and in our response to comments, we have revised our modeling analysis in light of the input we received during the public comment period. This additional information and analysis result in different costs and visibility benefits, two of the five BART factors. In some cases this leads us to finalize our proposal, and in other cases to reach a different conclusion.

This decision, which addresses multiple facilities in a state where numerous Class 1 areas are impacted to a greater or lesser degree, illustrates clearly the case-by-case nature of the BART determination process. The interplay among the five factors, and in particular the cost and visibility factors, is highly significant and determinative of the outcome. In considering this information, as we have noted in prior decisions, our first assessment is whether the state's determination is reasonable in light of the facts and consistent with the requirements of the Clean Air Act and implementing regulations. If we determine that it is, even if we might have reached a different outcome if it were our decision to make in the first instance, we will approve the SIP.

Below is a more specific discussion of our determinations in the final decision. As stated above more detailed information on our determinations can be found in the response to comments sections of this rulemaking.

A. Laramie River

The State's regional haze SIP determined that NO_x BART for Laramie River Units 1, 2, and 3 is new LNB/SOFA. We proposed to disapprove the State's determination because the State neglected to reasonably assess the costs of compliance and visibility improvement in accordance with the BART Guidelines. 78 FR 34766. After revising the State's costs and modeling and re-evaluating the statutory factors, we proposed to determine that NO_x BART is LNB/SOFA + SCR, with an emissions limit of 0.07 lb/MMBtu for each unit. We sought

comment generally on the BART factors and our control determinations and indicated that we could revise our control determinations depending on any new information that we received.

As the result of the comments received on our proposal, we have further revised our calculation of the costs of compliance and visibility modeling. We have considered any comments on the other BART factors but we have not changed our assessment of the other BART factors. The revised visibility modeling for the most impacted Class I area (Badlands) is presented in the following table.

Table 18 – Visibility Modeling for Laramie River Station

Laramie River Station	LNB/SOFA	LNB/SOFA + SNCR	LNB/SOFA + SCR
Unit 1	0.18 deciviews	0.28 deciviews	0.57 deciviews
Unit 2	0.18 deciviews	0.27 deciviews	0.53 deciviews
Unit 3	0.18 deciviews	0.27 deciviews	0.52 deciviews
Total*	0.54 deciviews	0.82 deciviews	1.62 deciviews

* The total visibility improvement was estimated as the sum of the visibility improvement from each unit.

We also considered the visibility improvement at other impacted Class I areas (Wind Cave, Rawah, and Rocky Mountain), which range from 0.25 to 0.47 deciviews, 0.26 to 0.43 deciviews, and 0.23 to 0.44 deciviews, for Units 1, 2, and 3, respectively. Further details regarding our revised visibility modeling and cost estimates were provided in section III.A.

After re-evaluating the BART factors, we continue to find that LNB/SOFA + SCR is reasonable as BART and are therefore finalizing our proposal. The visibility improvement associated with LNB/SOFA + SCR at the most impacted Class I area is significant on both a source-wide (1.62 deciviews) and unit-specific (0.52 – 0.57 deciviews) basis. The significant visibility improvement at three other impacted Class I areas also supports the selection of this option. Finally, we believe that the incremental visibility improvement at the most impacted Class I area of SCR over SNCR (nearly double in all cases) warrants the selection of the most stringent control.

In regards to the costs of compliance, we found that the revised average and incremental cost-effectiveness of LNB/SOFA + SCR is in line with what we have found to be acceptable in our other FIPs. The average cost-effectiveness per unit ranges from $4,375 to $4,461/ton, while the incremental cost-effectiveness ranges from $5,449 to $5,871/ton. We believe that these costs are reasonable, especially in light of the significant visibility improvement associated with LNB/SOFA + SCR. As a result, we are finalizing our proposed disapproval of the State's NO_X BART determination for Laramie River Station and finalizing our proposed FIP that includes a NO_X BART determination of LNB/SOFA + SCR, with an emission limit of 0.07 lb/MMBtu (30-day rolling average).

B. Jim Bridger

The State's regional haze SIP determined that NO_x BART for Jim Bridger Units 1-4 is new LNBs with SOFA. The State also determined that SCR should be installed at each unit as part of the State's long-term strategy to achieve reasonable progress at several Class I areas, and set compliance dates of December 31, 2022, December 31, 2021, December 31, 2015, and December 31, 2016 for Units 1-4, respectively.

In our proposal, we indicated that the State had neglected to reasonably assess the costs of compliance and visibility improvement for Jim Bridger in accordance with the BART Guidelines. We nonetheless proposed to approve the State's BART and reasonable progress determinations for Units 3 and 4 because the compliance deadlines to install SCR on these units were sufficient to meet the requirements of BART. We are now finalizing our proposed action for Units 3 and 4.

We also proposed to approve the State's BART and reasonable progress determinations for Units 1 and 2, but on a different basis. There, we indicated that given the number of SCR

retrofits PacifiCorp had to perform in Wyoming and in other states, it might not be affordable for PacifiCorp to install two additional SCRs on Jim Bridger Units 1 and 2 within the five-year BART compliance period. We requested additional information from commenters regarding whether the affordability provisions of the BART Guidelines should be applied to Units 1 and 2. In the alternative, we proposed to find that NO_x BART for Units 1 and 2 was an emission limit of 0.07 lb/MMBtu (30-day rolling average) based on the installation of LNB/SOFA + SCR with a compliance deadline of five years. Under this scenario, we acknowledged that the cost-effectiveness of LNB/SOFA + SCR at Units 1 and 2 was within the range of what EPA and the State itself had found reasonable in other BART determinations. We also considered the significant visibility improvement demonstrated by the State's modeling to warrant LNB/SOFA + SCR as BART. Finally, we sought comment generally on the BART factors and our control determinations and indicated that we could revise our control determinations depending on any new information that we received.

In response to our proposal, we received both supportive and adverse comments regarding whether the affordability provisions of the BART Guidelines should apply to Units 1 and 2. As explained in more detail in our responses to these comments, we agree that PacifiCorp did not make a sufficient showing that it could not afford to install LNB/SOFA + SCR on Units 1 and 2 within the five-year compliance period. Nevertheless, we also received new information regarding the costs of compliance and visibility benefits associated with Jim Bridger and have revised our cost estimates and visibility modeling for all four units accordingly. We have considered any comments on the other BART factors but we have not changed our assessment of the other BART factors.

The revised visibility modeling for the most impacted Class I area (Bridger) is presented in the following table (with straight font representing modeled results using an ammonia background based on a monitored monthly varying concentration, italicized font representing modeled results using IWAQM default 0.5 ppb background ammonia).[17]

Table 19 – Visibility Modeling for Jim Bridger

Jim Bridger	LNB/SOFA	LNB/SOFA + SNCR	LNB/SOFA + SCR
Unit 1	0.17 / *0.23* deciviews	0.20 / *0.27* deciviews	0.27 / *0.37* deciviews
Unit 2	0.16 / *0.21* deciviews	0.19 / *0.25* deciviews	0.27 / *0.36* deciviews
Unit 3	0.14 / *0.19* deciviews	0.17 / *0.23* deciviews	0.26 / *0.35* deciviews
Unit 4	0.25 / *0.23* deciviews	0.30 / *0.28* deciviews	0.45 / *0.42* deciviews
Total*	0.72 / *0.86* deciviews	0.86 / *1.03* deciviews	1.25 / *1.5* deciviews

* The total visibility improvement was estimated as the sum of the visibility improvement from each unit.

We also considered the visibility improvements at other impacted Class I areas (Bridger, Fitzpatrick, Rawah, Rocky Mountain, Grand Teton, Teton, Washakie, and Yellowstone), which range from 0.26 to 0.91 deciviews, 0.26 to 0.89 deciviews, 0.24 to 0.87 deciviews, and 0.27 to 1.0 deciviews, for Units 1-4, respectively. Further details regarding our revised visibility modeling and cost estimates are provided in section III.A.

After re-evaluating the BART factors, we are approving the State's determination that LNB/SOFA is NO_x BART for Units 1- 4. The visibility improvement associated with LNB/SOFA + SCR at the most impacted Class I area is significant on a source-wide basis (1.25 to 1.5 deciviews). The fact that Jim Bridger Station affects a number of other Class I areas,

[17] Air Quality Modeling Protocol: Wyoming Regional Haze Federal Implementation Plan, U.S. EPA, January, 2014.

which also would see appreciable visibility improvement with the installation of LNB/SOFA + SCR, also weighs in favor of selecting this option as BART. The unit-specific benefits for Units 1 and 2 are somewhat more modest (0.27 – 0.37 deciviews), however, especially considering the low incremental improvement over SNCR (0.07 – 0.11 deciviews). The incremental visibility improvement of SNCR over LNB/SOFA is even smaller (0.03 - 0.04 deciviews).

In regards to the costs of compliance, we found that the revised average cost-effectiveness of LNB/SOFA + SCR is in line with what we have found to be acceptable in our other FIPs. The average cost-effectiveness is $4,088 and $4,461/ton at Units 1 and 2, respectively. The incremental cost-effectiveness, on the other hand, is on the high end of what we have found to be reasonable in our other FIPs. The incremental cost-effectiveness is $7,477 and $8,986/ton at Units 1 and 2, respectively.

Ultimately however, while we believe that these costs and visibility improvements could potentially justify LNB/SOFA + SCR as BART, because this is a close call and because the State has chosen to require SCR as a reasonable progress control, we believe deference to the State is appropriate in this instance. We are therefore finalizing our approval of the State's determination to require SCR at Jim Bridger Units 1 - 4, with an emission limit of 0.07 lb/MMBtu (30-day rolling average), as part of its long-term strategy. We are also finalizing our approval of the compliance dates of December 31, 2022, December 31, 2021, December 31, 2015, and December 31, 2016 for Units 1- 4 respectively.

C. Dave Johnston Units 3 and 4

The State's regional haze SIP determined that NO_x BART for Dave Johnston Units 3 and 4 is LNB/OFA. We proposed to disapprove the State's determination because the State neglected to reasonably assess the costs of compliance and visibility improvement in accordance

with the BART Guidelines. 78 FR 34778. After revising the State's costs and modeling and re-evaluating the statutory factors, we proposed to determine that NO_X BART for Unit 3 is LNB/SOFA + SCR, with an emission limit of 0.07 lb/MMBtu (30-day rolling average). We proposed that NO_x BART for Unit 4 is LNB/SOFA + SNCR, with an emission limit of 0.12 lb/MMBtu. We sought comment generally on the BART factors and our control determinations and indicated that we could revise our control determinations depending on any new information that we received.

As the result of the comments received on our proposal, we have further revised our calculation of the costs of compliance and visibility modeling. We have considered any comments on the other BART factors but we have not changed our assessment of the other BART factors. The revised visibility modeling for the most impacted Class I area (Wind Cave) is presented in the following table.

Table 20 – Visibility Modeling for Dave Johnston (BART Units)

Dave Johnston	LNB/OFA	LNB/OFA + SNCR	LNB/OFA + SCR
Unit 3	0.33 deciviews	0.39 deciviews	0.51 deciviews
Unit 4	0.41 deciviews	0.46 deciviews	0.57 deciviews
Total*	0.74 deciviews	0.85 deciviews	1.08 deciviews

* The total visibility improvement was estimated as the sum of the visibility improvement from each unit.

We also considered the visibility improvement at other impacted Class I areas (Badlands, Mt Zirkel, Rawah, and Rocky Mountain), which range from 0.20 to 0.47 deciviews and 0.24 to 0.55 deciviews, for Units 3 and 4, respectively. Further details regarding our revised visibility modeling and cost estimates were provided in section III.A.

After re-evaluating the BART factors, we no longer believe that LNB/OFA + SNCR is NO_X BART for Dave Johnston Unit 4. As we explained in the proposal, the incremental cost-

effectiveness of LNB/OFA + SCR was and continues to be excessive ($13,312), so we have eliminated this control option. While the revised average and incremental costs of LNB/OFA + SNCR continue to be reasonable, the incremental visibility improvement of SNCR over LNB/OFA is now only 0.05 deciviews. In light of this new visibility information, we believe that the State's determination that LNB/OFA is NO_x BART for Unit 4 was reasonable and are approving it accordingly.

In regards to Dave Johnston Unit 3, we continue to believe that LNB/OFA + SCR is NO_X BART. The visibility improvement associated with LNB/SOFA + SCR at the most impacted Class I area is significant (0.51 deciviews). The visibility improvement at several other impacted Class I areas also supports the selection of this option. Finally, we do not believe that the incremental visibility improvement at the most impacted Class I area of SCR over SNCR (0.12 deciviews) is sufficiently insignificant to warrant the elimination of the most stringent control in this instance.

In regards to the costs of compliance, we found that the revised average and incremental cost-effectiveness of LNB/SOFA + SCR is in line with what we have found to be acceptable in our other FIPs. The average cost-effectiveness is $2,635/ton, while the incremental cost-effectiveness is $7,583/ton. We believe that these costs are reasonable, especially in light of the significant visibility improvement associated with LNB/SOFA + SCR.

In response to other comments we received, we also considered an alternative BART analysis for Unit 3 based on PacifiCorp's commitment to retire Unit 3 by 2027 in lieu of installing SCR. Using a 9-year remaining useful life as the amortization period for Unit 3, the incremental cost-effectiveness of LNB/OFA + SCR becomes excessive ($11,781). Furthermore, the incremental visibility improvement at the most impacted Class I area from use of LNB/OFA

to use of LNB/OFA+ SNCR is only 0.06 deciviews. Thus, taking all five factors into account, including the remaining useful life of nine years, we conclude that the NO_x BART would be LNB/OFA in this scenario.

To provide flexibility, we are finalizing both scenarios in a FIP for Dave Johnston Unit 3. Under the first scenario, we are finalizing a NO_x BART determination of LNB/OFA + SCR, with an emission limit of 0.07 lbs/MMBtu (30-day rolling average). Under the alternative scenario, based on a commitment to retire Unit 3 by 2027, we are finalizing a NO_x BART determination of LNB/OFA, with an emission limit of 0.28 lbs/MMBtu (30-day rolling average).

D. Naughton

The State's regional haze SIP determined that NO_x BART is new LNB/OFA for Naughton Units 1 and 2 and LNB/OFA + SCR for Naughton Unit 3. We proposed to approve the State's determination for Unit 3, but proposed to disapprove the State's determination for Units 1 and 2 because the State neglected to reasonably assess the costs of compliance and visibility improvement in accordance with the BART Guidelines. 78 FR 34748. After revising the State's costs and modeling and re-evaluating the statutory factors, we proposed to determine that NO_x BART for Units 1 and 2 is LNB/SOFA + SCR, with an emissions limit of 0.07 lb/MMBtu for each unit. We sought comment generally on the BART factors and our control determinations and indicated that we could revise our control determinations depending on any new information that we received.

As the result of the comments received on our proposal, we have further revised our calculation of the costs of compliance and visibility modeling. We have considered any comments on the other BART factors but we have not changed our assessment of the other BART factors. The revised visibility modeling for the most impacted Class I area (Bridger) is

presented in the following table (with straight font representing modeled results using an ammonia background based on a monitored monthly varying concentration, italicized font representing modeled results using IWAQM default 0.5 ppb background ammonia).

Table 21 – Visibility Modeling for Naughton

Naughton	LNB/OFA	LNB/OFA + SNCR	LNB/OFA + SCR
Unit 1	0.22 / *0.26* deciviews	0.26 / *0.30* deciviews	0.33 / *0.39* deciviews
Unit 2	0.28 / *0.32* deciviews	0.34 / *0.38* deciviews	0.42 / *0.46* deciviews
Unit 3	0.05 / *0.07* deciviews	0.20 / *0.29* deciviews	0.49 / *0.60* deciviews
Total*	0.55 / *0.65* deciviews	0.80 / *0.97* deciviews	1.24 / *1.45* deciviews

* The total visibility improvement was estimated as the sum of the visibility improvement from each unit.

We also considered the visibility improvement at other impacted Class I areas (Fitzpatrick, North Absaroka, Washakie, Teton, Grand Teton, and Yellowstone), which range from 0.10 to 0.30 deciviews, 0.08 to 0.42 deciviews, and 0.13 to 0.49 deciviews, for Units 1, 2, and 3, respectively. Further details regarding our revised visibility modeling and cost estimates were provided in section III.A.

After re-evaluating the BART factors, we no longer believe that LNB/OFA + SCR is NO_x BART for Naughton Units 1 and 2. The visibility improvement associated with LNB/SOFA + SCR at the most impacted Class I area remains significant on a source-wide basis (1.24 - 1.45 deciviews) but more modest on a unit-specific basis (0.33 – 0.46 deciviews). The visibility improvement at six other impacted Class I areas continues to support the selection of this option as well. In regards to the costs of compliance, however, we found that while the revised average cost-effectiveness values for LNB/OFA + SCR were acceptable, the revised incremental cost-effectiveness values were beyond the upper end of the range (higher even than Jim Bridger) of what we have found to be acceptable in our other FIPs. For Units 1 and 2, respectively, the average cost-effectiveness per unit is $3,109 and $2,566/ton, while the

incremental cost-effectiveness is $10,384 and $8,440/ton. Consequently, we believe that it was not unreasonable for the State to reject LNB/OFA + SCR as BART. Furthermore, we cannot say the State acted unreasonably in rejecting LNB/OFA + SNCR at Units 1 and 2 because the incremental visibility improvement of SNCR over LNB/OFA, while possibly appreciable, is very low at just 0.10 deciviews across both units. Therefore, based on our analysis we believe that the State's determination that LNB/OFA is NO_x BART for Units 1 and 2, with an emission limit of 0.28 lbs/MMBtu, was ultimately reasonable and are approving it accordingly.

E. Wyodak

The State's regional haze SIP determined that NO_x BART for Wyodak Unit 1 is new LNBs with OFA. We proposed to disapprove the State's determination because the State neglected to reasonably assess the costs of compliance and visibility improvement in accordance with the BART Guidelines. 78 FR 34784-34785. As a result, we also proposed a FIP for NO_x BART. After considering the BART factors, we noted that the cost-effectiveness and visibility improvement of the most stringent control option, LNB/OFA + SCR, were within the range of values that EPA had found reasonable in other FIPs. However, we proposed not to require LNB/OFA + SCR as NO_x BART for Wyodak Unit 1. Instead, we proposed to require LNB/OFA + SNCR based on the reasoning that the cumulative visibility improvement of SCR across all Class I areas was low when compared to the cumulative visibility improvement associated with SCR at Dave Johnston Unit 3, Laramie River Units 1 – 3, and Naughton Units 1 and 2. We sought comment generally on the BART factors and our control determinations and indicated that we could revise our control determinations depending on any new information that we received. Based on our discussion of LNB/OFA + SCR at Wyodak, that control option was among those that we invited comment on.

In response to our proposal for Wyodak, we received comments that cumulative visibility improvement should not be used as a basis to reject a control option that has already been deemed reasonable based on visibility improvement at the most impacted Class I area. The commenters pointed out that such an approach would have the illogical effect of allowing an added benefit (visibility improvement at multiple Class I areas) to weigh in favor of less stringent controls. We agree with this criticism and want to make clear today that where a control is warranted as BART based on the costs of controls and visibility benefits at the most impacted area alone, cumulative visibility benefits can only strengthen the case for that control, not suggest that it is unwarranted. Similarly, where a control might not be warranted as BART based on the improvement at a single Class I area, significant cumulative benefits are an additional consideration that could warrant that the control be selected as BART.

In addition, we have further revised our calculation of the costs of compliance and visibility modeling for Wyodak Unit 1. We have not changed our assessment of the other BART factors. The revised visibility modeling for the most impacted Class I area (Wind Cave) is presented in the following table.

Table 22 – Visibility Modeling for Wyodak

Wyodak	LNB/SOFA	LNB/SOFA + SNCR	LNB/SOFA + SCR
Unit 1	0.21 deciviews	0.32 deciviews	0.61 deciviews

We also considered the visibility improvement at a second impacted Class I area (Badlands), which is a maximum of 0.38 deciviews for LNB/SOFA + SCR. Further details regarding our revised visibility modeling and cost estimates were provided in the previous section.

After re-evaluating the BART factors and dismissing our earlier rationale for rejecting an otherwise reasonable control, we find that LNB/SOFA + SCR is reasonable as BART. As the BART-eligible source in this case is a single unit, the source-wide and unit-specific visibility improvements associated with the various control options are the same. The visibility improvement associated with LNB/SOFA + SCR at the most impacted Class I area (0.61 deciviews) is significant. There is also a more modest visibility improvement (0.38 deciviews) at a second impacted Class I area that supports the selection of this option. Finally, we believe that the incremental visibility improvement at the most impacted Class I area of SCR over SNCR (nearly double) warrants the selection of the most stringent control.

In regards to the costs of compliance, we found that the revised average and incremental cost-effectiveness of LNB/SOFA + SCR is in line with what we have found to be acceptable in our other FIPs. The average cost-effectiveness is $4,036/ton, while the incremental cost-effectiveness of SCR over SNCR is $6,223/ton. We believe that these costs are reasonable, especially in light of the significant visibility improvement associated with LNB/SOFA + SCR at Wind Cave. As a result, we are finalizing our proposed disapproval of the State's NO_x BART determination for Wyodak Unit 1. Additionally, after carefully considering adverse comments, we have decided not to finalize our proposed NO_x determination of LNB/SOFA + SNCR, but rather are finalizing a NO_x BART determination of LNB/SOFA + SCR, with an emission limit of 0.07 lb/MMBtu (30-day rolling average).

F. Dave Johnston Units 1 and 2 (Reasonable Progress)

We proposed to disapprove the State's determination to not impose LNB/OFA as reasonable progress controls for NO_X at Dave Johnston Units 1 and 2. Based on our original cost estimates and visibility modeling, we also proposed to require PacifiCorp Dave Johnston Units 1

and 2 to meet a FIP emission limit of 0.22 lb/MMBtu (30-day rolling average) (assuming the installation of LNB/OFA). Based on our revised cost estimates and visibility modeling that we developed in response to comments, however, we no longer conclude that reasonable progress controls are warranted this planning period. While we continue to disagree with the State's reasoning for not imposing controls (as detailed in our response to comments), we are not prepared to say the State's ultimate decision was unreasonable. In evaluating the four reasonable progress factors and the visibility improvement associated with potential controls, we found that the average and incremental cost-effectiveness of LNB/OFA ($990/ton and $1,221/ton, respectively), while reasonable if viewed in isolation, was not necessarily justified this planning period in light of the relatively modest visibility improvement predicted by the revised modeling (0.11 deciviews - 0.12 deciviews at the most impacted Class I area). As a result, we are approving the State's reasonable progress determination of no new controls for Dave Johnston Units 1 and 2, but we expect the State to revisit the issue during the next planning period.

V. Issues Raised by Commenters and EPA's Responses

A. Legal Issues

1. EPA Authority and State Discretion

Comment: Multiple commenters stated that CAA Section 169A and the Regional Haze Rule (RHR) give the states the lead in developing their regional haze SIPs. Some commenters went further in stating that Wyoming is given almost complete discretion in creating its regional haze SIP. These commenters argued that, because Wyoming is given such discretion, EPA lacks the statutory authority to disapprove the State's regional haze SIP. Specifically, some commenters pointed to the flexibility the State is granted in developing its BART determinations and other RHR requirements. The commenters stated that the CAA anticipates that EPA will create

guidance and that the states, using their discretion, will use this guidance to develop regional haze SIPs. The State of Wyoming and other parties argued that each factor in the five-factor analysis used to make its BART determinations was appropriately weighed based on the State's own discretion. The commenters therefore argue that EPA has no basis on which to disapprove the five-factor analysis and that EPA does not have authority to reject a state's BART determination solely because EPA would have conducted the analysis in a different way or reached a different conclusion. The commenters went on to say that the State, after considering all statutory factors, made BART determinations for all subject-to-BART sources in a manner consistent with 40 CFR Part 51 Appendix Y, the established CAA requirements, and the interests of the State of Wyoming.

Numerous commenters went on to say that the U.S. Court of Appeals for the D.C. Circuit has affirmed that EPA's role in determining BART is limited and that a state's role is paramount. The court found that the CAA "calls for states to play the lead role in designing and implementing regional haze programs." *Am. Corn Growers Ass'n v. EPA*, 291 F.3d 1, 2 (D.C. Cir. 2002). The commenters stated that the court also reversed a portion of EPA's original RHR because it found that EPA's method of analyzing visibility improvements distorted the statutory BART factors and was "inconsistent with the Act's provisions giving the states broad authority over BART determinations." *Id.*, *see also Utility Air Regulatory Group v. EPA*, 471 F.3d 1333, 1336 (D.C. Cir. 2006) (The second step in a BART determination "requires states to determine the particular technology that an individual source 'subject to BART' must install.").

The commenters asserted that states have the primary responsibility for preventing air pollution under the CAA. CAA section 101(a)(3), 42 U.S.C. 7401(a)(3). Pursuant to this principle, states, not EPA, have always had primary control over decisions to impose specific

emission limits (and therefore specific pollution control technologies) for individual facilities. By congressional design, EPA "is relegated ... to a secondary role in the process of determining and enforcing the specific, source-by-source emission limitations which are necessary [to meet] national standards." *Train v. NRDC*, 421 U.S. 60, 79 (1975). This basic division of responsibilities between EPA and the states remained unchanged when Congress amended the Act in 1977 and again in 1990. *See Virginia v. EPA*, 108 F.3d 1397, 1408-09 (D.C. Cir. 1997). *Response:* Congress crafted the CAA to provide for states to take the lead in developing SIPs, but balanced that decision by requiring EPA to review the SIPs to determine whether they meet the requirements of the CAA. EPA's review of SIPs is not limited to a ministerial type of automatic approval of a state's decisions. *See North Dakota v. EPA*, 730 F.3d 750, 760-61 (8th Cir. 2013) ("Although the CAA grants states the primary role of determining the appropriate pollution controls within their borders, EPA is left with more than the ministerial task of routinely approving SIP submissions.")(hereinafter "*North Dakota*"). EPA must consider not only whether the State considered the appropriate factors, but whether the State acted reasonably in doing so. In undertaking such a review, EPA does not "usurp" the State's authority, but ensures that such authority is reasonably exercised. EPA has the authority to issue a FIP either when EPA has made a finding that the state has failed to timely submit a SIP or when EPA has found a SIP deficient. Here, EPA has authority on both grounds, and we have approved as much of the Wyoming regional haze SIP as possible, while promulgating a FIP only to fill the remaining gaps. Our action today is consistent with the statute.

Our action does not contradict the Supreme Court's decision in *Train*. States have significant responsibilities in the implementation of the CAA and meeting the requirements of the RHR. We recognize that states have the primary responsibility of drafting a SIP to address

the requirements of the CAA's visibility program. We also recognize that we have the responsibility of ensuring that SIPs, including regional haze SIPs, conform to CAA requirements. We cannot approve a regional haze SIP that fails to address BART with a reasoned consideration of the statutory and regulatory requirements of the CAA and the RHR. *See Oklahoma v. EPA*, 723 F.3d 1201, 1207 (10th Cir. 2013) ("We agree with the EPA that the statute provides the agency with the power to review Oklahoma's BART determination for these four units.")(hereinafter "*Oklahoma*").

Contrary to the commenters' assertions, we recognize the State's primary responsibility in drafting a SIP. In fact, we have approved many of the State's determinations, including the entirety of Wyoming's Section 309 BART alternative for SO_2 emissions. We are disapproving the State's NO_x BART determinations, as the CAA requires, because the State neglected to properly consider the costs of compliance and the visibility benefits associated with several of the available control options.

We also disagree that our proposal is inconsistent with the *American Corn Growers* and *Utility Air Regulatory Group* decisions. These cases dealt with EPA's authority to issue broad regulations that prescribed how states must conduct their BART determinations. They did not address EPA's authority to review regional haze SIPs for compliance with the mandates of the CAA or EPA's now finalized implementing regulations. The Tenth Circuit, in concluding that EPA had authority to disapprove a BART determination that did not follow the BART Guidelines, stated that the *American Corn Growers* opinion "does not alter this conclusion." *Oklahoma v. EPA*, 723 F.3d 1201, 1208 (10th Cir. 2013).

Because the CAA sets certain mandatory statutory deadlines and provides for citizen suits when the Administrator fails to perform a mandatory duty, we are required by the terms of a

consent decree to ensure that Wyoming's CAA requirements for regional haze are finalized by January 10, 2014. Because we have found that the State's regional haze SIP did not satisfy CAA and RHR requirements in full and because we have previously found that Wyoming failed to timely submit its regional haze SIP, we have not only the authority, but a statutory duty to promulgate a FIP that meets those requirements. We have reviewed this decision in light of other decisions made by us, as well as decisions made in other states SIPs. Our action today in large part approves the regional haze SIP submitted by Wyoming. Our disapproval of Wyoming's NO_x BART and reasonable progress determinations and imposition of a FIP is not intended to encroach on State authority. Rather, our action today is required by the CAA to ensure that the State has a complete plan in place to address the CAA's visibility requirements.

Comment: The fact that Congress gave states primacy in making BART determinations is noteworthy and related to the fact that the regional haze program is focused on an aesthetic benefit, not a public health standard. Under other sections of the CAA, primarily those dealing with health-based standards, Congress directed EPA to establish standards that do not take costs into consideration. States then develop plans to meet those health-based standards. Under the New Source Performance Standards program (section 111 of the CAA) and National Emission Standards for Hazardous Air Pollutants program (section 112), EPA routinely establishes specific emission limits for large industrial sources. The regional haze program, which deals with an aesthetic standard, was clearly laid out by Congress to be different in its approach, to avoid establishing emission limits, to give states authority to decide appropriate controls, and allow states to weigh the costs against the benefits.

Response: We do not agree with this commenter's characterization of the regional haze program or the CAA's visibility requirements. While it is true that the goal of CAA sections 169A and

169B is to improve visibility in national parks and wilderness areas rather than to prevent adverse human health effects, Congress structured the program so that states' decisions had to be made in the form of SIPs, which EPA has the authority to review for compliance with all CAA requirements. Furthermore, Congress did not create an approach that would allow states to avoid establishing emission limits. On the contrary, Congress specifically directed EPA's regulations to require states to devise "emission limits ... necessary to make reasonable progress," CAA section 169A(b)(2), including the requirement to establish BART, which the RHR defines as "an emission limitation." 40 CFR 51.301.

Comment: EPA's actions leave nothing under the CAA's framework by which Wyoming could make an approvable BART determination. EPA has overreached and exceeded its statutory authority by proposing a FIP that replaces Wyoming's considered judgment with EPA's priorities and policy choices.

Response: We disagree with this comment. EPA is not substituting its judgment for that of the State of Wyoming or issuing a FIP merely to advance priorities and policy choices. Rather, we have determined that Wyoming did not properly follow the BART Guidelines or the CCM in conducting its BART analyses and, therefore, did not correctly consider the costs of compliance or the visibility benefits associated with available control technologies as the CAA requires. Consequently, we are finalizing a FIP in today's action to remedy the gaps left by these inadequacies. We note, however, that the CAA's framework provides Wyoming with the opportunity to submit a SIP revision at any time that could replace all or a portion of EPA's FIP, and we encourage Wyoming to do so.

Comment: EPA clearly gave the states more discretion through rulemaking when it split the universe of BART sources impacted by the BART Guidelines into power plants greater than 750

megawatts (MW) and all others. States were merely encouraged to follow the BART Guidelines for the smaller BART sources. EPA says in the preamble "that states should view the guidelines as helpful guidance for these other categories." In saying this, EPA is affording even more discretion to the states in making BART determinations for the smaller BART sources. EPA has proposed disapproval of Wyoming's BART determination and proposed a FIP for one of these smaller sources, the Wyodak Unit 1 335 MW power plant. The State believes that the EPA is again overreaching in its action by proposing a FIP for Wyodak Unit 1, where Wyoming was not even required to follow the BART Guidelines in arriving at its BART determination.

Response: We agree that the BART Guidelines are only mandatory for "fossil-fuel fired power plants having a total generating capacity greater than 750 megawatts." 40 CFR 51.308(e)(1)(ii)(B). However, the fact that a state may deviate from the procedures in the BART Guidelines when selecting BART for smaller EGUs does not mean that a state has unfettered discretion to act unreasonably or inconsistently with the CAA or the RHR. Ultimately, a state must still adopt the "*best available* retrofit technology," CAA section 169A(b)(2)B); 40 CFR 51.308(e)(1)(ii)(A), while reasonably considering the five statutory factors.

The RHR further defines BART to mean "an emission limitation based on the degree of reduction achievable through the application of the *best system* of continuous emission reduction for each pollutant which is emitted by an existing stationary facility." 40 CFR 51.301 (emphasis added). We do not interpret this requirement to allow a state to dismiss the best system of continuous emission reduction under the mantle of unlimited state discretion. As we discuss elsewhere in this document, Wyoming erroneously evaluated costs and visibility benefits when analyzing the various control options available for Wyodak, and thereby did not reasonably consider the statutory factors and select the best system of control.

Comment: EPA's RHR gave states the flexibility to choose alternatives to the BART process, such as participation in a trading program. EPA spells out in the preamble that this "substantial flexibility" provides the "states the ability to choose the least costly and least burdensome alternative." EPA and 28 states on the east coast took advantage of this flexibility when it declared that the cap and trade program for ozone nonattainment would, for the most part, satisfy the requirements of BART. The important point here is that EPA wanted and pushed for flexible, cost-savings approaches to address regional haze. EPA is still pushing for approval of the Cross States Air Pollution Rule (CSAPR) as a solution to regional haze problems on the east coast.

There appears to be a consistency issue within the EPA over the application of flexibility. Wyoming does not think EPA meant for an approach to promote costs savings and less burdensome solutions to be restricted to one area of the country or certain types of solutions. However, EPA's proposal to partially disapprove Wyoming's regional haze SIP and impose more costly and burdensome FIP requirements for seven BART units in the State of Wyoming appear to be inconsistent with EPA's purported "substantial flexibility." EPA's failure to recognize Wyoming's discretion in these areas is arbitrary and capricious.

Response: Wyoming had the opportunity to submit better-than-BART alternatives in lieu of source-specific NO_x BART determinations. Wyoming did not do so. Because Wyoming did not take advantage of the flexibility afforded by better-than-BART alternatives, we must review Wyoming's BART determinations for compliance with the applicable requirements of the CAA, RHR, and BART Guidelines. Our proposal clearly laid out the bases for our proposed disapproval of the State's NO_x BART determinations, and we have relied on the standards contained in our regulations and the authority that Congress granted us to review and determine

whether Wyoming's regional haze SIP complied with the minimum statutory and regulatory requirements. To the extent a cost analysis relies on values that are inaccurate, a state has not considered cost in a reasoned or reasonable fashion. To the extent a state has considered visibility improvement from potential emissions controls in a way that substantially understates the improvement or does so in a way that is not consistent with the CAA, the state has not considered visibility improvement in a reasoned or reasonable fashion. In these circumstances—as discussed in more detail in the proposed notice and this final notice—EPA is required to disapprove the relevant aspects of the SIP. In determining SIP adequacy, we must exercise our judgment and expertise regarding complex technical issues, and it is entirely appropriate that we do so. Courts have recognized this necessity and deferred to our exercise of discretion when reviewing SIPs. *See, e.g., Connecticut Fund for the Env't., Inc. v. EPA*, 696 F.2d 169 (2nd Cir. 1982); *Michigan Dep't. of Envtl. Quality v. Browner*, 230 F.3d 181 (6th Cir. 2000); *Mont. Sulphur & Chem. Co. v. EPA*, 2012 U.S. App. LEXIS 1056 (9th Cir. Jan. 19, 2012).

Comment: One commenter asserted that the U.S. Court of Appeals for the D.C. Circuit's decision to vacate CSAPR is relevant to the Wyoming FIP. *EME Homer City Generation, L.P. v. EPA.*, 696 F.3d 7 (D.C. Cir. 2012), *cert. granted* 570 U.S. (June 24, 2013) (No. 12-1182) (*CSPAR Decision*), and stated that EPA's proposed Wyoming FIP exceeds EPA's statutory authority. The commenter also states that in vacating CSAPR, the D.C. Circuit held that EPA's "FIP-first" approach exceeds EPA's authority because EPA issued a FIP at the same time it determined the emission reduction parameters that the states were supposed to implement. The commenter stated that EPA's theory was that EPA can define the end goals and simultaneously issue federal plans to implement them, upending that process and placing the Federal Government firmly in the driver's seat at both steps.

Other commenters stated that the D.C. Circuit's rejection of the CSAPR rule is irrelevant to EPA's regional haze rulemaking for Wyoming. They asserted that the regional haze program differs from the CAA's good-neighbor provision in fundamental ways that make the court's rejection of CSAPR irrelevant to EPA's action on Wyoming's regional haze plan. The commenters stated that the CAA's visibility provisions establish a technology-based standard for eligible major sources, including PacifiCorp's coal-fired power plants in Wyoming. *See* 42 U.S.C. 7491(b)(2)(A). To help achieve "reasonable progress" toward the national visibility goal, eligible sources must install BART for haze-causing pollutants. *Id.* BART is defined as: "an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant which is emitted by an existing stationary facility." 40 CFR 51.301. The emission limitation must be established on a case-by-case basis, taking into consideration the technology available, the costs of compliance, the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use or in existence at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology. Unlike the D.C. Circuit's interpretation of the good-neighbor provision, the BART definition establishes a floor for emissions reductions, but no ceiling. States must ensure that eligible sources install the best pollution control devices.

These commenters also argued that when a SIP fails to establish a program that meets CAA requirements, then EPA has an obligation to promulgate a FIP. Here, they argued, EPA carried out its statutory duty in proposing a partial FIP for Wyoming. EPA's role is not mere "rubber-stamping" of poor SIPs. EPA "has a duty to evaluate the adequacy of the existing SIP as a whole when approving SIP revisions." *Ass'n of Irritated Residents v. EPA*, 632 F.3d 584, 591

(9th Cir. 2011). A FIP "fill[s] all or a portion of a gap *or otherwise correct[s] all or a portion of an inadequacy in a State implementation plan*." 42 U.S.C. 7602(y) (emphasis added). In

proposing to reject many of Wyoming's inadequate BART determinations, and proposing a partial FIP, EPA is merely acting to fulfill its own regulatory obligations under the Act.

Response: With respect to the comment that we lacked authority to promulgate a FIP due to the D.C. Circuit's decision in *EME Homer City*, we disagree. In *EME Homer City*, the D.C. Circuit vacated CSAPR, which was promulgated by EPA to address interstate transport of SO_2 and NO_x under CAA section 110(a)(2)(D).The court found that CSAPR exceeded EPA's authority under section 110 because the rule had the potential to require upwind States to reduce emissions by more than their own significant contributions to downwind nonattainment and because EPA had not given states an opportunity to submit SIPs after EPA had quantified their obligations for emissions reductions.

In the regional haze context, by contrast, EPA defined states' obligations under the RHR and the BART Guidelines well in advance of its findings of failure to submit and subsequent SIP disapprovals. EPA promulgated the original RHR on July 1, 1999 (64 FR 35714). Following the D.C. Circuit's decision in *American Corn Growers*, EPA revised the RHR and issued the final BART Guidelines on July 6, 2005. (70 FR 39104). The revised RHR and the BART Guidelines were upheld by the D.C. Circuit in *Utility Air Regulatory Group v. EPA*, 471 F.3d

1333 (D.C. Cir. 2006).[18] As explained in our proposal and elsewhere in this document, the BART Guidelines provide detailed instructions to states on how to determine which sources are subject to BART and how to analyze the five statutory factors in order to set emissions limits representing BART for each subject-to-BART source.[19] In 2006, responding to specific questions from various states and Regional Planning Organizations (RPOs), EPA issued further guidance to help states implement the RHR and BART Guidelines.[20]

As noted in prior responses, EPA issued a finding of failure to submit for regional haze SIPs on January 15, 2009 (74 FR 2392), triggering a FIP clock under CAA section 110(c). By this time, states already had more than three years since issuance of the final BART Guidelines to develop their regional haze SIPs. By the time the FIP clock actually ran out in January 2011, EPA had received regional haze SIPs from nearly every state. EPA has since proposed and approved, in part or in whole, the vast majority of these SIPs.[21] [22] This stands in contrast to the

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[18] In response to another D.C. Circuit decision, *Center for Energy and Economic Development v. EPA*, 398 F.3d 653 (D.C. Cir. 2005), EPA revised the RHR's provisions governing alternatives to source-specific BART determinations on October 13, 2006. These revisions did not alter the requirements for source-specific BART determinations that apply to Wyoming's BART determinations at issue here.

[19] 40 CFR Part 51, Appendix Y. While the Guidelines are only mandatory for fossil fuel-fired electric generating plants with a total generating capacity in excess of 750 megawatts, States are encouraged to follow the BART Guidelines in making BART determinations for other types of sources. Id. section I.H. The Guidelines also set specific presumptive limits for SO_2 and NO_x for these large power plants, but allow states to apply more or less stringent limits based upon source-specific five-factor analyses. 70 FR 39131-39132.

[20] Memo from Joseph W. Paise Regarding Regional Haze Regulations and Guidelines for BART (July 19, 2006); Additional Regional Haze Questions (Guidance) (Sept. 27, 2006). In addition, EPA issued final "Guidance for Setting Reasonable Progress Goals Under the Regional Haze Program" on June 1, 2007, but this Guidance is not directly relevant for individual BART determinations.

[21] See, e.g., 76 FR 36450 (Nevada); 77 FR 24794 (New York); 76 FR 13944 (California); 77 FR 11798 (Rhode Island); 76 FR 27973 (Delaware); 77 FR 12770 (Nebraska); 77 FR 18052 (Colorado); 76 FR 16168 (Oklahoma); 77 FR 11914 (Vermont); 77 FR 11928 (Wisconsin); 76 FR 52604 (Kansas); 76 FR 64186 (Arkansas); 77 FR 11839 (Maryland); 76 FR 58570 (North

situation in *EME Homer City*, where the court noted that, "every Transport Rule State that submitted a good neighbor SIP for the 2006 24-hour $PM_{2.5}$ NAAQS was disapproved." Thus, it is clear that states had ample opportunity to submit approvable regional haze SIPs before EPA was obligated to promulgate regional haze FIPs under CAA section 110(c).

One commenter also pointed to the D.C. Circuit's general statements concerning state and federal roles under the CAA and argues that EPA has exceeded its statutorily mandated role in proposing to disapprove portions of Wyoming's regional haze SIP and promulgate a FIP. While we agree that the general principles concerning state and federal roles under Title I of the CAA apply to our action here, we do not agree that our action is inconsistent with those principles. In this action, we are fulfilling our statutory duty to review Wyoming's regional haze SIP, including its BART determinations, for compliance with the applicable requirements of the CAA and the RHR, and to disapprove any portions of the plan that do not meet those requirements. Based on our review of the SIP, we proposed to determine that certain elements of Wyoming's regional haze SIP did meet the requirements of the CAA and the RHR, and we proposed to approve those elements. However, for the reasons explained in detail in our proposed notices and elsewhere in this document, we have concluded that five of Wyoming's BART determinations[23] and four elements of the regional haze SIP[24] did not comply with the

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Dakota); 77 FR 3966 (Illinois); 76 FR 76646 (South Dakota). EPA proposed limited approval and limited disapproval of the Regional Haze SIPs of states covered by the Clean Air Interstate Rule (CAIR), due to the remand of CAIR by the D.C. Circuit. See, e.g. 77 FR 3691 (Jan. 25, 2012) (proposing limited approval and limited disapproval of Virginia's Regional Haze SIP).

[22] See, e.g., 76 FR 34608 (California); 76 FR 42557 (Delaware); 76 FR 80754 (Kansas); 77 FR 19 (New Jersey); 77 FR 5191 (District of Columbia); 77 FR 14604 (Arkansas); 77 FR 17334 (Nevada); 77 FR 24845 (South Dakota); 77 FR 40150 (Nebraska); 77 FR 51915 (New York).

[23] As presented elsewhere in this final notice and in the docket, the five NO_x BART determinations we are disapproving are for the following: PacifiCorp Dave Johnston Unit 3, PacifiCorp Wyodak Unit 1, and Basin Electric Laramie River Units 1, 2, and 3.

requirements of the CAA and the RHR. Based on these findings, we are required to disapprove these portions of Wyoming's regional haze SIP. As discussed in detail in several below responses, the CAA provides EPA with the authority to review and reject an inadequate regional haze SIP. *Oklahoma v. EPA*, 723 F.3d 1201, 1207 (10th Cir. 2013).

Comment: One commenter stated that the limits on EPA's authority to reject a SIP were affirmed by the Fifth Circuit in *Texas v. EPA*, 690 F.3d 670 (5th Cir. 2012), vacating EPA's rejection of a Texas SIP revision implementing its minor new source review program (i.e., the Texas Flexible Permit Program). In the *Texas* decision, the court reaffirmed the principle that if a SIP or SIP revision meets the statutory criteria of the CAA, then EPA must approve it. The Wyoming regional haze SIP meets the statutory criteria of the CAA. Therefore, EPA's disapproval of the Wyoming regional haze SIP exceeds EPA's statutory authority.

Response: In *Texas*, the Fifth Circuit found that EPA had failed to tie its disapproval to any specific requirement in the CAA or EPA's implementing regulations.[25] In this action, our disapproval is based explicitly and squarely on the SIP's failure to comply with the CAA section 169A(b)(2)(A), as implemented through the RHR and the BART Guidelines. Just because a court found EPA's disapproval invalid in one case does not mean that finding applies in all cases. This situation involves a very different program under the CAA and a very different state submittal and review. The *Texas* case does not involve BART or the CAA's regional haze

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[24] As presented elsewhere in this final notice and in the docket, the four elements of the State SIP we are disapproving include: (1) Wyoming's RPGs; (2) The State's monitoring, recordkeeping, and reporting requirements in Chapter 6.4 of the SIP; (3) portions of the State's long term strategy (LTS) that rely on or reflect other aspects of the regional haze SIP that we are disapproving; and (4) the provisions necessary to meet the requirements for the coordination of the review of the reasonably attributable visibility impairment (RAVI) and the regional haze LTS.

[25] 690 F.3d at 679, 682, 686.

provisions at all. Rather, it involved EPA's disapproval of SIP revisions involving Texas's minor new source review program. There are a limited number of specific requirements in EPA rules for minor source review programs. In contrast, regional haze SIPs and BART determinations are subject to the detailed requirements set forth in CAA section 169A, the RHR, and the BART Guidelines.

Comment: One commenter stated that the CSAPR decision criticized the CSAPR's FIP-first approach because it forces states to "take a stab in the dark" on their compliance obligations only to be judged later whether they hit the mark. As the D.C. Circuit explained in the CSAPR decision, a "SIP logically cannot be deemed to lack a required submission or deemed to be deficient for failure to meet ... [an] obligation before EPA quantifies the ... obligation." *EME Homer City Generation, L.P. v. EPA.*, 696 F.3d 7, 49 (D.C. Cir. 2012), *cert. granted* 570 U.S. (June 24, 2013) (No. 12-1182) (hereinafter "*CSPAR Decision*").

Other commenters reject this assertion, explaining that Wyoming was not forced to take a "stab in the dark" in developing its regional haze SIP. In *EME Homer City*, the D.C. Circuit accepted the state petitioners' argument that they had no obligation to submit SIPs until after EPA defined each state's contribution to interstate pollution and the necessary emissions reductions to address that contribution. *EME Homer City*, 2012 WL 3570721, at *18 ("[L]ogically, a SIP cannot be deemed to lack a required submission … until after EPA has defined the State's good neighbor obligation."; "There is no way for an upwind State to know its obligation … until EPA defines it.").

Response: We do not agree that Wyoming was forced to take a "stab in the dark" in developing its regional haze SIP. The regional haze program and the interstate transport obligations under the CAA are quite different. The states' regional haze obligations have been clearly defined. EPA issued BART Guidelines establishing detailed parameters for state BART determinations in 2005. Commenter's charge that EPA may never issue a FIP in such circumstances is incorrect. We explain in detail above how the CAA's visibility provisions and EPA's implementing regulations differ from the good-neighbor provision at issue in *EME Homer City*. Wyoming was well aware of these requirements as it developed its regional haze SIP, through EPA comment letters and meetings between EPA and the State. Finally, unlike the petitioners in *EME Homer City*, none of the commenters here dispute that Wyoming's regional haze SIP and BART determinations were "required submission[s]."

Comment: One commenter stated that the CSAPR decision also made clear that any FIP issued by EPA must be related to the "end goal of the statute." The D.C. Circuit stated in the CSAPR decision: "[T]he end goal of the statute is attainment in the downwind state. EPA's authority to force reductions on upwind states ends at the point where the affected downwind State achieves attainment." *CSAPR Decision* at p. 25.

The "end goal" of the regional haze statutory requirements is to gradually achieve "natural visibility" conditions by the year 2064 under an emission reduction approach known as reasonable progress as determined by the states. EPA's rush in the proposed Wyoming FIP to front-load as many emission reductions as possible in the first five years of this decades-long program is a clear indication that EPA has lost sight of the "end goal" of the regional haze program. Likewise, EPA's failure to account for, and properly address, other causes of visibility impairment in its FIP, such as natural causes (forest fires), out of state sources, oil and gas

sources, etc., demonstrates that EPA has lost focus on the "end goal" of the regional haze program. EPA's proposed Wyoming FIP violates this "end goal" principle espoused by the CSAPR decision.

Response: EPA is required to evaluate BART factors included in state SIPs (e.g., ultimately rejecting methodological flaws and data flaws in estimating costs of compliance and visibility, as we have done in this final action), where the flaws in the analysis prevented the State of Wyoming from conducting meaningful consideration of the BART factors, as required by the BART Guidelines, and moored to the CAA's BART and SIP provisions. *North Dakota v. EPA*, 730 F.3d 750, 761 (8th Cir. 2013).

Furthermore, we do not agree that one provision of the CAA should be read and applied in isolation. The commenter's position would ignore the rest of the CAA's statutory requirements and violate the "fundamental canon of statutory construction that the words of a statute must be read in their context and with a view to their place in the overall statutory scheme." A court must therefore interpret the statute "as a symmetrical and coherent regulatory scheme," and "fit, if possible, all parts into an harmonious whole." *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 133 (2000) (quoting *Davis v. Michigan Dept. of Treasury*, 489 U.S. 803, 809 (1989); *Gustafson v. Alloyd Co.*, 513 U.S. 561, 569 (1995); and *FTC v. Mandel Brothers, Inc.*, 359 U.S. 385, 389 (1959)). The commenter's claim that one provision in the CAA overrides all other statutory provisions is unfounded and not supported by the CAA. In particular, the statutory requirements for BART are separate and distinct from the statutory requirements for reasonable progress.

Moreover, as explained elsewhere in this document, EPA's action fully accounts for other causes of visibility impairment. With respect to wildfires, we explain in detail elsewhere in this

document the role that fires play in determining natural background conditions. With respect to oil and gas sources, we are approving the State's determination to not impose controls on this source category during this planning period, in part because the State already applies minor source BACT to many of them through the State's SIP-approved minor NSR program, and in part because controls on these sources are not so cost-effective that we are prepared to say the State was unreasonable. With respect to accounting for out-of-state sources, we cited sources outside the Western Regional Air Partnership (WRAP) domain as one factor that made it reasonable for our RPGs to fall short of the uniform rate of progress (URP) and unreasonable to achieve the URP. Finally, we note that we are approving some of Wyoming's BART determinations and all of Wyoming's reasonable progress determinations. Additionally, BART is required in the first planning period, which ends in 2018, and is required to be installed as expeditiously as practicable, but in no event later than five years after the effective date of this final notice. In light of the fact that many of Wyoming's Class I areas are not even expected to meet the URP this planning period, the notion that EPA has required "front-loading" of controls is utterly without merit.

Comment: Some commenters stated that the CSAPR decision considered, and then rejected, a "reasonableness" standard put forth by EPA as the only limit on its authority to impose emission reductions under the CSAPR. *CSAPR Decision* at p. 37, ftnt. 23. EPA likewise purports to impose a reasonableness standard as adequate justification for rejecting the Wyoming regional haze SIP and imposing a FIP. The CSAPR decision makes clear that such a reasonableness standard, not included in the CAA itself, does not have a place in justifying EPA's actions in issuing a FIP. For this added reason, the CSAPR decision makes clear the FIP exceeds EPA's statutory authority.

Response: EPA disagrees with this comment. First, the commenters misunderstand the cited footnote in the CSAPR decision. In the D.C. Circuit's view, EPA ignored statutory limits on its authority and instead claimed that reasonableness was the only bound on EPA's authority. Here, EPA makes no such claim. EPA, of course, has the authority and the duty to review Wyoming's SIP for compliance with the CAA and the RHR.

In reviewing the Wyoming regional haze SIP, EPA has determined that a "reasonableness" standard is in fact harmonious with the CAA and the RHR, and the courts have agreed. *Oklahoma v. EPA*, 723 F.3d 1201, 1207 (10th Cir. 2013) ("The EPA therefore had a reasonable basis for rejecting the 2008 Cost Estimates [that were based on the overnight costing method] as not complying with the guidelines."); *see also North Dakota v. EPA*, 730 F.3d 750, 761 (8th Cir. 2013) (explaining EPA is not required to "approve a BART determination that is based upon an analysis that is neither reasoned nor moored to the CAA's provisions").

The CAA requires states to submit SIPs that contain such measures as may be necessary to make reasonable progress toward achieving natural visibility conditions, including BART. The CAA accordingly requires the states to submit a regional haze SIP that includes BART as one necessary measure for achieving natural visibility conditions. *See Alaska Dep't of Envtl. Conservation v. EPA*, 540 U.S. 461, 500 (2004)(in a related context, holding that EPA validly issued stop work orders because the state's BACT determination "simply did not qualify as *reasonable* in light of the statutory guides." (emphasis added))(hereinafter "*ADEC*"). Thus we are not establishing a new reasonableness standard, as the commenter asserts.

Comment: In the CSPAR decision, the D.C. Circuit found it "inconceivable" that Congress would bury in the CAA "an open-ended authorization for EPA to effectively force every power plant in the upwind States to install every emissions control technology EPA deems 'cost

effective'." *CSAPR Decision* at p. 40. In so finding, the court refused to transform a "narrow" provision into a "broad and unusual" authority that would overtake other core provisions of the Act." *Id.* Similarly, it is inconceivable in the regional haze context that Congress would bury an open-ended authorization allowing EPA to ignore its own BART Guidelines, overrun carefully crafted state regional haze SIPs and BART determinations, and require the installation of expensive emission controls which result in minimal regional haze improvements. This principle espoused in the CSAPR decision is particularly applicable in the regional haze context where, just like in the CSAPR, EPA's BART determinations in the Wyoming FIP are "not a clear numerical target – far from it – until EPA defines the target." *CSAPR Decision* at p. 48. And in spite of EPA initially helping to define "the target" by issuing its BART Guidelines (which EPA subsequently ignored), EPA did not begin to redefine the target until it began to issue various determinations around the country in reaction to various state regional haze SIPs. Even then, EPA's "target" is not clear and certainly is impossible to determine, on a state or source-by-source basis, until EPA sets the target in a state-specific FIP.

Like the upwind states in the CSAPR decision, it was "impossible" for Wyoming to determine its regional haze obligation "until EPA defined it." *Id.* This process effectively allows EPA to impose any standard it wants with little ability for the states (or sources) to achieve the redefined target through a state-led process because of the tight deadlines imposed by EPA as a result of negotiated consent decree deadlines.

Response: We do not agree that we have ignored the CAA and BART Guidelines. As explained in our proposed notice and elsewhere in this document, our decisions are firmly grounded on the CAA provisions and BART Guidelines, and Wyoming was well aware of these requirements as it developed its SIP. In addition, the comparison of BART determinations and

the CSAPR decision is not appropriate. In contrast to CSPAR, the CAA and RHR do not set specific numerical targets for BART determinations. Instead, they require states to reasonably consider the five statutory factors, which, as we have detailed in our proposal and in our response to comments, Wyoming did not do. Furthermore, EPA provided extensive comments to the State on the proposed regional haze SIP and met with the State on numerous occasions, so the State was aware of EPA's concerns regarding approvability before the SIP was submitted to EPA. As explained below in greater detail, the Consent Decree that covers this action has not hindered Wyoming's ability to develop and submit an approvable SIP. Wyoming can submit new SIP revisions, and request that EPA review and approve them, to replace the FIP elements at any time.

To the extent that the comment argues that the RHR itself is invalid for similar reasons to those for which the D.C. Circuit vacated CSAPR, the time to make those arguments has passed.

Finally, in establishing the BART requirements, Congress was addressing a category of large sources that pre-dated the modern NSR affected sources, which were determined to significantly contribute to regional haze and set an expectation that included consideration of cost, feasibility, and effect on regional haze (as well as the other five factors) for those sources, many of which did not have modern pollution controls because of their age and because they hadn't been addressed through ozone SIPs the way so many eastern sources had. This is one of the reasons why the western regional haze SIPs are seeing emission controls.

Comment: One of the commenters stated that one of the key conclusions of the CSAPR decision was that EPA exceeded the scope of its authority by requiring emission reductions beyond the statutory or regulatory requirements. In the CSAPR decision, the court looked at the fact that once EPA had determined that an upwind emission source contributed "significantly" to

nonattainment or maintenance of the standard in a downwind state; it was "in" for purposes of requiring emission reductions. The emission reduction requirements were then based on cost-effectiveness thresholds that were applied uniformly throughout the CSAPR region. In other words, all emissions that could be reduced, for example, for a cost between $1 and $500 per ton were effectively required. The court held that this approach resulted in a situation where some sources had to bear a disproportionate amount of costs, based on their relative contribution to the nonattainment or maintenance problem.

Similarly in the regional haze context, EPA established an "in or out" criteria of a 0.5 deciview impact. Sources with modeling results that suggested the impact was greater than 0.5 were "in" and required further analysis. If, under EPA's FIP approach, the facilities could cost-effectively (as determined by EPA, not the states) control emissions, they were required to do so. Oftentimes, EPA has required the controls notwithstanding the negligible contribution the emission reductions will have towards meeting the requirement of the RHR. EPA's conclusions requiring individual sources to reduce emissions under its subjective cost-effectiveness criteria have no relationship to visibility impacts or improvements, and EPA failing to conduct that modeling, but supporting a determination of reasonableness of controls "based on the high cost effectiveness at each of the units." 77 FR at 33034, 33038 and 33055.

EPA's conclusions regarding emission reductions that are based on the cost-effectiveness of controls without an appropriate linkage to visibility improvement and meeting the goals and objectives of the RHR exceed EPA's statutory authority as suggested by the CSAPR decision.

Response: We agree with some of this comment and disagree with other portions. As an initial matter, as we explained in our proposed notice, we note that:

> Wyoming used a contribution threshold of 0.5 deciviews for determining which sources are subject-to-BART. By using a contribution threshold of 0.5 deciviews, Wyoming exempted seven of the fourteen BART-eligible sources in the State from further review under the BART requirements. Based on the modeling results, the State determined that P4 Production, FMC Granger, and OCI Wyoming had an impact of .07 deciview, 0.39 deciview, and 0.07 deciview, respectively, at Bridger Wilderness. Black Hills Neil Simpson 1, Sinclair Casper Refinery, and Sinclair—Sinclair Refinery have an impact of 0.27 deciview, 0.06 deciview, and 0.12 deciview, respectively, at Wind Cave. Dyno-Nobel had an impact of 0.22 deciview at Rocky Mountain National Park. These sources' modeled visibility impacts fell below the State's threshold of 0.5 deciview and were determined not to be subject-to-BART. 78 FR 34747

Since the State's approach is consistent with the BART Guidelines[26] and given the relatively limited impact on visibility from these seven sources, as explained earlier in this document and in our proposals, we are finalizing our proposal to approve Wyoming's threshold of 0.5 deciviews as reasonable for determining whether its BART-eligible sources are subject-to-BART. 78 FR 34734, 34747

We do not agree that our decision exceeds our statutory authority and the goals and objectives of the RHR. CAA section 110(a)(2)(J) requires each plan submitted by a state to "meet the applicable requirements" of Part C of Title I of the CAA, including those for "visibility protection." In the case of a regional haze SIP submittal, the "applicable requirements" include the requirement that each source found subject-to-BART, "procure,

[26] 40 CFR part 51, appendix Y, section III.A.1.

install, and operate, as expeditiously as practicable (and maintain thereafter) the best available retrofit technology ..."[27] Section 169A(g)(2) further provides that:

> In determining best available retrofit technology the State (or the Administrator in determining emission limitations which reflect such technology) shall take into consideration the costs of compliance, the energy and non-air quality environmental impacts of compliance, any existing pollution control technology in use at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.[28]

Similarly, the RHR provides that:

> The determination of BART must be based on an analysis of the best system of continuous emission control technology available and associated emission reductions achievable for each BART-eligible source that is subject to BART within the State. In this analysis, the State must take into consideration the technology available, the costs of compliance, the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.[29]

Wyoming's BART determinations for NO_x at five BART units fall short of these requirements in several respects.

First, Wyoming did not analyze the "best system of continuous emission control technology available and associated emission reductions achievable." This is explained in detail in our proposed rulemaking, the docket for this action, and elsewhere in this document. Therefore, Wyoming has not demonstrated that its BART determinations were "based on an analysis of the best system of continuous emission control technology available and associated emission reductions achievable."

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[27] CAA section 169A(b)(2)(A)., 42 U.S.C. 7491(b)(2)(A).
[28] 42 U.S.C. 7491(g)(2).
[29] 40 CFR 51.308(e)(1)(ii)(A).

For example, as we explained in our proposed notices and elsewhere in this final action, Wyoming did not appropriately consider the "degree of improvement in visibility which may reasonably be anticipated" from installation of BART because it did not provide visibility improvement modeling from which the benefits of individual NO_x controls could be ascertained. Thus Wyoming's BART determinations for NO_x do not meet the requirements of CAA section 169A(g)(2) or 40 CFR 51.308(e)(1)(ii)(A).

Additionally, as explained in our proposed notices and elsewhere in the modeling section of this final action, it was not possible to ascertain the visibility improvement from the NO_x control options as the State modeled emission reductions for multiple pollutants together. For this reason, in the modeling conducted by EPA, we held SO_2 and PM emission rates constant (reflecting the "committed controls" for those pollutants identified by Wyoming), and varied only the NO_x emission rate. This allowed us to isolate the degree of visibility improvement attributable to the NO_x control option.

In addition, 40 CFR 51.308(e)(1)(ii)(B) provides that the determination of BART for fossil-fuel fired power plants having a total generating capacity greater than 750 megawatts must be made pursuant to the guidelines in appendix Y of part 51 (Guidelines for BART Determinations under the Regional Haze Rule).

All of the Wyoming BART sources, except Wyodak, each have a generating capacity greater than 750 megawatts. Therefore, the BART determinations for these BART sources *must* be made pursuant to the BART Guidelines. However, Wyoming's BART determinations for these sources did not fully comply with the BART Guidelines. In particular, as explained more fully elsewhere in this document, contrary to the Guidelines' admonition that "cost estimates should be based on the CCM, where possible," the control cost calculations supplied by the

utilities and relied upon by Wyoming included costs not allowed by the CCM, such as owner's costs and Allowance for Funds Utilized During Construction (AFUDC). Thus, Wyoming's consideration of the "cost of compliance" for these units was not consistent with the Guidelines. Furthermore, as explained elsewhere in this document, Wyoming's consideration of visibility benefits was inconsistent with the Guidelines because the State did not provide visibility modeling from which the visibility improvement from individual controls could be ascertained. Finally, for all pollutants at all units covered by today's action, Wyoming's regional haze SIP does not meet the requirements of 40 CFR 51.308(e)(1)(iv) and (v) because it lacks the following elements:

• A requirement that each source subject to BART be required to install and operate BART as expeditiously as practicable, but in no event later than 5 years after approval of the implementation plan revision.

• A requirement that each source subject to BART maintain the control equipment required by this subpart and establish procedures to ensure such equipment is properly operated and maintained.

These two requirements are mandatory elements of the RHR and are necessary to ensure that BART is procured, installed, and operated as expeditiously as practicable and maintained thereafter, as required under CAA section 169A(b)(2)(A).

Moreover, the CAA and regional haze rule require that SIPs contain provisions that make emissions limits, including BART limits, practically enforceable. CAA section 110(a)(2)(A)-(B) require that emissions limits such as BART be "practically enforceable" and SIPs provide for establishment, methods and procedures necessary to monitor, compile, and analyze data . CAA

section 302(k) requires emissions limits to be met on a continuous basis. Additionally, CAA section 169A(b)(2) requires that regional haze SIPs include "such emission limits, schedules of compliance and other reasonable measures" necessary to meet the goals of the regional haze program." As discussed in our proposed notices and elsewhere in this final notice, Wyoming's regional haze SIP lacks requirements for monitoring, recordkeeping, and reporting sufficient to ensure that the BART limits are enforceable and are met on a continuous basis.

Therefore, Wyoming's BART determinations for these five units covered by the FIP do not meet the BART requirements of the CAA, the RHR and the BART Guidelines. Additionally, Wyoming's SIP requirements do not ensure the BART limits are enforceable for all BART sources for which there is a SIP or FIP emissions limit, and therefore do not meet the requirements of the CAA and RHR. Accordingly, we are compelled to partially approve and partially disapprove Wyoming's regional haze SIP.

Comment: EPA cannot invoke its Section 110 SIP approval authority as grounds for rejecting state BART determinations with which it disagrees. The CAA does not require any specific degree of visibility improvement in the determination and only requires BART for the purpose of eliminating or reducing impairment to visibility. See CAA Section 169A, 42 U.S.C. 7491.

Consistent with the long-recognized principle that EPA may not "condition approval of the plan of any State, on the State's adoption of a specific control measure," *Virginia*, 108 F.3d at 1408, EPA has no statutory authority to disapprove a SIP that contains a BART determination for an individual facility that complies with the statutory BART factors. Any other result would allow EPA to employ its generalized SIP approval authority to "run roughshod over the procedural prerogatives that the Act has reserved to the States." *Bethlehem Steel Corp*., 742 F.2d at 1036.

The fact that states must propose SIP revisions "as may be necessary" to achieve reasonable progress does not mean EPA has authority to countermand the textual commitment of specific BART decisions to the states. The D.C. Circuit interpreted similar language in Section 110(k)(5) to constrain EPA's authority over SIP approval and disapproval. See *Virginia*, 108 F.3d at 1409. The SIP call provisions of Section 110(k)(5) state that when a SIP is inadequate "the Administrator shall require the State to revise the plan as necessary to correct such inadequacies." But the *Virginia* court rejected the agency's expansive view of this phrase as authority to impose specific control measures for specific emission sources.

Response: States are required by the CAA to address the BART requirements in their SIP. Our disapproval of the NO_x BART determinations in the Wyoming regional haze SIP is authorized under the CAA because the State's NO_x BART determinations for the five units do not satisfy the statutory criteria. The State's analysis of the cost effectiveness of controls and visibility analyses were flawed due to reasons discussed elsewhere in the proposed and final notices. While states have authority to exercise different choices in determining BART, the determinations must be reasonably supported. Wyoming's errors in taking into consideration the costs of compliance were significant enough that we cannot conclude the State determined BART according to CAA standards. The cases cited by the commenters stress important limits on EPA authority in reviewing SIP submissions, but our disapproval of these NO_x BART determinations for the five units has an appropriate basis in our CAA authority. We did not require Wyoming to adopt specific control measures for specific emission sources. Instead, we disapproved some of Wyoming's BART determinations for reasons described in detail in our proposal and elsewhere in our response to comments. To promulgate our FIP, EPA then had both the authority and the duty to determine specific control measures for specific sources.

Finally, contrary to the commenter's assertion, the *Bethlehem Steel* case is inapplicable here. We are promulgating BART emission limitations and other FIP elements described elsewhere in this document under the authority of CAA section 110(c), not through our action on Wyoming's SIP. We have authority to promulgate our FIP under 110(c) on two separate grounds: first, based on our January 2009 finding of failure to submit the regional haze plan elements required by 40 CFR 51.309(g), the reasonable progress requirements for areas other than the 16 Class I areas covered by the Grand Canyon Visibility Transport Commission Report; and second, based on our partial disapproval of the regional haze SIP.

Comment: We received comments that EPA does not have the authority under the CAA to issue a regional haze FIP in this instance. Commenters contend that EPA's role under Section 110 in reviewing states' regional haze SIPs is narrow and that the CAA confines EPA to the ministerial function of reviewing SIPs for consistency with the CAA's requirements. Commenters assert that Wyoming submitted a regional haze SIP that met the requirements of Section 51.309 and included all the required elements and that EPA admits that Wyoming has considered all five BART factors. Therefore, commenters go on to say that EPA's sole function was to review whether Wyoming followed the regional haze requirements, including Appendix Y, in preparing the Wyoming regional haze SIP, and Congress did not authorize EPA to "second guess" Wyoming's BART decision making, or to substitute its own judgment, simply because EPA would prefer different BART and reasonable progress NOx controls. Commenters go on to point out that courts have consistently held that states are primarily responsible for SIP development; EPA's role is ministerial. Commenters cite that the Supreme Court has recognized the states' primary role in developing SIPs, holding "so long as the ultimate effect of a State's choice of emission limitations is in compliance with the national standards for ambient air, the State is at

liberty to adopt whatever mix of emission limitations it deems best suited to its particular situation." *Train v. NRDC,* 421 U.S. 60, 79 (1975). Commenters argue that EPA is going beyond its ministerial function of reviewing Wyoming's regional haze SIP for consistency with the CAA's requirements; it is attempting to design Wyoming's SIP by establishing new NO_x emission limits, contrary to its promulgated BART regulations. Commenters go on to say that EPA should follow the structure of the CAA and give deference to the State's judgment in determining BART in Wyoming's regional haze SIP.

Response: States are required by the CAA to address the BART requirements in their SIP. Our disapproval of the NO_x BART determinations in the Wyoming regional haze SIP is authorized under the CAA because the State's NO_x BART determinations for the five units do not satisfy the statutory criteria. The State's analyses of the cost effectiveness of controls and visibility analyses were flawed due to reasons discussed in the introduction and BART sections of this document. While states have the authority to exercise different choices in determining BART, the determinations must be reasonably supported. Wyoming's errors in taking into consideration the costs of compliance and visibility analyses were significant enough that we cannot conclude the State determined BART according to CAA standards. The cases cited by the commenters stress important limits on EPA authority in reviewing SIP submissions, but our disapproval of these NO_x BART determinations for the five units has an appropriate basis in our CAA authority.

Comment: Under the CAA, both the federal government and the states have responsibilities for maintaining and improving air quality. The federal government has the authority to set specific emissions targets, but the states have the authority to develop and impose their own regulatory structure to meet those. As long as the State meets its specific criteria, which Wyoming can and

will show that it has done, the fact that EPA does not share the State's opinion regarding the best course of action is immaterial.

This reading of the CAA is the opinion of the Congress that passed the regional haze program in 1977. Committee and floor debate in Congress at the time makes clear that Congress fully intended for the states to possess a high degree of primacy in regional haze decisions. The primary sponsor of the CAA and 1977 amendments in the Senate was the late Senator Edmund Muskie, a Democrat from Maine. In his opening address to the Senate on the Conference Report to the 1977 amendments, Senator Muskie said, "under this legislation, the administrator of the EPA will be more reliant on local and state capabilities to create the institutional and infrastructural changes necessary to achieve clean air. And perhaps this is as it should be. We have learned that there is little political support for inartfully conceived national measures. We have learned that where change can be made, it must be made with the full understanding and support of the people who are affected by that change."

While the courts in some instances may not give adequate weight to the intent of Congress in drafting legislation, Congress's intent in passing the nation's law is something that Congress itself takes very seriously. Some courts have honored Congressional intent and upheld the CAA as a cooperative statute. In *Appalachia Power Company v. EPA* [sic], the courts determined that the CAA includes a cooperative standard they call a federalism bar. In *Train* and *Luminant Generation Co., LLC v. EPA*, 675 F.3d 917 (5th Cir. 2012)(hereinafter "*Luminant*"), the courts held that the EPA had no authority to overturn the decisions of the states so long as the basic requirements of Section 110 are met.

EPA does not have the authority under the CAA to issue a regional haze FIP in this instance. EPA contends its review of the Wyoming SIP is "pursuant to section 110 of the CAA."

78 FR 34738. Section 110(a)(2) provides the general requirements that a SIP must contain. Importantly, EPA's role under Section 110 in reviewing states' regional haze SIPs is narrow: "With regard to implementation, the (CAA) confines the EPA to the ministerial function of reviewing SIPs for consistency with the (CAA)'s requirements." *Luminant Generation Co., LLC v. EPA*, 675 F.3d 917, 921 (5th Cir. 2012) (citing section 110(k)(3)). As the court in *Luminant* explained, if the state's submissions "satisfy those basic requirements (found in section 110), the EPA must approve them," and "(t)hat is the full extent of the EPA's authority in the SIP-approval process because that is all the authority that the CAA confers." *Id.* at 932. Here, Wyoming submitted a regional haze SIP that met the requirements of Section 309 and included all the required elements. The Wyoming SIP submittals are well developed and comprehensive. EPA admits that Wyoming considered all five BART factors. 78 FR 34748. Therefore, EPA's role was to review whether Wyoming followed the regional haze requirements, including Appendix

Y, and provided factual support for the Wyoming regional haze SIP. Congress did not authorize EPA to "second guess" Wyoming's BART decision making, or to substitute its own judgment, simply because EPA would prefer different BART and reasonable progress NO_x controls.

More recently, the D.C. Court vacated the CSAPR. The court's 2012 opinion in the CSAPR case is illustrative for our purposes because the EPA used very similar arguments to justify their authority in CSAPR as they're using today for regional haze. In vacating the CSAPR rule, the D.C. Circuit Court writes "under the CAA, the federal government sets air quality standards, but states retain the primary responsibility for choosing how to attain those standards within their borders. The Act thus leaves it to the individual states to determine, in the first instance, the particular restrictions that will be imposed on particular emitters within their

borders." The court goes on to write that "...the statutory federalism bar prohibits the EPA from using the SIP process to force states to adopt specific control measures."

Response: We responded to similar comments above.[30] With respect to EPA's supposed admission that Wyoming considered the five BART factors, the precise language in the proposal notice is: "We find that Wyoming considered all five steps above in its BART determinations, but we propose to find that its consideration of the costs of compliance and visibility improvement for the EGUs was inadequate and did not properly follow the requirements in the BART Guidelines and statutory requirements, as explained below." 78 FR 34748. With respect to the legislative history quoted, the comment does not provide any connection between the general remarks of Senator Muskie regarding the 1977 Amendments and EPA's interpretation of the visibility provisions in the Act.

Comment: We received numerous general comments that EPA has overstepped its authority and that states have the responsibility of determining what controls are necessary for regional haze.

Response: As explained earlier, the states have the responsibility to draft the regional haze SIP and EPA has the responsibility of ensuring state plans, including regional haze SIPs, conform to the CAA. As the drafter of the regional haze SIP, the State generally has the authority to decide how each of the BART factors are taken into account and weighed. EPA is not disapproving Wyoming's BART determinations because we disagree with how Wyoming weighed the relevant factors, such as the cost of controls or the degree of visibility improvement resulting from the use

[30] As the commenter mentions, we agree that we did approve Wyoming's regional haze SIP submitted under Section 309 of the RHR (40 CFR 51.309)(77 FR 73926 (Dec. 12, 2012)), as in that action we determined the State met the requirements of 40 CFR 51.309 and related provisions.

of controls. EPA is disapproving certain Wyoming BART determinations because the State did not consider these factors in its BART determinations in accordance with the RHR and the Act.

Comment: EPA's regional haze FIP failed to afford the required deference to the technical, policy and other discretion granted to Wyoming under the CAA and regional haze program. Congress added section 169A to the CAA in order to address the "impairment of visibility" in Class I areas that "results from man-made air pollution." This provision of the CAA, in turn, describes separate roles for EPA, the states, and major sources such as PacifiCorp's BART Units.

EPA's roles are to create a report, see CAA section 169A(a)(2)-(3), create regional haze regulations, see CAA section 169A(a)(4), provide guidelines for the states, see CAA section 169A(b)(1), and determine whether regional haze SIPs submitted by the states follow the regulations and guidelines, and contain the required elements. CAA section 110. The states' roles, which are central to the regional haze program, are intended to be accomplished using substantial discretion which, in turn, requires significant deference from EPA. States are required to submit a regional haze SIP that contains "emission limits, schedules of compliance and other measures as may be necessary to make reasonable progress toward meeting the national goal." CAA section 169A(b)(2). States also must "determine[]" BART for "each major stationary source." CAA 169A(b)(2)(A). BART sources, such as PacifiCorp's BART units, are required to "procure, install, and operate (BART) as expeditiously as practicable." CAA section 169A(b)(2)(A).

Thus, the CAA mandates that states have the primary role in developing regional haze SIPs to protect visibility in Class I areas. Likewise, the RHR makes clear that states have the responsibility to create and implement regional haze SIPs. In contrast, EPA's role is to develop

"guidelines" for the states to use in implementing regional haze SIPs and to determine whether states followed those guidelines. CAA section 169A(b)(1). In short, the CAA anticipates that states, using their discretion, develop regional haze SIPs using EPA guidelines. This is exactly what Wyoming did in issuing BART permits and developing the Wyoming regional haze SIP.

In issuing regional haze guidelines, EPA recognized the broad discretion granted to the states by the CAA. Specifically, EPA adopted guidance to address BART determinations for certain large electrical generating facilities, referred to as "Appendix Y." EPA created further guidance in the *Federal Register* responding to comments concerning the then-proposed Appendix Y, referred to as the "Preamble." EPA recognized in the Preamble that "how states make BART determinations or how they determine which sources are subject to BART" are among the issues "where the Act and legislative history indicate that Congress evinced a special concern with insuring that states would be the decision makers." 70 FR 39104, 39137 (July 6, 2005).

Likewise, in analyzing the applicability of certain executive orders, EPA stated that "ultimately states will determine the sources subject to BART and the appropriate level of control for such sources" and that "states will accordingly exercise substantial intervening discretion in implementing the final rule." Id. at 39155. The U.S. Court of Appeals for the D.C. Circuit has affirmed that EPA's role regarding regional haze programs is limited and that a state's role is paramount. Indeed, the Court found that the CAA "calls for states to play the lead role in designing and implementing regional haze programs." *American Corn Growers Ass'n v. E.P.A.*, 291 F.3d 1, 2 (D.C. Cir. 2002). The court also reversed a portion of EPA's original RHR because it found that EPA's method of analyzing visibility improvements distorted the statutory BART factors and was "inconsistent with the Act's provisions giving the states broad authority

over BART determinations." Id. at 8; (see also *Utility Air Regulatory Group v. EPA*, 471 F.3d 1333, 1336 (D.C. Cir. 2006) (The second step in a BART determination "requires states to determine the particular technology that an individual source 'subject to BART' must install.")). The court in *American Corn Growers* emphasized that Congress specifically entrusted states with making BART five-factor analysis decisions: "[t]o treat one of the five statutory factors in such a dramatically different fashion distorts the judgment Congress directed the states to make for each BART-eligible source." *American Corn Growers*, 291 F.3d at 6.

The court in *American Corn Growers* also outlined the relevant legislative history that recounts a specific agreement reached in Congress which granted this authority to the states: "The 'agreement' to which the Conference Report refers was an agreement to reject the House bill's provisions giving EPA the power to determine whether a source contributes to visibility impairment and, if so, what BART controls should be applied to that source. Pursuant to the agreement, language was inserted to make it clear that the states - not EPA - would make these BART determinations. The Conference Report thus confirms that Congress intended the states to decide which sources impair visibility and what BART controls should apply to those sources. The RHR attempts to deprive the states of some of this statutory authority, in contravention of the Act." Id. at 8. EPA's FIP action makes the same mistake and, if finalized, will be similarly reversible.

In sum, based on the language in the CAA, the RHR, EPA's own guidelines, and case law, the states have significant discretion when creating regional haze SIPs.

Response: We responded to similar comments above and elsewhere in this document.

Comment: EPA failed to properly account for that discretion in analyzing the Wyoming regional haze SIP. EPA should have acknowledged that the Wyoming regional haze SIP followed the law

and was supported by the facts. Examples of EPA ignoring Wyoming's discretion include: visibility improvement; cost effectiveness analysis; modeling; application of the five BART factors; and reasonable progress analyses.

Response: We responded to similar comments above and elsewhere in this document.

Comment: EPA's proposed action ignores the congressional commitment to have local decisions under the CAA - particularly those relating to BART - made by the states. States have the primary responsibility for preventing air pollution under the CAA. CAA section 101(a)(3), 42 U.S.C. 7401(a)(3). Pursuant to this principle, states, not EPA, have always had primary control over decisions to impose specific emission limits (and therefore specific pollution control technologies) for individual facilities. By congressional design, under the CAA EPA "is relegated … to a secondary role in the process of determining and enforcing the specific, source-by-source emission limitations which are necessary [to meet] national standards." *Train v. NRDC*, 421 U.S. 60, 79 (1975) (hereinafter "*Train*"). This basic division of responsibilities between EPA and the States remained unchanged when Congress amended the Act in 1977 and again in 1990. *See Virginia v. EPA*, 108 F.3d 1397, 1408-10 (D.C. Cir. 1997).

Congress took this principle a step further under the regional haze program, specifically directing that BART is to be "determined by the State." CAA section 169A(b)(2)(A), 42 U.S.C. section 7491(b)(2)(A). Congress adopted the BART provisions to address visibility, rather than health concerns. *See* H.R. Rep. 95-294, at 529 (1977) ("It should be made clear at the outset that this provision [concerning BART] is totally unrelated to any question involving public health.") (separate views of Messrs. Devine, Krueger, Broyhill, Gammage, Clarence J. Brown, Collins,

Moore and Stockman). Congress therefore sensibly left decisions relating to the imposition of costly visibility control technologies on certain existing sources entirely to the states, where local factors could be properly considered and implemented:

> The agreement clarifies that the state, rather than the Administrator, identifies the source that impairs visibility in the Federal class I areas. "…In establishing emission limitations for any source which impairs visibility, the State shall determine what constitutes 'best available retrofit technology'…" H.R. Conf. Rep. 95-564, at 155 (1977). While the original House bill would have given EPA the power to determine what BART controls should be applied to individual sources, Congress eventually inserted the current statutory language to make it clear that the States, rather than EPA, would make BART determinations. *See id.*; 5 Leg. History of CAA Amendments 1997 P.L. 95-95, H8663 (1997) ("The provision [in the original bill] was modified to give States a greater role in identifying sources which are contributing (or may in the future contribute) to visibility problems and in establishing control requirements for those sources."). Senator Muskie confirmed during the floor debate that "the State, not the Administrator, identifies a source that may impair visibility" and that "it is the State which determines what constitutes 'Best Available Retrofit Technology.'" 123 Cong. Rec. 26,854 (1977).

The federal courts have enforced this legislative intent. In *American Corn Growers*, the D.C. Circuit quoted at length from the legislative history of section 169A to conclude that it was "clear that the States – not EPA – would make these BART determinations." 291 F.3d at 8; see also id. at 8 ("The Conference Report ... confirms that Congress intended the States to decide which sources impair visibility and what BART controls should apply to those sources."). *American Corn Growers* reaffirms that the states have "broad authority" to make

their own BART determinations. *Id.* It also reaffirms that EPA cannot "deprive the states of some of this statutory authority," nor can EPA "constrain[] authority Congress conferred on the states" with respect to BART determinations. *Id.* at 8-9. It was for this reason that the court struck EPA's first attempt at the Regional Haze Rule: it purported to tell the states how to make BART determinations. *Id.* at 6-7. The same court later reiterated that BART "requires States to determine the particular technology that an individual source 'subject to BART' must install." *Utility Air Regulatory Grp. v. EPA*, 471 F.3d 1333, 1336 (D.C. Cir. 2006).

Other federal courts have recognized the cooperative federalism policies on which the CAA in general - and the regional haze provisions in particular - are based. *See, e.g., Texas v. EPA*, 690 F.3d 670, 684 (5th Cir. 2012); *Ellis v. Gallatin Steel Co.*, 390 F.3d 461, 467 (6th Cir. 2004); *Sierra Club v. EPA*, 315 F.3d 1295, 1300 (11th Cir. 2002); *Am. Lung Ass'n of N.J. v. Kean*, 871 F.2d 319, 322 (3d Cir. 1989). Under cooperative federalism, states retain the discretion and flexibility to make their own choices based on local conditions, histories, and policies. *See, e.g., Budget Prepay, Inc. v. AT&T Corp.*, 605 F.3d 273, 281 (5th Cir. 2010) ("'cooperative federalism' ... necessarily implies that states may reach differing conclusions on specific issues relating to the implementation of the [statute]"); *Global NAPs, Inc. v. Mass. Dep't of Telecom. & Energy*, 427 F.3d 34, 46 (1st Cir. 2005) (cooperative federalism has "the intended effect of leaving state commissions free, where warranted, to reflect the policy choices made by their states" and to implement statutory provisions "fairly and with due regard to… local conditions… and… historical circumstances"); *Taylor v. Vt. Dep't of Educ.*, 313 F.3d 768, 777 (2d Cir. 2002) ("'[c]ooperative federalism ... allows some substantive differentiation among the states in the determination of which ... theories, practices, and approaches will be utilized'") (citation omitted).

In sum, Congress directed that BART determinations are to be made by the states, allowing the states to make their own BART choices based on local conditions and other considerations. Because EPA may not exercise authority "in a manner that is inconsistent with the administrative structure that Congress enacted into law," *ETSI Pipeline Project v. Missouri*, 484 U.S. 495, 517 (1998), EPA may not disapprove a state BART determination that complies with the CAA, whether or not EPA agrees with the state's decision. Here, EPA has not demonstrated that Wyoming's BART determination violates the CAA, and for that reason EPA must approve the BART determination in the SIP even if it "disagrees" with it. Instead, just as in its rulemaking at issue in *Texas*, EPA's Proposed Rule "transgresses the CAA's delineated boundaries of [the] cooperative relationship" between EPA and the states. 690 F.3d at 686.

Response: EPA disagrees with this comment. First, the legislative history of the 1977 Amendments cited by the commenter is incomplete. The complete legislative history, when fairly read, contradicts the commenter and confirms EPA's supervisory role in reviewing state regional haze SIP submittals, including the state's initial BART determinations.

The 1977 Amendments resulted from a conference agreement that reconciled the House bill, H.R. 6161, and the Senate bill, S. 252. The conference committee agreed to adopt the visibility protection provisions of section 116 of the House bill, with certain modifications. With respect to the BART provision in what is now section 169A(b)(2)(A) of the Act, the conference agreement inserted the phrase "as determined by the State (or the Administrator in the case of a plan promulgated under [section 110(c) of the Act])" in the two places it now appears in that section.[31] The conference agreement inserted similar language into the definition of BART in

[31] The conference agreement also revised the language "except as otherwise provided pursuant to subsection (c), a requirement that each major stationary source (as defined in section 302(o))

section 169A(g)(2). The 1977 Amendments also added section 110(a)(2)(J) to the Act, which makes (among other things) a regional haze SIP that meets the requirements of part C relating to visibility protection a *required* part of a state's SIP.

Thus, H.R. 6161 required states to submit regional haze SIPs containing BART determinations, but did not explicitly specify that the BART determinations should, in the first instance, be made by the state. The conference agreement language clarified that states should make BART determinations as part of their SIP submittals, as explained in the conference report:

> The agreement clarifies that the State, rather than the Administrator**,** identifies the source that impairs visibility in the Federal class I areas identified and thereby fall within the requirements of this section. … In establishing emission limitations for any source which impairs visibility, the State shall determine what constitutes "best available retrofit technology" (as defined in this section) in establishing emission limitations on a source-by-source basis *to be included in the State implementation plan so as to carry out the requirements of this section*.

H.R. Conf. Rep. 95-564, at 155 (1977) (emphasis added). In other words, BART determinations are a *required* element ("the State shall determine") of a state's regional haze SIP submittal ("to be included in the State implementation plan"). However, the conference report *does not* say that the state's determination is final. For example, it does not say: "The State shall determine, and EPA shall abide by …." Thus, all the conference report says is that states must provide BART determinations as part of the state's required regional haze submittal. As the Tenth

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which is in existence on the date of enactment of this section, but which has not been in operation for more than 15 years as of such date" in H.R. 6161 to its present form. This revision does not affect any issue raised by the commenter.

Circuit Court of Appeals stated, "All the conference agreement referenced by the D.C. Circuit did was shift the initial responsibility for making BART determinations from the EPA to the state. But that does not differ from other parts of the CAA—states have the ability to create SIPs, but they are subject to EPA review." *Oklahoma v. EPA*, 723 F.3d 1201, 1209 (10th Cir. 2013).

Another portion of the legislative history, only partially quoted by the commenter, confirms EPA's supervisory role. Congressman Rogers inserted into the Congressional Record a Clean Air Conference Report (1977) : Statement of Intent; Clarification of Select Principles. 123 Cong. Rec. 27070 (daily ed. Aug. 4, 1977) (statement of Cong. Rogers). The Statement of Intent clarified "some important points on the intention and effect of the conferees action [that] may have been overlooked or may be unclear in the text of the conference bill or the accompanying statement of managers." *Id.* Under section "D. Visibility protection," the first full paragraph states:

> The conferees essentially agreed to the House provision for visibility protection. The provision was modified to give States a greater role in identifying sources which are contributing (or may in the future contribute) to visibility problems and in establishing control requirements for those sources. However, the conferees rejected a motion to delete the national goal. *The conferees also rejected a motion to delete EPA's supervisory role under section 110 to assure that the required progress toward that goal will be achieved by the revised State plan. If a State visibility protection plan is not adequate to assure such progress, then the Administrator must disapprove that portion of the SIP and promulgate a visibility protection plan under section 110(c).* Thus, visibility protection in

most mandatory federal Class I areas remains a national commitment, which is nationally enforceable.

Id. (emphasis added). Thus, the Statement of Intent, instead of supporting the commenter's arguments, confirms EPA's supervisory role over states' regional haze SIPs, as the conferees deliberately rejected a proposal to remove that supervisory role.[32] The Statement of Intent also only describes states as having a "greater role" in determining BART; it does not describe that role as exclusive.

With respect to Senator Muskie's statements, the comment omits a portion of the legislative history regarding application of the BART Guidelines. *Oklahoma v. EPA*, 723 F.3d 1201, 1209-10 (10th Cir. 2013). The Tenth Circuit considered those statements in context and confirmed EPA's authority to ensure that state BART determinations for fossil-fuel fired power plants having a total generating capacity greater than 750 MW complied with the BART Guidelines. *Id.* With respect to the separate views of several Representatives regarding visibility protection as unrelated to public health, those views are of a small minority that opposed any provisions for visibility protection whatsoever. H.R. Rep. 95-294, at 530 (1977). Their views did not carry the day and, in any case, are irrelevant to the question of EPA's supervisory role.

With respect to the remainder of the comment regarding various court opinions, we have responded to similar comments elsewhere. EPA's action here violates neither the holdings in

[32] In context, the statement regarding "required progress" must be understood to include BART. First, the preceding portion of the statement discusses States' roles in determining controls generally under 169A(b)(2), "including" the BART requirements in 169A(b)(2)(A). The portion about EPA's supervisory role in assuring "required progress" should be understood to apply to all of 169A(b)(2), including subsection 169A(b)(2)(A).

American Corn Growers and *UARG* regarding the RHR, nor the generic remarks regarding cooperative federalism in the other cited cases.

Comment: Although EPA cites "errors" made by Wyoming in its BART determination for Laramie River Station, EPA has not - and cannot - demonstrate that any of these alleged "errors" represents a violation of the CAA. These are technical disagreements over judgments committed by Congress to the states - not grounds for EPA to step in and dictate a technology choice. Section 169A does not confer any authority upon EPA to make a BART determination when the state has made one. Once the state makes a BART determination, EPA's authority to review it in the SIP review process is very limited. Section 110 mandates that "[EPA] *shall approve* such [SIP] submittal as a whole if it meets all of the applicable requirements of this chapter." 42 U.S.C. 7410(k)(3). *See also Forest Guardians v. Babbitt*, 174 F.3d 1178, 1187 (10th Cir. 1999) ("The Supreme Court and this circuit have made clear that when a statute uses the word 'shall,' Congress has imposed a mandatory duty upon the subject of the command.").

As the Fifth Circuit recently expressed, "the Act confines the EPA to the ministerial function of reviewing SIPs for consistency with the Act's requirements," and "[t]h[e] statutory imperative [of section 110(k)(3)] leaves the agency no discretion to do anything other than ensure that a state's submission meets the CAA's requirements and, if it does, approve it." *Luminant*, 675 F.3d at 921, 926. *See also id.* at 932 ("If [the State's] regulations satisfy th[e] basic requirements [of the CAA], the EPA must approve them, as section 7410(k)(3) requires. That is the full extent of the EPA's authority in the SIP-approval process because that is all the authority that the CAA confers.") *Texas*, 690 F.3d at 676 ("[I]f a SIP or a revised SIP meets the statutory criteria of the CAA, then the EPA must approve it."); *Bethlehem Steel Corp. v. Gorsuch*, 742 F.2d 1028, 1036 (7th Cir. 1984) (EPA's SIP disapproval power is "constrained by

the substantive criteria in 42 U.S.C. 7410(a)(2)(A)-(K)"); *Fla. Power & Light Co. v. Costle*,650 F.2d 579, 581 (5th Cir. 1981) ("If a SIP or a revised SIP meets the statutory criteria…the EPA must approve it.") (citations omitted).

Since Wyoming's BART decision for Laramie River Station, along with its associated SIP revision, meets the requirements set forth in the CAA, EPA has no discretion and must approve it in its entirety. As the Supreme Court explained in the NAAQS context: The Act gives the Agency no authority to question the wisdom of a state's choices of emission limitations if they are part of a plan which satisfies the standards of section 110(a)(2), and the Agency may devise and promulgate a specific plan of its own only if a state fails to submit an implementation plan which satisfies those standards. Section 110(c). Thus, so long as the ultimate effect of a state's choice of emission limitations is compliance with the national standards for ambient air, the state is at liberty to adopt whatever mix of emission limitations it deems best suited to its particular situation. *Train*, 421 U.S. at 79; *see also Virginia*, 108 F.3d at 1408-10 (confirming that the 1977 Amendments to section 110 did not alter the division of responsibilities recognized in *Train*). *Accord Union Elec. Co. v. EPA*, 427 U.S. 246, 267 (1976) ("[T]he State has virtually absolute power in allocating emission limitations so long as national standards are met.").

The fact that states must propose SIP revisions "as may be necessary" to achieve reasonable progress does not mean that EPA has authority to countermand the textual commitment to leave BART decisions to the states. The D.C. Circuit interpreted similar language in Section 110(k)(5) to constrain EPA's authority over SIP approval and disapproval. *See Virginia*, 108 F.3d at 1409. The SIP call provisions of Section 110(k)(5) similarly state that when a SIP is inadequate "[EPA] shall require the State to revise the plan as necessary to correct such inadequacies." But the *Virginia* court rejected the agency's expansive view of this phrase

as authority to impose specific control measures for specific emission sources: EPA apparently thinks the "as necessary" language in section 110(k)(5) altered the division of responsibilities between the states and the agency. We suppose the idea is that because section 110(k)(5) empowers EPA to "require the State to revise the plan as necessary to correct" inadequacies, it empowers EPA to require the state to include particular control measures in the revised plan. There is nothing to this. *Id.* at 1409. Instead, the court concluded that this phrase "keep[s] EPA within bounds." *Id.* at 1410. Imposition of a FIP is intended to be a drastic penalty, imposed only where a state fails to provide the air pollution reductions required by the CAA, as "it rescinds state authority to make the many sensitive and policy choices that a pollution control regime demands.'" *Id.* at 1406-07 (citation omitted). The court also expressed, in rejecting EPA's interpretation of Section 110(k)(5), that "[w]e would have to see much clearer language to believe a statute allowed a federal agency to intrude so deeply into state political processes." *Id.* at 1410.

EPA must therefore approve the Wyoming SIP as it relates to BART at Laramie River Station, as compliance with the law is all that is required. *See Luminant*, 675 F.3d at 926 (EPA's reliance on factors other than compliance with the CAA in disapproving a SIP violated the Administrative Procedures Act (APA), as it was "in excess of statutory authority," and was arbitrary and capricious, as it considered "a 'factor[] which Congress has not intended [the EPA] to consider'") (quoting 5 U.S.C. 706(2)(C) and *State Farm*, 463 U.S. at 43) (alteration in original).

Response: EPA is not substituting its judgment on required technology for the State's in this decision. Rather, we have determined that Wyoming's analysis and determinations were not performed consistent with the CAA and implementing regulations. EPA considered the State's

SIP as well as the most recent information submitted by Basin Electric and others for the Laramie River BART units. As explained in detail in our response to similar comments in the BART section of this document, we found Basin Electric's estimates of SCR capital cost deficient in a number of respects, specifically: 1) Inadequate explanation for the high labor rates that were assumed when compared to published labor rates; 2) High overtime and per diem costs without sufficient explanation; 3) Apparent duplication of costs associated with General Facilities; 4) Inclusion of AFUDC; 5) Apparent duplication of contingencies and other cost adders; and 6) Addition of unnecessary SO_3 mitigation system. All of these contributed to excessively high capital cost. Sargent & Lundy also assumed excessively high cost for replacement catalyst, which contributes to high operating cost. As we explain elsewhere, these deficiencies are inconsistent with the CAA and RHR.

We responded to similar comments regarding the remaining comments above and elsewhere in this document.

Comment: To the extent that the Supreme Court in *ADEC* suggested it was adopting a "reasonableness" standard, and did not expressly state that what it was doing was adopting an "arbitrary and capricious" standard, the Supreme Court and other federal courts have confirmed that these two standards are nearly interchangeable. Moreover, to the extent that there is any perceivable difference between the two standards, these cases confirm that "reasonable" means something more like "not arbitrary and capricious" than "not what EPA would prefer." *See, e.g.*, *Marsh v. Ore. Nat. Res. Council*, 490 U.S. 360, 377 n.23 (1989) ("as some of the[] courts have recognized, the difference between the 'arbitrary and capricious' and 'reasonableness' standards is not of great pragmatic consequence") (citing cases); *Ridenour v. Kaiser-Hill Co.*, 397 F.3d 925, 939 (10th Cir. 2005) ("When a party challenges agency action as arbitrary and capricious

the reasonableness of the agency's action is judged in accordance with its stated reasons.") (citation omitted); *Amisub (PSL), Inc. v. Colo. Dep't of Social Servs.*, 879 F.2d 789, 800 (10th Cir. 1989) (the court's role in applying the arbitrary and capricious review standard is "to determine if there was a reasonable factual basis to support" the agency's findings); *United States v. Minnkota Power Co-Op Inc.*, 831 F. Supp.2d 1109, 1119 (D.N.D. 2001) (expressing that the "reasonableness" standard employed by the *ADEC* Court is the same as the "arbitrary and capricious" standard).

Under the APA's arbitrary and capricious review standard, administrative action is presumed valid, and review of that action is "'narrow in scope.'" *Copar Pumice Co. v. Tidwell*, 603 F.3d 780, 793 (10th Cir. 2010) (citation omitted). "Agency action is arbitrary and capricious only if the agency 'has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency,' or if the agency action 'is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.'" *Id.* (quoting *State Farm*, 463 U.S. at 43). A court will not "substitute [its] judgment for that of the agency," but will only consider whether the agency provided a "reasoned basis" for its action. *Id.* at 793-94 (quoting *State Farm*, 463 U.S. at 43). The courts also have developed a series of related standards designed to ensure that courts afford appropriate deference to an agency's technical and policy choices, and refrain from substituting the courts' judgment for that of the agency. For the same reasons that arbitrary and capricious review should apply to EPA's review of a state BART determination, these related standards also should apply: (1) the State's BART decision is presumed valid, and EPA bears the burden of proving otherwise, *see Hillsdale Envt'l Loss Prevention, Inc. v. U.S. Army Corps of Eng'rs*, 702 F.3d 1156, 1165 (10th Cir. 2012); (2) the

State's decision may be set aside "'only for substantial procedural or substantive reasons,'" *id.* (citation omitted); and (3) where experts might disagree about a technical issue, EPA must defer to the "reasonable opinions" of the States' experts, *see Colo. Wild v. U.S. Forest Serv.*, 435 F.3d 1204, 1214 (10th Cir. 2011). *See also Minnkota Power*, 831 F. Supp.2d at 1119-20 (the same principles that apply to court review of agency action under the APA apply to EPA challenges to state BACT determinations).

EPA's proposal does not formulate or apply these standards, and thus does not establish grounds to overrule the State's BART determination for Basin Electric's Laramie River Station. EPA has not found that Wyoming "entirely failed to consider an important aspect of the problem," considered factors Congress did not intend it to consider, or reached a decision "so implausible" as to be arbitrary. Nor has EPA found that Wyoming's explanation for its decision runs counter to the evidence that was before it. Instead, EPA complains of minor alleged deviations from broadly worded and highly flexible guidelines deliberately designed to be consulted but not rigidly adhered to in any event. EPA therefore must approve the State's BART decision for Laramie River, as any other result represents EPA's substitution of its judgment over Wyoming's, which EPA has no statutory authority to do.

Response: EPA disagrees with this comment, which is based on a fundamental misunderstanding of EPA's role. In acting on a state's SIP submittal, EPA does not sit in the position of a reviewing federal court. Instead, EPA is the agency entrusted by Congress with administering the CAA. Thus Congress has "vested EPA with explicit and sweeping authority to enforce CAA requirements" and requires that "EPA step in to ensure that the statutory requirements are honored." *Alaska Dep't of Envtl. Conservation v. EPA*, 540 U.S. 461, 490 (2004). Reviewing courts, on the other hand, "are not experts in the field" and thus defer to

decisions by "the agency charged with the administration of the statute." *Chevron, Inc. v. Natural Res. Def. Council*, 467 U.S. 837, 866 (1984).

In the context of acting on a regional haze SIP, EPA must assure that it meets the requirements of the Act and the RHR, including requirements regarding BART. EPA—unlike a reviewing court—is not required to defer to the state's technical judgments. Instead, EPA is not only authorized, but required to exercise independent technical judgment in evaluating the adequacy of a state's regional haze SIP, including its BART determinations, just as EPA must exercise such judgment in evaluating other SIPs. In evaluating other SIPs, EPA's role is always to make a judgment about SIP adequacy, not just to meet and maintain the NAAQS, but also to meet other requirements that do not have a numeric value. In this case, Congress did not establish NAAQS by which to measure visibility improvement; instead, it established a reasonable progress standard and required that EPA assure that such progress be achieved. Here, contrary to the commenter's assertion, we are exercising judgment within the parameters laid out in the CAA and our regulations. Our interpretation of our regulations and of the CAA, and our technical judgments, are entitled to deference. *See, e.g.*, *Michigan Dep't. of Envtl. Quality v. Browner*, 230 F.3d 181 (6th Cir. 2000); *Connecticut Fund for the Env't., Inc. v. EPA*, 696 F.2d 169 (2nd Cir. 1982); *Voyageurs Nat'l Park Ass'n v. Norton*, 381 F.3d 759 (8th Cir. 2004); *Mont. Sulphur & Chem. Co. v. EPA*, 666 F.3d 1174 (9th Cir. 2012).

The comment does not cite to anything in the *ADEC* opinion (or, for that matter, in the CAA itself) that suggests EPA must, in reviewing a SIP submittal, adopt the APA standards of review. Instead, in *ADEC* the Supreme Court upheld EPA's position that the State permitting agency's BACT determination "did not qualify as reasonable in light of the statutory guides." *Alaska Dep't of Envtl. Conservation v. EPA*, 540 U.S. 461, 484 (2004). The mere coincidence

that some courts have described the APA standards of review as essentially a "reasonableness" standard does not compel EPA to adopt the APA standards of review; nor did the *ADEC* opinion suggest EPA must do so. As explained above, a fundamental difference between EPA and a reviewing court is that courts lack technical expertise and so generally defer to agency technical judgments; on the other hand, EPA is the expert agency entrusted by Congress with administering the CAA and exercising its best technical judgment in doing so. Another fundamental difference is that a reviewing court is limited to the record compiled by the administrative agency, but EPA in its review of a SIP submittal is not limited just to the record compiled by the state agency, and may supplement the record with (among other things) EPA's own expert reports and analyses. In fact, if the cases cited by the commenter discussing the APA standard of review stand for anything, it is the proposition that if and when EPA's action on this SIP submittal is subject to judicial review, the court will base its decision on the record compiled by EPA and give appropriate deference to EPA's technical judgments and interpretations of the Act and the RHR. Accordingly, the Eighth and Tenth Circuit Court of Appeals have applied the APA standard of review to EPA's actions on other regional haze SIP submittals. *See Oklahoma v. EPA*, 723 F.3d 1201 (10th Cir. 2013), *North Dakota v. EPA*, 730 F.3d 750 (8th Cir. 2013).

The discussion of the standard of review in the district court's order and opinion in *United States v. Minnkota Power Co-op., Inc.*, 831 F. Supp. 2d 1109 (D.N.D. 2011), cited by commenter, is not to the contrary. The district court's opinion first quotes the *ADEC* opinion for the proposition that the question presented is whether "*the state agency's* BACT determination was reasonable, in light of the statutory guides and the state administrative record." *Id.* at 1119 (emphasis added). The district court's opinion then again quotes the *ADEC* opinion: "We apply the familiar default standard of the Administrative Procedure Act … and ask whether *the*

Agency's action was 'arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.'" *Id.* (emphasis added). In the context of the *ADEC* opinion, the Agency referred to by the Supreme Court in the second quote is EPA, not the State agency. The district court's opinion then continues by quoting a separate Supreme Court opinion discussing the similarities of the arbitrary and capricious standard and the reasonableness standard. This fails to establish any sort of connection between the APA standard and EPA's review of a state determination. In addition, *Minnkota Power* took place in the context of an enforcement action, not action on a SIP submittal. The EPA had entered into a consent decree that (among other things) "establishe[d] the standard of review governing the EPA's challenge to the North Dakota NO_x BACT Determination." *Id.* at 1112. The consent decree provided that "[t]he disputing Party shall bear the burden of proof throughout the dispute resolution process." Thus, *Minnkota Power* has nothing to say about use of the APA standard in EPA's review of a state's BART determination.

Comment: In applying the arbitrary and capricious standard, EPA should accord the same deference to a state's BART determination that courts accord to an agency decision under the National Environmental Policy Act (NEPA), which, like section 169A, "does not mandate particular results, but simply prescribes the necessary process." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989). *See also* 42 U.S.C. 4332(2)(C) (any agency contemplating a "major Federal action [that] significantly affect[s] the quality of the human environment" must prepare an environmental impact statement [EIS] analyzing the action's environmental effects). Under NEPA, "[t]he role of the courts is simply to ensure that the agency has adequately considered and disclosed the environmental impact of its actions and that its decision is not arbitrary or capricious." *Baltimore Gas & Elec. Co. v. NRDC*, 462 U.S. 87, 97-98 (1983).

The purpose of this deferential review standard under NEPA is to prevent a court from "substitut[ing] its judgment for that of the agency." *Kleppe v. Sierra Club*, 427 U.S. 390, 410 n.21 (1976). As the Supreme Court explained in *Kleppe*, "[t]he only role for a court is to insure that the agency has taken a 'hard look' at environmental consequences; it cannot 'interject itself within the area of discretion of the executive as to the choice of the action to be taken.'" *Id.* (citing *NRDC v. Morton*, 458 F.2d 827, 838 (D.C. Cir. 1972)).

Under this review standard, "even if [the reviewing court] would have made a different choice had the matter been before [the court] de novo," the court "cannot displace the agencies' choice" between conflicting views, evidence, data, and scientific opinions. *Custer Cnty. Action Ass'n v. Garvey*, 256 F.3d 1024, 1036 (10th Cir. 2001). Thus, even in the face of technical objections, a court will uphold the agency's action so long as it is supported by substantial evidence in the administrative record, is adequate to foster informed public participation and decision making, and is not otherwise arbitrary or capricious. *Id.*

Moreover, as the courts have repeatedly recognized, "[d]eficiencies in an EIS that are mere 'flyspecks' and do not defeat NEPA's goals of informed decision making and informed public comment will not lead to reversal.'" *WildEarth Guardians v. NPS*, 703 F.3d 1178, 1183 (10th Cir. 2013) (quoting *New Mexico v. BLM*, 565 F.3d 683, 704 (10th Cir. 2009)). *See also Custer Cnty*, 256 F.3d at 1035 ("Our objective is not to 'fly speck' the [EIS], but rather, to make a 'pragmatic judgment whether the [EIS]'s form, content and preparation foster both informed decision-making and informed public participation.'") (citation omitted).

The same principles apply here, where Congress has expressly delegated the BART decision to the states, did not mandate the states to reach a specific outcome, and established only a decision making process for the states to follow - not a required outcome. If the state

considered all five statutory factors to arrive at a result that improves visibility, and its decision is not arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law, EPA must affirm the BART selection - even if EPA would or could have made a different selection.

Response: EPA disagrees with this comment. The comment does not identify anything in the NEPA court decisions that demonstrates that those decisions are applicable to EPA's review of a SIP submittal. In fact, Section 7(c) of the Energy Supply and Environmental Coordination Act of 1974 (15 U.S.C. 793(c)(1)) exempts actions under the CAA from the requirements of NEPA. Specifically, this section states that "[n]o action taken under the CAA [42 U.S.C. 7401 et seq.] shall be deemed a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969 [42 U.S.C. 4321 et seq.]." While the standard of review for EPA's SIP and FIP decisions may be similar to that under NEPA,[33] the NEPA decisions simply are not applicable in the CAA context.

Furthermore, NEPA relies solely on "procedural mechanisms—as opposed to substantive, result-based standards." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 353 (1989). Unlike NEPA, the CAA's regional haze program has specific substantive requirements, and EPA must ensure that SIP submittals meet the requirements of the Act, including the substantive provisions of the regional haze program. *See* CAA Section 110(a)(2)(J) (SIP submittals must meet applicable requirements of Part C of title I, including visibility protection). As the Eighth Circuit Court of Appeals stated: "EPA is left with *more*

[33] By statute, EPA's promulgation of a FIP must be upheld unless the court determines EPA's action was "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law." CAA Section 307(d)(1)(B), (9)(A). There is no statutory standard of review governing EPA's disapproval of a SIP, however, the Supreme Court has held that where the Clean Air Act does not specific a standard for judicial review, "we apply the familiar default standard of the Administrative Procedure Act … and ask whether the agency's action was arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." *ADEC* at 496-97.

than the ministerial task of routinely approving SIP submissions." *North Dakota v. EPA*, 730 F.3d 750 (8th Cir. 2013) (emphasis added).

Comment: One commenter asserted that the U.S. Supreme Court and the lower federal courts have long recognized and applied the principle of "harmless error" where an agency may have committed an error, but that error did not affect the outcome of its decision. *See, e.g.*, *Nat'l Ass'n of Home Builders v. Defenders of Wildlife*, 551 U.S. 644, 659 (2007); *Hillsdale*, 702 F.3d at 1165. *See generally* 5 U.S.C. 706 ("[D]ue account shall be taken of the rule of prejudicial error.").

The commenter argued that the courts also have long recognized the related principle that agencies may "overlook circumstances that in context may fairly be considered *de minimis*," as part of the broad notion that "the law does not concern itself with trifling matters." *Alabama Power Co. v. Costle*, 636 F.2d 323, 360 (D.C. Cir. 1979). Thus, for instance, the D.C. Circuit rejected a challenge to a Federal Aviation Administration rule where the agency had used "inappropriate guidelines for measuring the effects of noise" in its determination that a proposed airport site would not result in any "use" of a nearby wildlife refuge. *Allison v. Dep't of Transp.*, 908 F.2d 1024, 1026 (D.C. Cir. 1990). The court cited the APA provision requiring consideration of "prejudicial error," and expressed that "[a] court should not upset a decision because of errors that are not material." *Id.* at 1029 (citations omitted). *See also Grunman Data Sys. Corp. v. Widnall*, 15 F.3d 1044, 1048 (Fed. Cir. 1994) (rejecting bid protest although agency may have violated accounting principles in its analysis of the best value bid, as any accounting errors were "*de minimis*," and stating that "overturning awards on *de minimis* errors wastes resources and time, and is needlessly disruptive of procurement activities and governmental programs and operations") (citation omitted).

Finally, the commenter argued, the courts have repeatedly held that agency action should not be reversed due to mere calculation errors that do not render a rule arbitrary and capricious. *See, e.g.*, *Michigan v. EPA*, 213 F.3d 663, 691 (D.C. Cir. 2000) (rejecting challenge to EPA decision despite error in calculation); *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 241, *clarified on reh'g*, 885 F.2d 253 (5th Cir. 1989) (same); *CPC Int'l, Inc. v. Train*, 540 F.2d 1329, 1343-44 (8th Cir. 1976) (same). The commenter stated that these same principles should apply to EPA's review of the State's BART determinations, such that EPA has no authority to disapprove the State's decisions if a deviation from the BART Guidelines and CCM was merely *de minimis* and at most harmless error that did not affect the State's selection of BART. Indeed, EPA's approach itself suggests that the BART Guidelines and CCM were intended to be flexible, and that EPA's review of compliance with their provisions is subject to a materiality standard. For instance, in the Proposed Rule, EPA proposes to disapprove certain BART determinations based on purported deviations from the BART Guidelines and CCM in assessing cost and visibility, yet it also proposes to approve other BART determinations "because [it has] determined that the State's conclusions were reasonable despite the cost and visibility errors" identified by EPA. 78 FR 34750. And, while the Tenth Circuit's decision in *Oklahoma v. EPA* is not yet final, as petitions for rehearing may yet be filed, that court similarly suggested that there was a materiality element to a state's compliance with the BART Guidelines, noting, in particular, that the State's cost estimates were "more than ten times EPA's stated average costs per ton for th[e] technology, and nearly five times as much as the upper limit of EPA's expected cost range." --- F.3d ---, 2013 U.S. App. LEXIS 14634, at *25 (10th Cir. July 19, 2013). Notably, that case did not involve SCR technology, which the CCM affords a greater amount of flexibility in assessing, and the State had failed to note and explain its deviations from the CCM.

By applying these principles here, the commenter asserted, any deviation from the BART Guidelines and CCM was *de minimis*, and mere harmless error. Certainly, EPA has not shown that the State would have made a different BART selection had it assessed the cost and visibility factors in the manner EPA suggests—particularly as the selection of BART must be made by weighing all five factors, and as the differences between the State's and EPA's assessments of cost and visibility are not so substantial as to necessitate a different result. In other states, EPA has acknowledged that a state's BART determination may be disapproved on account of a claimed error only if the error would have changed the BART determination. In approving Colorado's regional haze SIP, EPA did not disapprove the BART determination for the Martin Drake power plant, despite EPA's disagreement regarding the control efficiency of SCR because the discrepancy would not have changed the outcome. 77 FR 76871, 76875-76 (Dec. 31, 2012) ("[We] find that it was not unreasonable for Colorado to use 0.07 lb/MMBtu to model the predicted visibility improvement from SCR. Moreover, while we do agree that assuming a control efficiency of 0.05 lb/MMBtu would have resulted in greater modeled visibility benefits, we do not agree that the difference in visibility benefits would have led Colorado to a different conclusion given the magnitude of the benefits associated with SCR."). The commenter advocated that EPA should take a similar approach in Wyoming.

The commenter finished by stating that if there is a question as to whether the State might have made a different BART selection had it assessed cost and visibility in the manner suggested by EPA, EPA should return the issue to the State to reweigh the BART factors with that information. *See SKF USA Inc. v. United States*, 254 F.3d 1022, 1029 (Fed. Cir. 2001) (courts may remand matters to the agency upon request to correct "clerical errors, transcription errors, or erroneous calculations").

Response: The cases cited to by the commenter all concern standards by which courts evaluate agency action, not standards by which EPA, an administrative agency, evaluates SIP submissions for compliance with the requirements of the CAA. The cases are therefore inapposite. Nevertheless, in situations where a state's SIP reaches a reasonable result overall despite violations of certain statutory or regulatory requirements, EPA believes that approving the SIP is sometimes a better use of scarce administrative resources and more in line with principles of cooperative federalism than promulgating a FIP. This approach is arguably similar to the principle of "harmless error" that courts adhere to in the context of judicial review.

In this situation, however, the errors committed by Wyoming in its regional haze SIP were neither harmless nor *de minimis*. As we have explained previously, because Wyoming did not properly calculate the costs of the various control options or accurately estimate the visibility improvement associated with these controls, the State's ultimate selection of BART for several EGUs did not represent the best system of continuous emission reduction. As the Eighth and Tenth Circuits have recently held, EPA acts within its power under section 169A of the CAA when it rejects a BART determination on the basis that a state did not properly take into consideration the costs of compliance as a result of methodological or data flaws. *See Oklahoma v. EPA*, 723 F.3d 1201, 1212 (10th Cir. 2013); *North Dakota v. EPA*, 730 F.3d 750 (8th Cir. 2013). This same reasoning applies equally to the other statutory BART factors, such as visibility improvement.

We also disagree with the commenter that our action on the Colorado regional haze SIP implies that a similar outcome is warranted here. In that action, we stated that "it was not unreasonable for Colorado to use 0.07 lb/MMBtu to model the predicted visibility improvement from SCR." 77 FR 76871, 76875 (Dec. 31, 2012). Thus, we did not disagree with Colorado's

choice of control efficiency, as the commenter claims, and the situation bears no relationship to this one, where we have carefully explained our disagreement with multiple aspects of Wyoming's NO_X BART determinations.

Finally, we decline to "return the issue to the State," as the commenter proposes. At this time, the Wyoming regional haze SIP is many years overdue, and the deadline for EPA to issue a FIP has long since passed. We note, however, that Wyoming is free to submit a SIP revision at any time that, if approved, could replace all or a portion of EPA's FIP.

Comment: EPA's proposal to disapprove Wyoming's BART determination for Laramie River not only overrides the State's technical judgment but also renders moot with a stroke of a pen the extensive judicial, administrative, and political processes developed by the State to implement its obligations under the CAA as a separate sovereign. Wyoming has enacted a robust and independent set of administrative and judicial procedures to review and potentially overturn BART decisions made by the State. These procedures are part of the State's SIP expressly approved by EPA, 40 CFR 52.2620, making them federally enforceable.

Wyoming's air quality regulations require a source subject to BART to apply for and obtain a BART permit. In this case, Laramie River Station's BART permit was issued pursuant to Wyoming Air Quality Standards and Regulations (WAQSR) Chapter 6, Sections 2 and 9. The rules requiring BART permits in Wyoming were adopted on October 9, 2006 as a new section to meet the requirements of EPA's RHR. Chapter 6 requires facilities seeking permits to comply with all the rules and regulations of Wyoming. Chapter 6, Section 9 of the Air Quality Division's rules and regulations govern BART permits. Section 9(e)(iv) requires that the opportunity for public comment on BART permits follow the procedures specified in Chapter 6, Section 2(m). That section, in turn, establishes a notice and comment procedure that specifically

requires a copy of the public notice to be sent to EPA. Thus, EPA approved Wyoming's plan that specifically contemplates EPA's inclusion in State administrative review proceedings. *See* 40 CFR 52.2620; *see also US Magnesium, LLC v. EPA*, 690 F.3d 1157, 1159 (10th Cir. 2012) (EPA's approval of a State's SIP gave the SIP the force and effect of federal law).

Here, EPA received the required notice at every step of the proceedings. EPA, however, chose to participate to only a limited extent. After submitting August 3, 2009 comments to the State's BART Application Analysis and proposed permit and October 26, 2009 comments to Wyoming's draft regional haze SIP, EPA excised itself from the process. Despite its prior comments on Basin Electric's BART permit and the regional haze SIP, EPA did not seek to intervene in Basin Electric's administrative appeal to the Environmental Quality Council or comment on Basin Electric's settlement agreement with the Environmental Quality Council. EPA could have advised the Environmental Quality Council that it believed the proposed settlement violated the CAA or was otherwise arbitrary and capricious, but it did not. Instead, illustrating its disregard for State primacy, EPA now proposes to disapprove the NO_x BART emissions limits in the settlement agreement and final SIP, years after the administrative process concluded.

As the dissenters in *ADEC* described, EPA should not be permitted to avoid a "more painstaking state process by a mere stroke of the pen under the agency's letterhead." 540 U.S. at 509 (Kennedy, J., dissenting) (discussing an analogous process for BACT determinations). The CAA's "strict" division of authority creates a "statutory federalism bar [that] prohibits EPA from using the SIP process to force States to adopt specific control measures." *EME Homer City Generation, L.P. v. EPA*, 696 F.3d 7, 29 (D.C. Cir. 2012) (citing *Virginia*, 108 F.3d at 1410). But that is precisely what EPA seeks to do here. EPA's approach both confuses the CAA "with

a general administrative law statute like the [APA]" and upsets "the balance between State and Federal Governments." *See ADEC*, 540 U.S. at 507-17 (Kennedy, J., dissenting). Simply put, it is inappropriate for EPA to dodge the administrative and judicial review process established in the State of Wyoming through overturning of Wyoming's BART decision by administrative fiat. *See id*. at 510 (Kennedy, J., dissenting). It was only after Wyoming submitted its regional haze SIP to EPA that EPA announced it found the settlement "unreasonable" and something with which it "disagreed." Based upon these assertions, and without demonstrating that the BART permit actually violates the CAA, EPA now proposes to void all the extensive administrative proceedings, processes, comment periods, and permit finality accorded under State law.

This improperly impinges upon state authority. Under the regional haze program, deference to state authority is far more compelling than issues related to public health under the BACT program, and so the Supreme Court's holding in *ADEC* that EPA may not require "recourse to state processes" is inapplicable to BART decisions. *ADEC*, 541 U.S. at 492. EPA should conduct itself in accordance with the spirit of its representation to the Supreme Court that it has never sought to override a state court judgment, and should not seek to override a state BART decision that has been litigated to administrative conclusion under state law, particularly where, as here, EPA never advised the State adjudicators or the parties to the State proceedings that it considered the permit to be invalid under the CAA. EPA could have participated in the State administrative appeal proceeding or, at a minimum, appeared in the proceeding to register an objection to the settlement agreement. Having elected not to do so, EPA should respect the result of the State's process. Alternatively, EPA is precluded from overruling the Laramie River BART permit decision that resulted from that process. *ADEC*, 540 U.S. at 491 n.14. EPA had

notice and ample opportunity to contest the appropriateness and legality of the BART permit in Wyoming, but simply chose not to do so.

EPA is not free to let parties like Basin Electric spend thousands of dollars and years of effort resolving the terms of a BART permit, only to find the process wasted because EPA disagrees yet chose to ignore multiple notices of the State proceedings. Absent application of claim preclusion under these circumstances, EPA could effectively "rescind[] state authority to make the many sensitive and policy choices that a pollution control regime demands." *Virginia*, 108 F.3d at 1406-07 (citation omitted). Here, EPA does not intrude upon state political processes; it ignores them, upsetting "the balance between State and Federal Governments." *See ADEC*, 540 U.S. at 507-17 (Kennedy, J., dissenting).

EPA's interference with State's prerogatives also violates the Tenth Amendment to the United States Constitution. "[T]he Tenth Amendment confirms that the power of the Federal Government is subject to limits that may, in a given instance, reserve power to the States." *New York v. United States*, 505 U.S. 144, 157 (1992). *See also* U.S. Const. amend. X ("The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people."). Here, EPA's rejection of Wyoming's BART decision and imposition of its own not only overrides Congress' resolution to leave localized BART analyses in the hands of the states, but also infringes on Wyoming's (and its citizens') Tenth Amendment right to have those decisions made *and adjudicated* by the State. *See Arlington*, 133 S.Ct. at 1874 (although *Chevron* deference generally applies to an agency's interpretation of the scope of its authority, "[w]here Congress has established a clear line, the agency cannot go beyond it; and where Congress has established an ambiguous line, the agency can go no further than the ambiguity will fairly allow"); *Hodel v. Va. Surface Min. &*

Reclamation Ass'n, 452 U.S. 264, 289 (1981) (statute survived Tenth Amendment scrutiny because it "establishes a program of cooperative federalism that allows the States, within limits established by federal minimum standards, to enact and administer their own regulatory programs, structured to meet their own particular needs," instead of "commandeer[ing] the legislative processes of the States by directly compelling them to enact and enforce a federal regulatory program").

Earlier comments provided similar arguments, by noting that Wyoming issued its BART Application Analysis and proposed permit on May 28, 2009, and accepted public comments on its analysis and proposed permit for a period of 60 days, followed by a public hearing on August 6, 2009. Numerous comments were received, including comments from EPA dated August 3, 2009. EPA did not comment that Wyoming's proposed BART determination violated the CAA. Nor did EPA identify any action taken by Wyoming in connection with the permit that was arbitrary or capricious. While EPA regularly encouraged Wyoming to consider both SNCR and SCR technologies, at no point did EPA advise Wyoming that BART controls of LNBs and OFA for the Laramie River Station would violate the CAA or otherwise be arbitrary and capricious. Basin Electric appealed its BART permit to the Environmental Quality Council, arguing that Wyoming's imposition of additional technology requirements in 2018 as part of its long term goals exceeded its authority for terms contained in a BART permit. In its appeal, Basin Electric accepted LNB and OFA as BART but objected to the additional permit condition related to long term strategies.

Basin Electric served its Petition for Review before the Environmental Quality Council on EPA, and EPA received this notice of appeal, as indicated by its acceptance of the certified mail forwarding the appeal. Thereafter, EPA chose not to comment or otherwise participate in

Basin Electric's appeal and never informed the parties or the Environmental Quality Council that EPA considered Wyoming's BART decision to violate the CAA. In fact, no contention was made, by any person or entity, that the BART permit issued by Wyoming violated the CAA.

After litigation, Basin Electric's appeal was settled. Wyoming agreed to remove the provision related to future control strategies in exchange for Basin Electric's agreement to reduce emission levels further than those proposed in the original permit and provide even further reductions by the end of 2017. This proposed settlement was presented to the Environmental Quality Council for approval. No persons or entities objected to the proposed settlement, including EPA.

Only after Wyoming's regional haze SIP was submitted to EPA did EPA announce that it found the settlement "unreasonable" and something with which it "disagreed." Based upon these assertions, and without demonstrating that the BART permit actually violates the CAA, EPA now proposes to void all of the extensive administrative proceedings, processes, comment periods and permit finality accorded under state law.

This violates the explicit representations EPA made to the United States Supreme Court that decisions to over-ride state technology choices are rarely undertaken and therefore do not pose a threat to state adjudicative processes. In footnote 14 of the *ADEC* decision, the Court quoted EPA for the proposition that EPA has engaged in "restrained and moderate" use of its authority to overrule specific technology choices and has never "asserted authority to override a state-court judgment." Based upon this understanding, the majority in *ADEC* dismissed concerns expressed by the dissent about state/federal relations, stating that "[e]xperience … affords no grounding for the dissent's predictions that EPA oversight … will 'rewor[k] … the balance between State and Federal Governments' and threaten state courts' independence." *ADEC*, 540

U.S. at 493 n. 16. With its proposed action here, however, EPA is doing precisely what the dissent in *ADEC* predicted, ignoring the extended contested case process afforded under state law and the final administrative litigation resolution reached under state law.

While Basin Electric's appeal ended short of a court proceeding, the distinction between a litigated judgment in an administrative appeal and a judgment in a state court proceeding is not significant. In both cases, EPA's proposed action fails to respect the cooperative federalism that underlies the CAA in general. Under the RHR deference to state authority is far more compelling than issues related to public health under the BACT program, and so the Supreme Court's holding in *ADEC* that EPA may not require "recourse to state processes" is inapplicable to BART decisions. *ADEC*, 541 U.S. at 492. EPA should conduct itself in accordance with the spirit of its representation to the Supreme Court that it has never sought to override a state-court judgment, and should not attempt to override a state BART decision that has been litigated to an administrative conclusion under state law particularly where, as here, EPA never advised the state adjudicators or the parties to the state proceedings that it considered the permit to be invalid under the CAA. EPA could have participated in the State administrative appeal proceeding or at a minimum appeared therein to register an objection to the settlement agreement. Having elected not to do so, EPA should respect the result of the State's process.

Response: EPA disagrees with this comment. As an initial matter, as provided in detail elsewhere in this section and in the docket for this action, we provided feedback to the State in our comment letters on the proposed SIP and in meeting with State and company officials; therefore, the State and companies were aware of our expectations.

That WAQSR Chapter 6, Section 2 has been approved into the SIP does not somehow commit EPA to participate in Wyoming's BART permit process. The Act and the RHR do not

require that BART be determined through a permit process that is subject to administrative appeal or through a permit process at all. The SIP-approved provision in Chapter 6, Section 2 for notice to EPA of permit actions meets the requirements of 40 CFR 51.161(d), regarding public procedures for review of *new or modified sources*, not BART sources. Furthermore, nothing in Chapter 6, Section 2 suggests that notice to EPA of a permit process somehow binds EPA to participate in that process.

The commenter provides no statutory, regulatory, or judicial authority to support the proposition that EPA must participate in state administrative or judicial procedures. With respect to state judicial procedures, the Supreme Court has stated: "[i]t would be unusual, to say the least, for Congress to remit a federal agency enforcing federal law solely to state court." *Alaska Dep't of Envtl. Conservation v. EPA*, 540 U.S. 461, 493 (2004). Thus the Court "decline[d] to read such an uncommon regime into the [CAA]." *Id*. The commenter's notion that the *ADEC* opinion (which concerned a BACT determination under the PSD program) is inapplicable to BART determinations, merely because BART determination are part of a program to improve visibility rather than public health, finds no support in the *ADEC* opinion or anywhere in the CAA. We elsewhere respond to comments that argue that the language of the CAA itself requires a greater level of deference to states BART determinations.

With respect to the dissent in *ADEC*, that dissent of course does not represent the opinion of the Supreme Court. Nonetheless, EPA is not undoing the State's process through the "mere stroke of a pen on the Agency's letterhead," but instead is acting on the State's regional haze submittal through notice-and-comment rulemaking that is potentially subject to judicial review. Furthermore, EPA is not confusing the CAA with the APA; our authority and duty to review the State's regional haze SIP for compliance with the CAA and the RHR stems from the CAA itself.

As we discuss elsewhere, EPA's role in reviewing SIPs differs in many key aspects from that of a court reviewing agency action under the APA.

Under the CAA, states are required to submit SIPS that contain emissions limits necessary to protect visibility, and EPA is required to disapprove of any inadequate SIPs and promulgate FIPs in their place. 42 U.S.C. 7491(b)(2); Section 7410(c)(1)(A). The CAA does not require EPA to participate in state proceedings related to its SIP submission, nor does it preclude EPA from carrying out its statutory duty to disapprove an inadequate SIP if EPA does not participate in state proceedings. The notion that BART determinations are insulated from EPA review simply because the State has an administrative appeal process not only has no support in the Act, it is contrary to the purposes of the Act and EPA's express obligation to approve only SIP submittals that meet the requirements of the Act.

Moreover, any state BART decisions made under an unapproved SIP are not federally enforceable because any SIP "shall not be treated as meeting the requirements of this chapter until the Administrator approves the entire plan revision as complying with the applicable requirements." 42 U.S.C. 7410(k)(3); *see also Gen. Motors Corp. v. United States*, 496 U.S. 530, 540 (1990) (holding EPA may bring enforcement action under an existing SIP while a SIP proposal is pending).

Finally, this action does not violate the Tenth Amendment. The Supreme Court has explained that "where Congress has the authority to regulate private activity under the Commerce Clause, we have recognized Congress' power to offer States the choice of regulating that activity according to federal standards or having state law pre-empted by federal regulation." *New York v. United States*, 505 U.S. 144, 167 (1992); *see also* U.S. Const. Art. I, Section 8, cl. 3 (commerce clause); *id.* Art. VI, cl. 2 (supremacy clause). The commenter does not argue that the

CAA is outside of Congress' Commerce Clause authority. Through the SIP/FIP mechanism, the Act offered Wyoming the choice of regulating sources in the State in accordance with the regional haze provisions in the CAA and with rules promulgated by EPA under its CAA authority; thus the Act itself does not violate the Tenth Amendment. With respect to this particular action, our disapproval of Wyoming's regional haze SIP and our FIP compel no action on the part of the State and are not coercive vis-a-vis the State. As explained elsewhere in these responses, EPA has not required Wyoming to adopt specific control measures. Instead, our FIP contains requirements applicable only to some private companies. The Tenth Amendment is not implicated by our action.

Comment: Even if EPA can contravene the state process, it should still require compelling circumstances demonstrating a plain and unambiguous violation of the CAA before it countermands a state proceeding. Such a showing is necessary to preserve the balance between Federal and state governments under the CAA. EPA is undermining the significance and integrity of the State appeals process as well as the State's authority to determine BART. EPA is also making it possible for interested parties, including environmental groups, to ignore their procedural obligation to voice objections under State law because they can wait to raise them when EPA acts on a proposed SIP. EPA chose not to participate in the BART permit process and the resulting appeals, despite knowing that the very NO_x control equipment at issue in the regional haze FIP was being determined. Under the principles of comity, EPA should be barred from now addressing these issues at this late period. Under these circumstances, EPA should not be allowed to raise complaints with a BART permit for the first time in the federal proceeding. Failure to do so diminishes State law and puts parties like Basin Electric into a position where

they must pursue State remedies to avoid finality under State law but find that such actions mean nothing in the end under the federal process.

Response: EPA disagrees with this comment. Nothing in the CAA sets some sort of "compelling circumstance" standard for disapproval of a SIP. Instead, we have the duty to ensure that regional haze SIP submittals meet the requirements of the Act and the RHR. *See* CAA Section 110(a)(2)(J) (SIP submittals must meet applicable requirements of Part C of title I, including visibility protection). We do not agree that we are prohibited from identifying deficiencies in the Wyoming SIP after the State rulemaking process is complete, and the commenter cites nothing in the Act to the contrary. Furthermore, many of the concerns raised in this action were communicated to the State in our comment letters and in numerous meetings with State officials. With respect to comments we have received from environmental organizations on our proposed action on Wyoming's SIP, the CAA does not require those organizations to participate in state processes.[34] EPA is taking actions specified under the CAA in partially approving and partially disapproving the Wyoming SIP. The CAA also specifies the responsibility of EPA to issue a FIP when states have not met their requirements under the CAA. EPA is promulgating this FIP to fill the regulatory gap created by the partial disapproval. Under the FIP, the State retains its authority to submit future regional haze SIPs consistent with CAA and RHR requirements; we do not discount the possibility of a future, approvable SIP submission that results in the modification or withdrawal of the FIP. This rulemaking does not change the distribution of power between the states and EPA.

[34] In contrast, elsewhere in the Act Congress has made it explicit that participation in state processes is required in order to raise objections with EPA. See CAA section 504(b)(2).

Comment: BART applies to specific emission sources and requires consideration of facts applicable to specific source locations. Unlike a rule, or a SIP generally, a BART determination effectively adjudicates the specific rights and legal obligations of individual emissions sources. This typically entitles individual source owners to substantive procedural rights and remedies under state law when a BART determination is made. In Wyoming, for example, each individual source is required to apply for a BART Permit. Wyoming law affords the source being regulated with special opportunities to be heard, both as part of the public review of a permit application and, in the case of a permit, in an adjudicative hearing with opportunities to challenge factual determinations, call and question witnesses, and present evidence. When an applicant applies for a BART construction permit, the applicant is afforded the opportunity to present its own views and responses to comments to the state agency. If a permit is issued or denied, the applicant can appeal the permit decision to the Environmental Quality Council, which has statutory authority to amend, grant, modify, or deny the permit. Wyo. Stat. Section 35-11-802. This proceeding is conducted as a contested case, affording the applicant the right to cross-examine the Environmental Quality Council's technical experts regarding their BART assumptions and conclusions.

The applicant also can call its own experts and witnesses. Wyo. Dep't of Envtl. Quality Rules and Regulations, Wyo. Admin. Code ENV PP Ch. 2 Sections 1-14. With these procedures, BART permit applicants can challenge the cost estimates and assumptions underlying a BART permit decision, including making a showing, as Basin Electric does here by comment only, that EPA's consultants have ignored critical site-specific conditions.

EPA's effort to impose BART determinations by federal rulemaking impermissibly deprives source owners of these substantive procedural rights afforded under State law. This is

one reason courts have taken a strong stance against EPA imposing specific control technologies through partial approval of a SIP. Leaving site-specific decisions in the hands of the states provides state-sponsored procedural rights for the individually regulated sources. *See Virginia*, 108 F.3d at 1406-10; *Michigan v. Thomas*, 805 F.2d 176, 186 (6th Cir. 1986); *Bethlehem Steel Corp.*, 742 F.2d at 1035-37 (all holding that EPA may not render a state SIP more stringent than intended by the state by partial SIP approval or imposition of control technologies). A BART determination requires consideration of complex, case-specific control technologies and makes fact-dependent determinations for individual named sources, which effectively makes the federal BART determination an administrative order directed specifically at Basin Electric rather than a rule generally applicable to the public. Under these circumstances, EPA cannot order specific emission limits and consequent expensive control technologies without affording Basin Electric a hearing at which it can cross examine EPA's consultants. Basin Electric must also be given an opportunity to challenge EPA's interpretation of the facts. When EPA moves from a quasi-legislative function to a quasi-judicial function, as it has by making fact-based determinations for specific, named sources, it must provide the required procedural protections for those affected by its actions. *See Londoner v. City & Cnty. of Denver*, 210 U.S. 373, 386 (1908) (requiring an agency to provide notice and an adjudicative hearing for individuals suffering specific injury from an agency rule); *compare Amoco Oil Co. v. EPA*, 501 F.2d 722, 734-35 (D.C. Cir. 1974) (agency action was quasi-legislative because it did not rely on "findings of fact" and evidence to make determinations for a single source).

One administrative law expert designated the distinction between rule making and adjudication as "perhaps the most critical distinction in all of administrative law." Gary Lawson,

Federal Administrative Law 10 (American Casebook Series, Thomson-West 4th ed. 2007). It is an important distinction because it separates agency decisions that function as policy from those that make situational determinations. "A plain[] instance of administrative adjudication occurs where an administrative agency at one and the same time makes a rule and applies it to a concrete situation ...The essential difference between legislation and adjudication is not that one looks to the future and the other to the past ... What distinguishes legislation from adjudication is that the former affects the rights of individuals in the abstract and must be applied in a further proceeding before the legal position of any particular individual will be definitely touched by it; while adjudication operates concretely upon individuals in their individual capacity." John Dickinson, *Administrative Justice and the Supremacy of Law in the United States* 16-21 (Harvard University Press 1927), *quoted in* Gary Lawson, *Federal Administrative Law* 10-11(American Casebook Series, Thomson-West 4th ed. 2007).

In the Proposed Rule, EPA makes specific factual findings about individual sources. EPA relies on its expert consultant Andover to draw specific factual conclusions about retrofit construction costs for Laramie River, yet it affords Basin Electric no opportunity to confront its expert over the Andover Report's error-filled findings. In order to provide due process, a specific party like Basin Electric who is singled out and subjected to EPA's fact-based determinations must be allowed "the right to support his allegations by argument however brief[,] and, if need be, by proof, however informal." *Londoner*, 210 U.S. at 386. In the case of Laramie River, the requirement for a hearing is especially strong because "[t]he extent to which procedural due process must be afforded the recipient is influenced by the extent to which he may be 'condemned to suffer grievous loss.'" *Goldberg v. Kelly*, 397 U.S. 254, 262-63 (1970) (citing *Joint Anti-Fascist Refugee Comm. v. McGrath*, 341 U.S. 123, 168 (1951)).

EPA must afford these procedural rights to Basin Electric if EPA is going to assume control over site-specific BART determinations, rather than leave them to the states as Congress intended. Section 169A's directive that BART be determined by the states permits states to afford individual emissions sources the procedural and other rights that due process requires for site-specific regulation, and EPA must afford these same rights to source owners if it is going to federalize the BART program by rejecting all state determinations with which its technical consultants disagree.

Response: EPA disagrees with this comment. EPA's procedures did not deprive Basin Electric of due process. First, the comment confuses the issues by arguing that under State law Basin Electric has "substantive procedural rights" and that EPA's procedures somehow deprived Basin Electric of these. But due process under the Fifth Amendment does not require EPA to give exactly the same process that the State gave. The commenter provides no authority for the existence of something called a state "substantive procedural right" that the United States is bound by the Fifth Amendment to respect.[35] Instead, federal due process protects substantive

[35] The cases cited by the commenter, *Virginia*, 108 F.3d at 1406-10; *Michigan v. Thomas*, 805 F.2d 176, 186 (6th Cir. 1986); *Bethlehem Steel Corp.*, 742 F.2d at 1035-37, lack any reference to a notion of "state substantive procedural rights" or "state-sponsored procedural rights." The opinion in *Virginia* concerns the roles EPA and states play under the Act; the opinion does not discuss due process for owners of individual sources. The opinion in *Michigan*, noting that EPA's action had a rational basis, briefly dismisses a claim that the action violated the due process clause of the Fifth Amendment by discriminating against business and industry. *Michigan*, 805 F.2d at 185 n.1. Although the opinion does not make it explicit, the claim there thus seems to have been equal protection as incorporated into the Fifth Amendment, not procedural due process. *See Bolling v. Sharpe*, 347 U.S. 497 (1954). *Michigan* is not on point. Finally, the dicta in *Bethlehem Steel* speculates that, in the case of a FIP, "EPA might have had to give interested persons an opportunity to submit oral as well as written comments," *Bethlehem Steel*, 742 F.2d at 1032, which EPA did in this case. The dicta, which in any case is not binding, does not say that EPA's experts must be available for cross-examination or that EPA is bound by state procedures or that the Fifth Amendment to the U.S. Constitution recognizes state "substantive procedural rights."

fundamental rights and procedural rights if the claimant has a constitutionally protected life, liberty, or property interest. *See* U.S. Const., Amend. V ("nor be deprived of life, liberty, or property, without due process of law"). That the comment attempts to make a state procedure into a constitutionally protected interest by calling it a "substantive procedural right" is of no avail; the comment identifies no attribute of the state procedure that makes it into a constitutionally protected "life, liberty, or property" interest under either the text of the Fifth Amendment or the case law interpreting that Amendment. *See Cleveland Bd. Of Educ. v. Loudermill*, 470 U.S. 532, 541 (1985) ("[T]he Due Process Clause provides that certain substantive rights—life, liberty, and property—cannot be deprived except pursuant to constitutionally adequate procedures. The categories of substance and procedure are distinct."). Nor does Basin Electric have a protected interest in the *outcome* of the State BART permit process. There is no "legitimate claim of entitlement" to that outcome, *Board of Regents of State Colleges v. Roth*, 408 U.S. 564, 577 (1972), as the State's BART determination was always subject to review by EPA under the CAA. In the end, what the Fifth Amendment does potentially protect is Basin Electric's property interest itself, not the State procedure. As we now explain, EPA's procedures were sufficient to satisfy the requirements of due process with respect to Basin Electric's property interest.

CAA section 307(d) specifies the procedures that EPA is required to follow in promulgating a FIP. Section 307(d) does not require adjudicatory hearings, nor does it require EPA to allow for cross-examination of EPA's consultants.[36] Additionally, the Administrative Procedure Act only requires adjudicatory hearings if a particular statute specifies that a rule must

[36] *See* 42 U.S.C. 7607(d)(5).

be made "on the record after an opportunity for an agency hearing."[37] No such requirement is contained in section 307(d).[38] The Supreme Court has explained that courts face an extremely high burden in order to impose additional procedures beyond those specifically required by statute because "unwarranted judicial examination of perceived procedural shortcomings of a rulemaking proceeding can do nothing but seriously interfere with that process prescribed by Congress."[39] EPA followed the procedures required by Congress in the CAA and EPA believes that no additional proceedings are warranted.

Moreover, Congress specifically contemplated and rejected a cross-examination requirement for public hearings in section 307.[40] The House bill contained an opportunity to cross-examine those who made oral presentations at the public hearing. During Conference Committee, this was deleted and replaced with a requirement that the rulemaking record remain open for thirty days after public hearing to allow interested parties to submit rebuttal and supplemental information.[41]

The comment cites *Goldberg v. Kelly*, 397 U.S. 254, 262-63 (1970) and argues that Basin Electric, like the welfare recipient in *Goldberg*, has an especially strong claim to an evidentiary hearing prior to EPA's final rulemaking because Basin Electric may be "condemned to suffer grievous loss." The comment fails to explain why the private interest of Basin Electric here is identical to the *Goldberg* welfare recipient's private interest in an evidentiary hearing before the termination of welfare benefits. The comment also does not examine the factors set out in

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[37] *See* 5 U.S.C. 553(c); *see also U.S. v. Allegheny-Ludlum Steel Corp.*, 406 U.S. 742, 757 (1972).
[38] *See* 42 U.S.C. 7607(d)(5); *see also Anaconda Co. v. Ruckelshaus*, 482 F.2d 1301, 1306 (10th Cir. 1973).
[39] *Vermont Yankee Nuclear Power Corp. v. Natural Res. Def. Council, Inc.*, 435 U.S. 519, 548 (1978).
[40] *Kennecott Corp. v. EPA*, 684 F.2d 1007, 1020 (D.C. Cir. 1982).
[41] *See* H.R. Rep. No.95-564, 95th Cong. (1977).

Mathew v. Eldridge, 424 U.S. 319 (1976),[42] for determining what due process requires, and so does not provide any reason for EPA to think that the procedures here were inadequate. In particular, the comment provides no basis to think that EPA's procedures created a serious "risk of an erroneous deprivation" of Basin Electric's interest and that there would be any "probable value" to cross-examination. With respect to the alleged errors referred to in the comment, Basin Electric has made its arguments as to why they are errors and EPA has responded why they are not. If Basin Electric thinks EPA's responses are inadequate, then Basin Electric may seek judicial review of EPA's action under section 307(b) of the Act. The risk of erroneous deprivation appears small, and Basin Electric's comment gives no reason to think otherwise. Basin Electric's comment also does not identify any particular value to cross-examination in this context. As the comment admits, the matters here are ones of technical judgment; they are not (for example) eyewitness accounts that might benefit from cross-examination.

EPA also notes that the comment fails to discuss "the Government's interest, including … the fiscal and administrative burdens" that cross-examination would entail. *Eldridge* alternatively identified this third factor as "the public interest." *Eldridge*, 424 U.S. at 347. In considering the burdens imposed by a full adjudicatory hearing on the Government and the public, the Tenth Circuit Court of Appeals stated (albeit before *Eldridge*, so not in the context of applying the *Eldridge* factors):

[42] "[I]dentification of the specific dictates of due process generally requires consideration of three distinct factors: First, the private interest that will be affected by the official action; second, the risk of an erroneous deprivation of such interest through the procedures used, and the probable value, if any, of additional or substitute procedural safeguards; and finally, the Government's interest, including the function involved and the fiscal and administrative burdens that the additional or substitute procedural requirement would entail." *Eldridge*, 424 U.S. at 335.

> Unending procedure could be produced by an adjudicatory hearing. This could bring about unending delay which would not only impede but completely stifle congressional policy. We do not, of course, condemn the trial court's concern for the rights of [the petitioner]. Those rights are important and the court should be sensitive to them, but those rights are not of such magnitude as to overcome congressional policy and the rights of the remainder of the community.

Anaconda Co. v. Ruckelshaus, 482 F.2d 1301, 1307 (10th Cir. 1973). The comment gives EPA no reason to think otherwise.

With respect to the comment's invocation of the *BiMetallic-Londoner* distinction between rulemaking and adjudication, it is not clear that *Londoner* applies here, where the interests of many parties are at stake. *See Anaconda*, 482 F.2d at 1306 ("The fact that Anaconda alone is involved is not conclusive on the question as to whether the hearing should be adjudicatory, for there are many other interested parties and groups who are affected and are entitled to be heard. So the guidelines enunciated by Mr. Justice Holmes in *Bi-Metallic Investment Co. v. State Board of Equalization* are not applicable.") (citation omitted). Even if the distinction does apply, due process does not *per se* require a full adjudicatory hearing. As the comment admits, what due process does require is that a person "have the right to support his allegations by argument, however brief: and, if need be, by proof, however informal." *Londoner v. City & Cnty. of Denver*, 210 U.S. 373, 386 (1908). Thus the "core of due process is the right to notice and a meaningful opportunity to be heard."[43] With respect to whether a full evidentiary hearing is required, "differences in the origin and function of administrative agencies preclude wholesale transplantation of the rules of procedure, trial, and review which have evolved from

[43] *LaChance v. Erickson*, 522 U.S. 262, 266 (1988).

the history and experience of courts. The judicial model of an evidentiary hearing is neither a required, nor even the most effective, method of decision making in all circumstances." *Eldridge*, 424 U.S. at 348 (citations and quotations omitted).

EPA believes Basin Electric was afforded a meaningful opportunity to be heard and present evidence to EPA in support of its position. EPA notified the public of its proposed rule, held a public hearing, and accepted public comments for a period of 60 days.[44] In an effort to provide a greater opportunity for public comment on the proposed rule, EPA held two additional public hearings and extended the comment period to 75 days, which goes beyond the procedures required by the CAA.[45] Basin Electric submitted extensive comments prior to the first comment deadline, participated in two public hearings, and submitted additional comments during the extended public comment period.[46] Basin Electric took full advantage of its opportunity to be heard and was not denied due process.

Comment: Section 169A requires the State to take into consideration five different factors when making its BART determination. 43 U.S.C. 7491(g)(2). But these factors "were meant to be considered together" to arrive at a *single* judgment committed to the State: a BART emission

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[44] Implementation Plans; Approvals, Disapprovals and Promulgations: Wyoming; Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze June 10, 2013 Docket EPA-R08-OAR-2012-0026-0093.

[45] Air Quality State Implementation Plans; Approvals, Disapprovals and Promulgations: Wyoming; Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze; Public Hearings Jul. 8, 2013 Docket EPA-R08-OAR-2012-0026-0098; s*ee* 42 U.S.C. 7607(d)(5).

[46] Basin Electric Power Cooperative Comments, Aug. 6, 2013 Docket EPA-R08-OAR-2012-0026-0058; Public Comment from Basin Electric Email Aug. 9, 2013 Docket EPA-R08-OAR-2012-0026-0148; Transcript from July 26, 2013 Hearings in Casper, Wyoming Aug. 8, 2013 Docket EPA-R08-OAR-2012-0026-0108 pp. 48-83; Transcript from June 24, 2013 Hearings in Cheyenne, Wyoming Aug. 15, 2013 Docket EPA-R08-OAR-2012-0026-0100 pp. 62-67; Additional Public Comment from Basin Electric Laramie River Station BART CALPUFF Modeling Analysis Aug. 26, 2013 Docket EPA-R08-OAR-2012-0026-0227.

limit. *American Corn Growers*, 291 F.3d at 6. Moreover, only Wyoming - not EPA - is entitled to determine the weight and significance to assign costs, feasibility, and visibility improvements. 70 FR 39123 ("The State makes a BART determination based on the estimates available for each criterion, and as the CAA does not specify how the State should take these factors into account, the States are free to determine the weight and significance to be assigned to each factor."); *see also* 40 CFR Part 51, App. Y, Section IV.D.5.

By applying a different assessment of costs and visibility than those employed by Wyoming in its BART determination, and assuming that these assessments mandate a different BART outcome, EPA's proposed FIP rejects the State's determinations on cost, feasibility, and visibility improvement without considering whether, taken together, the five statutory factors would compel a different result than the one reached by Wyoming. The net result is a decision imposing a different BART choice than that selected by the State by splitting the statutory factors and giving them separate and independent determinative significance - the same legal error EPA made in *American Corn Growers*. The "splitting of the statutory factors is consistent with neither the text nor the structure of the statute." 291 F.3d at 6.

Wyoming must therefore be afforded an opportunity to reconsider its BART determination before EPA imposes a FIP. This is necessary to preserve State primacy in the BART determination. States "determine what is too costly (and what is not) for a particular source." *Am. Corn Growers*, 291 F.3d at 6-7. The actual BART determination flows not from any one of the statutory factors, but instead from consideration of all of them together. That is why it is erroneous for EPA to impose its own BART choice without explaining how it reached that choice upon consideration of all five statutory factors. If EPA acts to correct alleged errors in the State's cost assessment or visibility modeling, EPA must remand the statutory evaluation

back to the State. Section 110(c) contemplates that States should be given an opportunity to correct any "deficiencies," and this statutory opportunity should not be taken from the State as a result of self-imposed consent decree deadlines. Doing so destroys State primacy in the BART determination.

It also results in a BART determination from EPA that is not informed and explained by an independent assessment of the five statutory factors. EPA's failure to remand the BART determination back to the State therefore results in neither the State nor EPA making a BART assessment that considers all of the statutory factors together. While Basin Electric acknowledges that the Tenth Circuit Court of Appeals recently reached a different conclusion in *Oklahoma v. EPA*, 723 F.3d 1201 (10th Cir. 2013), that case is not yet final and that Court was not presented with, and did not consider, the fundamental problem associated with EPA's effort to make one of the five statutory factors outcome determinative. EPA cannot cause an outcome in which no agency has actually complied with the statute, which is what happens when EPA simultaneously disapproves the State's BART assessment on one or two statutory factors and then imposes a different BART assessment based upon cost and visibility factors combined with the State's prior consideration of the other factors, as EPA does here. This is not a procedural error, but rather an error that results in no agency - neither the State nor EPA - actually complying with the statute by considering all five statutory factors together before arriving at a BART emission limit.

Response: EPA does not agree with this comment. The RHR and the BART Guidelines allow the reviewing authority (State, Tribe, or EPA) the discretion to determine how to weigh and in what order to evaluate the statutory factors (cost of compliance, the energy and non-air quality environmental impacts of compliance, any existing pollution control technology in use at the

source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology), as long as the reviewing authority justifies its selection of the "best" level of control and explains the CAA factors that led the reviewing authority to choose that option over other control levels.[47] In this action, having disapproved the State's BART determinations for NO_X at five units, "all of the rights and duties that would otherwise fall to the State accrue instead to EPA."[48] This includes a significant degree of discretion in deciding how to weigh the five factors, so long as that weighing is accompanied by reasoned explanation for adopting the technology selected as BART, based on the five factors, and in accordance with the BART Guidelines. EPA has provided a detailed explanation of our BART evaluation process and five-factor analyses in our proposal, and elsewhere in this final notice. We have weighed the potential energy and non-air environmental quality impacts of the various control options along with the other statutory factors in our BART analyses. We have not, as the commenter surmises, approved the State's assessment of certain factors and disapproved the assessment of others, replacing just the factors we have disapproved. Instead, for those NOx BART determinations we are disapproving, we have disapproved them in their entirety. Then EPA independently assessed and weighed the five factors. That we adopted the State's assessment of certain factors as our own does not change this. Thus the split in authority that the commenter suggests simply has not occurred.

We also disagree that our proposal is inconsistent with the *American Corn Growers* decision. In *American Corn Growers*, the petitioners challenged the original RHR because, among other things, the RHR treated one of the five statutory factors differently than the others

[47] See BART Guidelines, 40 CFR Part 51, appendix Y, section IV.E.2.
[48] Central Arizona Water Conservation Dist. v. EPA, 990 F.2d 1531, 1541 (9th Cir. 1993).

by requiring states to consider the degree of visibility improvement from imposing BART on a group of sources rather than on a source-specific basis.[49] The court concluded that such a requirement could force states to apply BART controls at sources without evidence that the individual sources contributed to visibility impairment at a Class I area, which encroached on states' primary authority under the regional haze provisions to determine which individual sources are subject to BART and what BART controls are appropriate for each source.[50] Therefore, the court vacated the visibility improvement part of the original RHR as contrary to the statute.[51] Contrary to some commenters' suggestions, however, the *American Corn Growers* decision did not address EPA's authority to reject a state's BART determinations for failure to conform to the CAA, the RHR, or the BART Guidelines.

Finally, as explained elsewhere in this final rule, we have the authority to promulgate a FIP concurrently with a disapproval action.

Comment: EPA's FIP is subject to APA review. Accordingly, it cannot withstand judicial scrutiny if it is arbitrary, capricious, an abuse of discretion, or not in accordance with the law. S*ee* 5 U.S.C. 706(2)(A); *Olenhouse*, 42 F.3d at 1574. More generally, a court will set it aside "if the agency relied on factors which Congress has not intended for it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise." *State Farm*, 463 U.S. at 43.

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[49] 291 F.3d at 5-9.
[50] Id. at 7-8.
[51] EPA revised the RHR to address the court's decision in *American Corn Growers* at the same time as we promulgated the BART Guidelines. 70 FR 39104 (July 6, 2005). The revised RHR and the Guidelines were upheld by the D.C. Circuit in *Utility Air Regulatory Group v. EPA*, 471 F.3d 1333 (D.C. Cir. 2006).

A court reviewing agency action under the APA must "ascertain whether the agency examined the relevant data and articulated a rational connection between the facts found and the decision made." *Olenhouse*, 42 F.3d at 1574 (citing *State Farm*, 463 U.S. at 43) (footnote omitted). A reviewing court also must review the agency's explanation to "determine whether the agency considered all relevant factors and whether there has been a clear error of judgment." *Id.* (citing, *inter alia*, *Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402, 416 (1971)). The court "'should not attempt itself to make up for ... deficiencies'" in the agency's reasoning and "may not supply a reasoned basis for the agency's action that the agency itself has not given." *Id.* at 1574-75 (quoting *State Farm*, 463 U.S. at 43) (emphasis removed).

As a result, "'an agency's action must be upheld, if at all, on the basis articulated by the agency itself," and "the grounds upon which the agency acted must be clearly disclosed in, and sustained by, the record." *Id.* at 1575 (quoting *State Farm*, 463 U.S. at 50). In its decision, "[t]he agency must make plain its course of inquiry, its analysis and its reasoning." *Id.* Moreover, its action must be "supported by the facts in the record." *Id.* This means the action must be supported by "substantial evidence," *i.e.*, "'enough to justify, if the trial were to a jury, a refusal to direct a verdict when the conclusion to be drawn is one of fact.'" *Id.* (citation omitted). In addition to providing a basis for invalidating the agency action, an agency's failure to fully explain and support its reasoning warrants a court's grant of less deference to the agency's decisions. *See, e.g.*, *Achernar Broad. Co. v. FCC*, 62 F.3d 1441, 1447 (D.C. Cir. 1995) ("no deference is due when the agency has stopped shy of carefully considering the disputed facts"); *NLRB v. P*I*E Nationwide, Inc.*, 923 F.2d 506, 518 n.16 (7th Cir. 1991) ("deference given to an agency is not granted freely, it is purchased; the agency must exercise its touted expertise and "explain the rationale and factual basis for its decision") (citation omitted).

Although a court generally will defer to an agency's experts when the agency acts within its area of expertise, a court will not do so and will invalidate the agency's action where its expert's decisions were arbitrary and capricious. *See, e.g.*, *Garvey*, 256 F.3d at 1036 (agencies can rely on their own experts only "so long as their decisions are not arbitrary and capricious") (citation omitted). *See also NetCoalition v. SEC*, 615 F.3d 525, 539 (D.C. Cir. 2010) ("[W]e do not defer to the agency's conclusory or unsupported suppositions.") (citation omitted); *Brower v. Evans*, 257 F.3d 1058, 1067 (9th Cir. 2001) ("The deference accorded to an agency's scientific or technical expertise is not unlimited. The presumption of agency expertise can be rebutted when its decisions, while relying on scientific expertise, are not reasoned.") (citation omitted); *Nat. Resources Defense Council*, 725 F.2d at 768, 771 (the court owed EPA no deference where the agency "complete[ly] fail[ed] to consider the criteria that should inform [its decision]"). Similarly, an agency can rely on a model "only so long as it 'explains the assumptions and methodology used in preparing the model' and 'provides a complete analytical defense' should the model be challenged." *Appalachian Power Co. v. EPA*, 249 F.3d 1032, 1052 (D.C. Cir. 2001) (citation and brackets omitted). *See also Sierra Club v. Costle*, 657 F.2d 298, 333 (D.C. Cir. 1981) (although computer modeling undoubtedly "is a useful and often essential tool," an "agency must sufficiently explain the assumptions and methodology used in preparing the model" and must "provide a complete analytic defense of its model (and) respond to each objection with a reasoned presentation") (internal quotation marks omitted), *rev'd on other grounds*, 463 U.S. 680 (1983); *id.* (there must be "a rational connection between the factual inputs, modeling assumptions, modeling results and conclusions drawn from these results"). Here, in promulgating its FIP, EPA was required to do the same thing Wyoming did: determine BART by "tak[ing] into consideration" the five statutory factors, including the costs of

compliance, the energy and non-air quality environmental impacts of compliance, any existing pollution control technology in use at the source, the remaining useful life of the source, and the degree of improvement in visibility that may reasonably be anticipated to result from the use of the technology. CAA Section 169A(g)(2), 42 U.S.C. 7491(g)(2). As the D.C. Circuit explained in *American Corn Growers*, "the factors were meant to be considered together" in determining BART, as "[t]he language of section 169A(g)(2) can be read in no other way." 291 F.3d at 6.

Accordingly, in order to comply with the CAA and withstand APA review, EPA must fully explain how it assessed and weighed the five BART factors together, and it must support that explanation with record facts. EPA has failed to do so. Additionally, the same regulations EPA promulgates for state BART determinations must also apply to BART determinations made by EPA. *See* CAA Section 169A(b)(2)(A), 42 U.S.C. 7491(b)(2)(A). Indeed, it would be arbitrary and capricious for EPA to require a state to follow certain specific guidelines in making a BART determination, yet to not itself follow those same guidelines in making that same determination after taking it out of the state's hands. Moreover, EPA has suggested that the BART Guidelines and Cost Manual are mandatory provisions that must be followed in order to comply with the CAA.

Response: We disagree with this comment. As detailed elsewhere in this document and documented in the supporting record, EPA applied the BART statutory factors and BART Guidelines to each and every BART unit that is covered under this rulemaking; fully considered all significant comments submitted on the proposed notices and incorporated those comments as appropriate; provided basis for the decisions; applied models that are specified in the BART Guidelines (thus, the opportunity for commenters to challenge the specified models has long passed); developed and provided detailed explanations regarding EPA's model inputs and

settings; and rationally applied the modeling results to the final determinations in applying the BART and reasonable progress factors. The comment does not identify any deficiency in any portion of this.

Comment: Wyoming developed a SIP that established reasonable progress toward meeting the national goal for regional haze as required under the CAA Section 169A(a)(1). EPA's establishment of a 2064 goal and glide path requires incremental visibility improvement for successive planning periods. EPA also clearly explains in these requirements that the glide path and 2064 target date are not binding. This provides considerable latitude to the individual states that are responsible to develop a regional haze SIP that makes reasonable progress in a way that works to achieve the visibility goals over time.

The State developed and submitted a plan that would make substantial progress in reducing haze at the affected Class I areas. The State followed the process in the EPA's Regional Haze Guidelines, yet because it came to a different conclusion than EPA, the plan was rejected and replaced with EPA's FIP.

By rejecting the State's reasonable approach, EPA has ignored its own requirements and guidance. EPA's issuance of a FIP not only ignores the flexibility and authority granted the State, it also ignores EPA's guidance for establishing reasonable control requirements.

Response: EPA disagrees with this comment. While the RHR does not require states to achieve the URP, when a state's selected RPGs do not meet the URP, the state must demonstrate, based on the four reasonable progress factors, that meeting the URP is not reasonable and that the selected RPGs are reasonable. 40 CFR 51.308(d)(1)(ii). As discussed elsewhere, the State did not appropriately consider the four reasonable progress factors for Dave Johnston Units 1 and 2, and to the extent that the State relied on its BART determinations to show reasonable progress

for those sources, we have disapproved some of those BART determinations. While the comment states that EPA "ignored its own requirements and guidance," the comment does not cite any particular requirement that EPA purportedly violated.

Comment: The EPA proposal is deficient in large measure because the EPA has identified what it views as deficiencies in the Wyoming SIP and, rather than ordering reconsideration of all relevant factors with improved data, has created a FIP that suffers from analytical errors and arrogates the EPA's role in development and review of SIPs. If the EPA was convinced Wyoming's cost estimates were in error, it should have directed corrections, rather than substituting other flawed data and its own judgment. Indeed, it is apparent the EPA is not committed to maintaining the CAA's deference to states' authority to formulate workable haze plans. Otherwise, the EPA would have required Wyoming to correct perceived cost estimate errors and subsequently reevaluate BART factors. The EPA instead, substituted its own errors and performed its own evaluation in pursuit of its own goals.

Another commenter argued that EPA should not impose a FIP until it has issued a final rule disapproving the Wyoming regional haze SIP. 42 U.S.C. 7410(c)(1)(B). EPA should first conduct a rulemaking and take public comment on the Wyoming regional haze SIP submission, issue its determination on the regional haze SIP, and then seek input from the State. (*See* 42 U.S.C. 7410(c)(1)(B); *see also* 42 U.S.C. 7607(d)(B) (rulemaking provisions apply to "the promulgation or revision of an implementation plan by the Administrator under section 7410(c)") Otherwise, EPA removes the State from its assigned role as the one determining BART.

The facts here illustrate this problem. EPA initially agreed with Wyoming's BART determinations for Naughton Units 1 and 2, and Dave Johnston Unit 3. EPA then reversed itself,

supposedly on the basis of new cost and visibility information. Without offering Wyoming any chance to review the new information and issue a new BART determination, EPA disapproved Wyoming's BART determination for these units, and instituted new BART determinations for these units through a regional haze FIP. EPA's failure to provide Wyoming an opportunity to review this new information, and address it through a revised BART determination, violates the applicable CAA statutes.

The CAA defines a FIP as a plan (or portion thereof) promulgated by the (EPA) Administrator to fill all or a portion of a gap or otherwise correct all or a portion of an inadequacy in a SIP. 42 U.S.C. 7602(y). Until EPA first assesses the Wyoming regional haze SIP, develops a proposed rule to approve or disapprove the Wyoming regional haze SIP, solicits and receives public comment on that proposed rule, considers the comments and information, and takes final action on whether (and to what extent) to approve the Wyoming SIP, EPA cannot know whether there is a "gap" in the Wyoming regional haze SIP that needs to be filled or whether (and to what extent) there is an "inadequacy" in the Wyoming regional haze SIP that needs to be corrected. *Id.* Moreover, EPA's failure to obtain public comments prior to proposing a regional haze FIP deprives Wyoming of an opportunity to correct any "deficiencies" identified by EPA. Here, where EPA claims to have obtained new cost and visibility information but did not allow Wyoming an opportunity to review and act on the new information, EPA's final determination regarding the Wyoming regional haze SIP ignores the State's authority under the CAA (including the regulatory programs implicated by CAA Section169A) to design and implement plans to control air pollution control within its borders. (*See* 42 U.S.C. 7401(a)(3).) Therefore, EPA illegally seeks to impose its regional haze FIP and should withdraw the same.

Earlier comments argued that EPA cannot impose a regional haze FIP until it has issued a final rule disapproving Wyoming's regional haze SIP. 42 U.S.C. 7410(c)(1)(B) mandates that disapproval of all or part of a SIP is a prerequisite to promulgation of a FIP. EPA must first conduct a rulemaking and take public comment on Wyoming's regional haze SIP submission, issue its determination on the regional haze SIP, and then proceed, or not, with promulgation of a regional haze FIP. (See 42 U.S.C. 7410(c)(1)(B); see also 42 U.S.C. 7607(d)(B) (rulemaking provisions apply to "the promulgation or revision of an implementation plan by the Administrator under section 7410(c)")

Response: We disagree with this comment. We have the authority to promulgate a FIP concurrently with a disapproval action. Nowhere in the CAA is there language that limits EPA's authority to simultaneously propose a FIP and propose disapproval of a state's SIP where there has been a prior finding of a failure to submit. This timing for FIP promulgation is authorized under CAA section 110(c)(1). As has been noted in past FIP promulgation actions, the language of CAA section 110(c)(1), by its terms, establishes a two-year period within which we must promulgate the FIP, and provides no further constraints on timing. *See, e.g.*, 76 FR 25178, at 25202. Wyoming failed to submit the 40 CFR 51.309(g) plan elements by December 17, 2007, as required under the CAA and our implementing regulations. Two years later, Wyoming still had not submitted these required plan elements. When we made the finding in 2009 that Wyoming had failed to submit these regional haze SIP elements (*see* 74 FR 2392), that created an obligation for us to promulgate a FIP by January 2011. We are exercising our discretion to promulgate the FIP concurrently with our disapproval action because of the applicable statutory deadlines requiring us at this time to promulgate regional haze BART determinations to the extent Wyoming's BART determinations are not approvable. In these concurrent SIP/FIP

actions, if comments or other information cause us to reconsider portions of our proposed disapproval, and instead approve additional portions of Wyoming's SIP, we can readily adjust our FIP accordingly by not finalizing the FIP portions that are no longer needed, as, indeed we are doing in this case. Thus, the supposed procedural problem the comment identifies simply does not exist.

With respect to the argument that the CAA requires EPA, before promulgating a FIP, to give additional opportunities to Wyoming to address the deficiencies that EPA has identified, in fact the opposite is true. Under section 110(c)(1) of the CAA, EPA must promulgate a FIP within 2 years of a finding of failure to submit a required SIP submittal. As explained above, the requirement for a FIP promulgation in today's action was triggered by a finding published on January 15, 2009 (74 FR 2392), that Wyoming (among other states) had failed to make a submittal to address the requirements of 40 CFR 51.309(g). Thus, EPA had an obligation to promulgate a FIP for the requirements of 40 CFR 51.309(g) by January 15, 2011, unless the State submitted and EPA approved a SIP addressing the deficiency. Although we are approving portions of Wyoming's SIP that meet the requirements of 51.309(g), we are disapproving other portions and, therefore, are still under an obligation to promulgate a FIP for those portions. In considering a similar argument to that made by the commenter, the Tenth Circuit Court of Appeals has stated:

> Once the EPA issued findings that Oklahoma failed to submit the required SIP under the Regional Haze Rule, the EPA had an obligation to promulgate a FIP. The statute itself makes clear that the mere *filing* of a SIP by Oklahoma does not relieve the EPA of its duty. And the petitioners do not point to any language that requires the EPA to delay its promulgation of a FIP until it rules on a proposed SIP. As the EPA points out, such a rule

> would essentially nullify any time limits the EPA placed on states. States could forestall the promulgation of a FIP by submitting one inadequate SIP after another.

Oklahoma v. EPA, 723 F.3d 1201, 1223 (10th Cir. 2013).

Finally, as explained elsewhere, under the FIP, the State retains its authority to submit future regional haze SIPs consistent with CAA and RHR requirements; which may result in the modification or withdrawal of the FIP.

Comment: The CAA and the RHR provide substantial discretion to states to determine how best to make reasonable progress toward achieving natural visibility conditions in designated areas. Reasonable progress-the touchstone of the regional haze program-is a flexible benchmark. *See* 42 U.S.C. 7491(g)(1). In recognition of this overarching flexibility and the need to account for local conditions, Congress directed EPA to allow states discretion in how they determine the BART for improving visibility. *Id.* Section 7491(b)(2)(A); *Am. Corn Grower Ass 'n* v. *EPA,* 291 F.3d 1, 8 (D.C. Cir. 2002) ("Congress intended the states to decide which sources impair visibility and what BART controls should apply to those source."); *see also* 40 CFR 51.308(e)(1)(ii)(A).

Against this backdrop of state discretion, the CAA requires SIPs to include: generally, "such emission limits, schedules of compliance and other measures as may be necessary to make reasonable progress toward meeting the national goal [of natural visibility conditions in national parks and wilderness areas]," 42 U.S.C. 7491(b)(2); "a long-term (ten to fifteen years) strategy for making reasonable progress toward meeting the national goal," *id.* Section 7491(b)(2)(B); and more specifically, a plan for particular sources to "procure, install, and operate, as

expeditiously as practicable (and maintain thereafter) the best available retrofit technology," *id.* Section 7491(b)(2)(A).

Response: The CAA gives states substantial but not unfettered discretion in determining BART and reasonable progress. We have already largely addressed the assertions in this comment in our responses to comments on our legal authority. Furthermore, as a hypothetical example, EPA would not defer to a state determination that the remaining useful life of a source is one year if relevant evidence indicates the remaining useful life is 20 years. Limits on state discretion are inherent in the CAA and our regulations; otherwise, states would be free to reach decisions that are arbitrary and capricious or inconsistent with the purpose behind the CAA and EPA's regulations. As we have stated, while we have approved much of Wyoming's SIP submittal, those elements which we have disapproved and for which we are finalizing a FIP thwart the goals stated by Congress in CAA section 169A and underlying the RHR. Those statutory and regulatory provisions cannot be simply dismissed under the mantle of state discretion.

Comment: On May 28, 2009, Wyoming published its BART application analyses for the PacifiCorp and Basin Electric facilities subject to BART. Wyoming solicited public comments on the analyses and to that end held public hearings. EPA commented on Wyoming's analyses on August 3, 2009. EPA was fully aware of Wyoming's BART proposals, but, at that time EPA gave no indication that Wyoming's BART proposals violated the CAA or were unreasonable.

Both PacifiCorp and Basin Electric ultimately challenged Wyoming's BART determinations before the Wyoming Environmental Quality Council. *See* Appeal & Pet. for Review of BART Permits, *In re BART Permit Nos. MD-6040 and MD-6042,* No. 10- 2801 (Wyo. Envtl. Quality Council Feb. 26, 2010) (PacifiCorp Petition); Appeal & Pet. for Review, *In re Basin Electric Power Coop.,* No. 10-2802 (Wyo. Envtl. Quality Council March 8, 2010)

(Basin Petition). The Environmental Quality Council is an independent administrative body charged with adjudicating issues arising under Wyoming environmental law, including BART determinations. *See* Wyo. Stat. Ann. Sections 35-11-111, 112.

Both Basin Electric and PacifiCorp served their petitions for review on EPA Region 8. EPA was again fully apprised of Wyoming's final BART decisions, as well as the appeals of those decisions. EPA elected not to participate in those proceedings, and, again, provided no indication that EPA viewed Wyoming's BART decisions as invalid.

After filing motions for summary judgment, PacifiCorp and Basin Electric both ultimately settled their litigation with the State. The Environmental Quality Council approved the settlements after providing an opportunity for public comment. EPA did not comment on the settlement agreements. Because no aggrieved person appealed the Council's decision approving the settlements, the permit decisions became final by operation of law. Wyoming therefore incorporated the BART permits into its SIP.

Years later, when EPA proposed action on Wyoming's SIP, EPA raised for the first time its disagreement with the BART decisions that PacifiCorp, Basin, and Wyoming had already litigated to conclusion. Because EPA had the opportunity to participate in the litigation and elected not to, EPA is now precluded from collaterally attacking those permit decisions. *See, e.g., ADEC,* 540 U.S. at 490 n.14. To conclude otherwise - that EPA can forgo participation in state adjudications only to later attack the conclusions of those state processes - is to give EPA the power to nullify state court judgments. *Id.* at 1015 (Kennedy, J., dissenting). Congress did not intend to so empower EPA to turn federalism on its head through the regional haze program.

Response: EPA disagrees with this comment. First, the comment does not identify any way in which EPA is precluded from exercising its authority and duty under the CAA to ensure that SIP

submittals meet the requirements of the Act. The notion that a state BART determination is insulated from the requirements of the Act merely because the state has an administrative appeal process is contrary to the Act itself as well as the Supremacy Clause of the U.S. Constitution. Had Congress wanted to require EPA to participate in state rulemaking or permit processes, Congress would have explicitly stated this in the Act. With respect to the *ADEC* dissent, it is just that, a dissent. Even if the dissent were somehow relevant, EPA is not nullifying a state court judgment. The Wyoming Environmental Quality Council is not within the State judicial branch. It is an executive agency. The members are appointed by the Governor and serve at the Governor's pleasure. See Wyo. Stat. Ann. Section 35-11-111(a) ("Council members shall be appointed by the governor with the advice and consent of the senate. The governor may remove any council member as provided in W.S. 9-1-202."); Section 9-1-202(a) ("[A]ny person may be removed by the governor, at the governor's pleasure, if appointed by the governor to serve … as a member of a state board or commission.").

Furthermore, EPA's comments to Wyoming on its proposed SIP and BART permits, which are in the docket for this action, emphasized that we would only come to a final conclusion regarding the adequacy of Wyoming's BART determinations when we acted on Wyoming's regional haze SIP revision, through public notice and comment rulemaking. While we may have been silent on some issues, silence from the EPA does not signify implicit approval. Any lack of participation by the EPA in the state administrative appeal proceeding or failure to register an objection to the settlement agreement is not an indication that a state's proposed BART determination will be approved following its submittal as part of a larger regional haze SIP, as discussed in greater detail elsewhere in this document. Wyoming is required to adopt a final BART determination as part of its regional haze SIP. As explained

elsewhere in this document, once a state submits a SIP to the EPA, we are authorized to approve, partially approve, or disapprove the SIP, and we have the duty to assure that the SIP submittal complies with the requirements of the Act. The statutory scheme explicitly provides for this.

Alaska Dept. of Environmental Conservation v. Environmental Protection Agency, 540 U.S. 461 (2004) concerned EPA's response to ADEC's issuance of a permit to a mine that provided, as BACT, unreasonably low NO_x controls. Accordingly, EPA issued three orders prohibiting ADEC from granting the permit unless it satisfactorily documented its reasoning behind its BACT determination. The Ninth Circuit held the three orders were a proper exercise of EPA's authority and discretion. The Supreme Court affirmed. EPA agrees with the commenter that EPA made representations to the Court stating the need to accord "appropriate deference" to states' determinations. EPA also agrees that we made the representation that we have never asserted our authority to override a state-court judgment, and therefore, the fear that EPA will threaten state courts' independence is unfounded.

While EPA did make these representations, these representations are not inconsistent with EPA's decision to disapprove Wyoming's BART determination for Laramie River Station. As explained above, we are not overriding a state-court judgment. Furthermore, the notion that a state administrative appeal process can insulate a BART determination from federal requirements itself "turns federalism on its head." *See* U.S. Constitution, Art. VI, cl. 2 (supremacy clause).

In this instance, some of Wyoming's BART determinations were unreasonable in terms of cost effectiveness and other factors as detailed elsewhere in this document (detailed descriptions of the cost assumption are described in the comments specific to the units elsewhere

in this document).[52] Finding Wyoming's BART determinations to be unreasonable is a "restrained and moderate" use of EPA's statutory authority. *See* 540 U.S. at n.14. Following EPA's issuance of orders to ADEC for failing to establish a reasonable BACT, the Court noted, "Only when a state agency's BACT determination is 'not based on a reasoned analysis'… may EPA step in to ensure that the statutory requirements are honored." 540 U.S. 461, 490. In the case of Wyoming's BART determinations, EPA adhered to a similar role. Upon finding some of Wyoming's BART determinations unreasonable, EPA disapproved those determinations and proposed an alternative standard.

EPA continues to acknowledge the importance of significant deference to state authorities regarding their BART determinations since they are in the best position to make these determinations given their close familiarity with the unique characteristics of their particular area. This structure encourages cooperative federalism, a principle that underlies the CAA. However, this "initial responsibility" does not permit the state to make unreasonable BART determinations. *See* 540 U.S. at 464. EPA is not using its authority to disapprove part of a state's SIP as a way to override legitimate administrative litigation reached under state law. Rather, we are enforcing a requirement of the CAA concerning anthropogenic impairment of visibility by ensuring that reasonable BART controls are considered. State adjudicative processes are not threatened because states are free to use these processes to reach their own BART determination, provided that this determination is reasonable and consistent with the CAA.

[52] As explained elsewhere in this document, EPA has accepted some of the costs submitted in response to the proposed notice developed for Basin Electric, but not others.

Comment: Nowhere does the Act command national consistency in BART cost estimates and, to the contrary, by allowing states to make individualized BART determinations, Congress demonstrated that consistency was not intended to be a component of the regional haze program, save for the uniform objective of attaining natural visibility conditions. The commenter indicated that the RHR takes the same approach, allowing states wide discretion to conduct BART analyses, and that the BART Guidelines encourage states to take into account site-specific conditions that impact costs. In light of these authorities, the commenter believes that the EPA cannot disapprove the State's cost analyses simply because they do not fit within the EPA's preferred vision of national uniformity.

Another comment argued that EPA claimed that the State failed to follow the CCM, and the EPA supported this claim by quoting the CCM as saying that the EPA prefers consistency in control cost estimates (78 FR 34749). The CAA, the RHR, the BART Guidelines, and the fact that different sources have vastly different designs belie the EPA’s preference for “consistency.” Nowhere does the Act command national consistency in BART cost estimates and, to the contrary, by allowing states to make individualized BART determinations, Congress demonstrated that consistency was not intended to be a component of the regional haze program, save for the uniform objective of attaining natural visibility conditions. The commenter indicated that the RHR takes the same approach, allowing states wide discretion to conduct BART analyses, and that the BART Guidelines encourage states to take into account site-specific conditions that impact costs. In light of these authorities, the commenter believes that the EPA cannot disapprove the State’s cost analyses simply because they do not fit within the EPA's preferred vision of national uniformity.

Response: As we explain in our response to other comments in the legal issue section, we have authority to assess the reasonableness of a state's analysis of costs; and a state's discretion must be reasonably exercised in compliance with the applicable requirements. While we agree that site-specific challenges must be identified and factored into the cost effectiveness analysis, the SIP elements disapproved elsewhere in this document items are not "site-specific conditions," but rather use of the wrong costing methodology and improper categorization of costs, as well as other issues. An erroneous analysis of costs, whether due to methodological or to data flaws, prevents a state from conducting a meaningful consideration of the cost of compliance factor. *North Dakota v. U.S. EPA*, 730 F.3d 750, 761 (8th Cir. 2013).

EPA is not relegated to a ministerial role. *Id.* We have not replaced cost estimates, modeling analyses and other SIP elements submitted by the State solely for the purpose of ensuring consistency across states. When a state or source puts forward costs estimates that are atypical, it is reasonable for us to scrutinize such estimates more closely to determine whether they are reasonable or inflated. Also, given that the assessment of costs is necessarily a comparative analysis and one marker of reasonableness, it is reasonable to insist that certain standardized and accepted costing practices be followed absent unique circumstances. Such consistency is particularly relevant for BART determinations at fossil-fuel fired power plants having a capacity in excess of 750 MW, which must be made pursuant to the BART Guidelines.[53] To the extent a BART determination for such a power plant is plainly inconsistent with EPA-approved determinations for similar sources, it is more likely to be inconsistent with the RHR and the BART Guidelines and therefore to warrant greater scrutiny for compliance with the applicable requirements.

[53] CAA section 169A(b) and 40 CFR 51.308(e)(1)(ii)(B).

Comment: Basin Electric submits with these comments an updated cost estimate for SNCR and SCR emission controls at Laramie River Station. That report states that in Sergeant & Lundy's opinion SNCR would likely achieve a 48% reduction from EPA's input emission rate. However, when it made its BART determination the State did not have the benefit of this report and made its judgment based on the best information available at the time. EPA, in its August 3, 2009 comments on Wyoming's BART permit for Laramie River Station, stated that it estimated that "SNCR can reduce NO_x by 40% - 50% for most large boilers (EPA Air Pollutions Control Cost Manual, 2002, Sixth ed., EPA-452-02-001. Section 4.2, Chapter 1, pg. 1-3.)." States are entitled to rely on information available at the time they make BART determinations, and EPA may not disapprove a state's BART based on information that becomes available later. This principle seems particularly appropriate when at the time EPA itself asserts the bona fides of information similar to that relied upon by the State.

Response: We disagree with this comment. EPA is required to take new information submitted as part of this rulemaking into consideration. Indeed, EPA has taken into consideration the updated cost estimate information submitted by Basin Electric for SNCR and SCR at Laramie River Station, which was not available to Wyoming. *See Sierra Club v. EPA*, 671 F.3d 955, 967 (9th Cir. 2012) ("if new information indicates to EPA that an existing SIP or SIP awaiting approval is inaccurate or not current, then, viewing air quality and scope of emissions with public interest in mind, EPA should properly evaluate the new information and may not simply ignore it without reasoned explanation of its choice"); *see also* 42 USC 7607(d)(6)(B) ("The promulgated rule shall also be accompanied by a response to each of the significant comments, criticisms, and *new data* submitted … during the comment period.") (emphasis added). Thus, EPA is required, at a minimum, to take new information into account during the SIP approval

process and, if necessary, alter its final decision accordingly. As explained in detail elsewhere, section 307(d) of the Act explicitly provides for the consideration of information developed after the proposed rule is published.

EPA considered this new cost information and the assessment of our evaluation regarding this information appears elsewhere in this document.

Comment: EPA is again overstepping its role in this process. Wyoming completed its BART analysis in 2009, more than three years ago, and it would have been impossible to incorporate the alleged urea price increases in that analysis. Simply put, Wyoming's BART determination is hardly arbitrary and capricious simply because it failed to take into account alleged urea price increases some three years after Wyoming completed its BART analysis. Wyoming did precisely what the Guidelines instruct: made a BART determination based on information available before the close of its public comment period. 40 CFR Pt. 51, App. Y., Section IV(D)(2)(3). To disapprove Wyoming's cost analysis based on information that was not available to the State would be to employ a "gotcha" approach that runs contrary to EPA's own regulations and counter to EPA's commitment to do its job fairly and objectively. If the urea issue is truly material, EPA should, at a minimum, allow Wyoming to consider whether this new information would affect its BART determination before disapproving that determination.

Another commenter suggests that urea prices are relevant to operating costs for SNCR but are not relevant to SCR. If the State's urea prices were *too low*, that would mean the State had *underestimated* the cost of SNCR, which is what EPA claims in its proposal. 78 FR 34748. Such an underestimate would have no material impact on the State's BART determination and thus provides no basis for EPA's disapproval. Once again, this is a fact that in retrospect supports the State's BART decision, rather than demonstrating it to be arbitrary. If Wyoming's

estimate of the cost of SNCR should have been higher, as EPA maintains, the higher cost would tend to add further support for rejecting SNCR - the more expensive a control technology, the stronger the reason to reject it as BART. So if EPA is correct in claiming the State's assumed urea price was too low, it is incorrect in claiming this made a difference in the State's BART determination. A mistake in a cost assumption, if there was a mistake, is not a *per se* reason to reject a BART determination. Such a mistake would help support disapproval of a cost analysis and resulting BART determination only if it *overstated* costs in a material way and thus tended to make a technology appear significantly more costly than it actually would be.

Response: We disagree with portions of these comments. As we explained in responses to similar comments below in the section on Overarching Comments on BART, we agree that a change in the market price of urea, in and of itself, may have not provided EPA sufficient grounds for rejecting the State's SNCR analysis. However, we identified a number of deficiencies in our proposed rule, that when taken collectively, led EPA to conclude that Wyoming's consideration of the costs of compliance and visibility improvement for the EGUs was inadequate and did not properly follow the requirements in the BART Guidelines and statutory requirements. 78 FR 34748. Therefore, regardless of the market price of urea, EPA would have reached the same conclusion.

Additionally, EPA is required to take into account the urea price information and we have taken that technical information into account as detailed elsewhere in this final notice and the docket. As explained in detail above, while this information was not available to the State, EPA nonetheless had a duty to consider any new information submitted during public comment when reviewing the states' SIPs. *See Sierra Club v. EPA*, 671 F.3d 955, 967 (9th Cir. 2012).

Therefore, while the new urea cost information was not available to the State, EPA was nonetheless obligated to consider any new information submitted during public comment when reviewing the states' SIPs. Thus, EPA is required, at a minimum, to take new information into account during the SIP approval process and, if necessary, alter its final decision accordingly. Regarding the comment that Wyoming should get an opportunity to consider this information before EPA takes final action, see responses to similar comments above.

Comment: EPA relies on its consultant's report as a basis for rejecting Wyoming's cost analysis for SNCR and proposing to disapprove the State's NO_x BART for Laramie River Station. 78 FR 34748. EPA may not reject the State's estimate of the NO_x reduction achievable with SNCR just because EPA's consultant disagrees with the State. Under the appropriate legal standard, EPA must defer to the State's technical assessment absent demonstration it is arbitrary and capricious - which EPA has not attempted to prove. Nor can EPA mount a credible argument that its consultant's report is superior to the State's. The report does not comply with EPA's own Guidelines, as interpreted by EPA, and ignores site-specific conditions that have a huge impact on the cost of NO_x emission controls. Given the flaws in the report, EPA's reliance on it is not only arbitrary and capricious, but downright astonishing.

Response: We disagree with the commenter's assertion that we have rejected the State's estimate of cost analysis for SNCR and the NO_x reduction achievable with SNCR just because we disagree with the State. During the public comment period on our proposed rulemaking, Basin Electric, as well as other parties, submitted information concerning cost estimates. We have placed this information to the docket and as explained elsewhere in this document, taken it into account as part of this final rulemaking. This final action clearly explains the basis for our disapproval of State's NO_x BART for Laramie River Station, based on comments received and

our cost and visibility analysis, we are disapproving others. We also disagree that we are required to defer to the State's technical judgments and to apply an arbitrary and capricious standard in reviewing the State's SIP submittal. We respond in detail to those arguments elsewhere.

Comment: This commenter stated that even if the Wyoming's cost analyses were revised to reflect the EPA's high urea prices, the average cost effectiveness of SNCR would still be consistent with the State's original analyses. The commenter noted that the EPA's average and incremental cost effectiveness numbers for SNCR fall well below the values considered by the State to be cost effective and therefore are consistent with the State's original conclusion that the costs of compliance from the application of SNCR to the EGUs were reasonable. The commenter added that even if the State-analyzed urea costs are adjusted to reflect EPA's urea costs, the average cost effectiveness values remain below $2,600 dollars per ton of NO_x reduced and with incremental cost effectiveness values below $5,000 dollars per ton of NO_x reduced (citing commenter's Exhibit 10), and those values are consistent with the State's original conclusion. The commenter believes that it is clear that the EPA does not take issue with Wyoming's cost analyses, but rather Wyoming's BART conclusions. The commenter contended that the EPA's allegation that Wyoming incorrectly analyzed costs is simply an excuse for EPA to override Wyoming's BART determinations because EPA does not like the result. The commenter asserted that the EPA must explain why Wyoming's ultimate BART determinations run afoul of the law, rather than hold up allegations of technical deficiencies as window dressing for EPA to take over the role Congress gave to states to make BART determinations.

Response: We disagree with this comment. As we explained earlier in this final notice, Congress crafted the CAA to provide for states to take the lead in developing implementation

plans, but balanced that decision by requiring EPA to review the plans to determine whether a SIP meets the requirements of the CAA. EPA's review of SIPs is not limited to a ministerial type of automatic approval of a state's decisions. EPA must consider not only whether the State considered the appropriate factors but acted reasonably in doing so. EPA has the authority to issue a FIP either when EPA has made a finding that the State has failed to timely submit a SIP or where EPA has found a SIP deficient. Here, EPA has authority on both grounds, and we have chosen to approve as much of the Wyoming SIP as possible and to adopt a FIP only to fill the remaining gap. Our action today is consistent with the statute. We disagree that technical deficiencies are mere "window dressing'; instead, appropriate technical analyses are fundamental to a reasoned BART determination. Finally, details of technical issues regarding urea costs are addressed elsewhere in this rule.

Comment: No single factor justifies disapproval of the State's BART. The authority to determine BART belongs to states, and BART determinations must be based on all five BART factors weighted together. States are responsible for balancing those factors and deciding how much weight to give to each factor. 70 FR 39123, 39130, 39170. To show that Wyoming had been arbitrary and capricious in making a BART determination, EPA would bear a heavy burden—a burden that it does not even begin to meet based on a disagreement that the State's cost analysis for SCR was in error. EPA's own incremental cost effectiveness for SCR is more than $5000/ton, which is a high cost even if lower than the State's. EPA makes no attempt to argue that the difference between its incremental cost effectiveness and the State's would have changed the State's selection of BART or rendered the State's BART arbitrary or illegal.

Response: We responded to similar comments elsewhere. First, as we explain in detail elsewhere, we disagree that EPA's review of a state's SIP submittal is limited to an arbitrary and

capricious standard. Second, as we explain in detail elsewhere, we disagree that states have the sole authority to determine BART. Third, as we explain in detail elsewhere, we disagree that a "harmless error" standard should be applied.

Comment: In June of 2012, EPA issued a proposal that analyzed the cost effectiveness of various NO_x control technologies at Laramie River Station. 77 FR 33051. Although EPA disagreed with the State's NO_x BART determination for Laramie River Station, EPA accepted and relied on the State's cost analysis for NO_x controls, which concluded that SCR would cost $3305 per ton of NO_x removed, while SNCR would cost $2036 per ton of NO_x removed. 77 FR 33051, Table 30 (These values are for Unit 3. The State's conclusions for Units 1 and 2 were similar.) In light of these estimates, EPA eliminated SCR from consideration at Laramie River Station "because the cost effectiveness value is significantly higher than LNBs with OFA and there is a comparatively small incremental visibility improvement over LNBs with OFA." *Id.* EPA now expressly disavows its earlier finding, apparently as a result of comments that raised questions with the State's analysis and a cost analysis prepared by Andover. 78 FR 34740, 34748. Yet EPA's own cost analysis - based entirely on the findings of a technically infirm and legally indefensible contractor analysis of the costs of SNCR and SCR at Laramie River Station - concludes that the cost effectiveness of SCR at Laramie River Station ranges from $3,589 to $3,903, which exceed Wyoming's cost effectiveness demonstrations. *Id*. at 34774-34775. For EPA to take the position SCR is now cost effective, based on a higher estimate of tons NO_x removed that is inconsistent with its earlier position and without any further explanation, is arbitrary and capricious. *Cf. W. States Petroleum*, 87F.3d at 284 (EPA "may not depart, sub silentio, from its usual rules of decision to reach a different, unexplained result in a single case").

Response: We disagree with this comment. EPA's June 2012 *Federal Register* notice was a "proposal," not a final agency action. Based on additional information and analyses, on June 10, 2013 we reproposed to partially approve and partially disapprove the Wyoming SIP. Therefore, contrary to commenter's assertions, we had not taken a final agency action in June 2012 and the Western States Petroleum case in not applicable here. In addition, we fully explained the reasons for the changes in our proposed action. We note that adjustments in cost-effectiveness of SCR were not the only factor in our proposed changes. We also revised modeling of visibility benefits of SNCR and SCR and cost-effectiveness of SNCR, which played a role in our reproposed BART determination.

2. Compliance with Section 307(d)

Comment: EPA cannot adopt a FIP using a procedure that simultaneously proposes both disapproval of a SIP BART determination and a different BART determination as a FIP. Doing so results in a violation of Section 307(d), which requires EPA to first announce the "statement of basis and purpose" that accompanies the FIP, including a summary of "the factual data on which the … rule is based" and "the major legal interpretations and policy considerations underlying the . . . rule." 42 U.S.C. 7607(d)(1)(B), (d)(3)(A) & (C), (d)(6)(A). The reason is simple. BART determinations are inherently technical evaluations that consider costs, feasibility, potential plant shut-downs, etc. The same requirement would apply to any BART determination undertaken by EPA as part of a FIP. Thus, any response by EPA to comments that Basin Electric and others submit in support of Wyoming's BART determination will necessarily have to deal with new detailed technical information and data, particularly when, as here, EPA has initially proposed to reject a BART determination as inadequately supported and thus has invited extensive comments. EPA's responses to comments will then necessarily become part

of the grounds supporting any new BART determination in a FIP, but will not have been publicly disclosed until EPA's response to comments on the SIP. Thus, EPA will be unable to provide a substantive statement of basis and purpose for the FIP in the same proposal to disapprove the SIP unless it intends to ignore comments. Yet this violates EPA's statutory obligation to announce all the facts and grounds supporting a FIP before adoption. It also wholly undermines the underlying purposes of the APA's notice and comment obligations. *See, e.g.*, *United States v. Cain*, 583 F.3d 408, 420 (6th Cir. 2009) (these obligations are intended to "ensure fair treatment for persons to be affected by regulation" and to "ensure that affected parties may participate in decision making at an early stage'") (citations omitted); *NRDC v. Thomas*, 805 F.2d 410, 437 (D.C. Cir. 1986) (the purposes of these obligations include that "notice improves the quality of agency rulemaking by ensuring that agency regulations will be tested by exposure to diverse public comment," that "notice and the opportunity to be heard are an essential component of fairness to affected parties," and that "by giving affected parties an opportunity to develop evidence in the record to support their objections to a rule, notice enhances the quality of judicial review") (quoting *Small Refiner Lead Phase-Down Task Force v. EPA*, 705 F.2d 506, 547 (D.C. Cir. 1983).

This must be true, unless EPA's proposed course of action has already been determined, meaning that EPA has already decided to reject the SIP BART determinations and replace them with its own regardless of the comments submitted. Such prejudgment would be contrary to law. *See, e.g.*, *Davis v. Mineta*, 302 F.3d 1104, 1112 (10th Cir. 2002) (plaintiffs were likely to prevail in showing agency acted arbitrarily and capriciously, in part because the agency "prejudged the NEPA issues"); *Metcalf v. Daley*, 214 F.3d 1135, 1146 (9th Cir. 2000) (agencies' environmental assessment prepared under NEPA was "demonstrably suspect" and "fatally defective" because

the agencies "were predisposed" to a particular finding; agencies must conduct "an objective evaluation free of the previous taint"). Yet that is plainly what EPA is suggesting by its effort to simultaneously disapprove one BART determination while proposing another. Either EPA must ignore the comments so as not to establish new grounds for the FIP, or it must reject the comments on substantive grounds that become justification for the FIP but have never been publicly disclosed. Either way, its action violates APA standards.

This is a consequence of the procedural posture into which EPA has put itself by taking no action on the SIP until the end of the Sections 110(c) FIP clock. To follow the requirements of Sections 307(d), EPA must first propose to disapprove a SIP, take comment, and then make a decision after full and fair consideration of the comments. If, after open-minded consideration of the comments, EPA continues to believe the SIP must be disapproved, then and only then can EPA lawfully propose a different BART determination in a FIP, articulating for public comment why the proposed federal BART determination is legal and the State BART determination is not.

Failure to follow this procedure necessarily results in a violation of the law, one way or another. Nor does the existence of a Consent Decree excuse EPA's failure to follow the correct procedure. A court-fashioned decree may not foreclose the total range of procedural options available to an agency. *See Watt v. Energy Action Educ. Found.*, 454 U.S. 151, 168-69 (1981) (refusing to limit the procedural options within the discretion of an agency); Marina T. Larson, *Consent Decrees and the EPA: Are They Really Enforceable Against the Agency?*, 1 Pace Envt'l L. Rev. 147, 160-63 (1983) (arguing that consent decrees may not limit agency procedural options). EPA waited until compelled by Court Order to propose disapproval of the State BART determination, but could have done so much earlier. In any event, the obligations EPA

negotiated for itself in the Consent Decree cannot be used to deprive Wyoming or Basin Electric the substantive procedural rights afforded by the CAA.

Response: EPA disagrees with this comment, which fundamentally misunderstands the nature of notice-and-comment rulemaking. As the Ninth Circuit stated in another context:

> Nothing prohibits the Agency from adding supporting documentation for a final rule in response to public comments. In fact, adherence to the [petitioners'] view might result in the EPA's never being able to issue a final rule capable of standing up to review: every time the Agency responded to public comments, such as those in this rulemaking, it would trigger a new comment period. Thus, either the comment period would continue in a never-ending circle, or, if the EPA chose not to respond to the last set of public comments, any final rule could be struck down for lack of support in the record.

Rybachek v. U.S. EPA, 904 F.2d 1276, 1286 (9th Cir. 1990).

In the context of the CAA, the specific rulemaking provisions in section 307(d) are in accord with this. Under section 307(d)(3), the notice for the *proposed* rule must be accompanied by a statement of basis and purpose, including "a summary of (A) the factual data on which the *proposed* rule is based; (B) the methodology used in obtaining the data and in analyzing the data; and (C) the major legal interpretations and policy considerations underlying the *proposed* rule." 42 USC 7607(d)(3) (emphasis added). "All data, information, and documents referred to in [section 307(d)(3)] on which the *proposed* rule relies shall be included in the docket on the date of publication of the proposed rule." *Id.* (emphasis added). Then, under section 307(d)(6), the *promulgated* rule must "be accompanied by (i) a statement of basis and purpose *like* that referred to in [section 307(d)(3)] with respect to a *proposed* rule." 42 USC 7607(d)(6)(A) (emphasis added). In other words, the statement of basis and purpose must provide a summary of (among

other things) the factual data and methodologies on which the *promulgated* rule is based. In addition, section 307(d)(6) specifically requires a "response to each of the significant comments, criticisms, and *new data* submitted … during the comment period." 42 USC 7607(d)(6)(B) (emphasis added). And finally, "the promulgated rule may not be based … on any information or data which has not been placed in the docket as of the date of such promulgation," *id.* 7607(d)(C), which by implication allows EPA to base the promulgated rule on information and data that is placed in the docket before the date of promulgation. Thus, section 307(d)(6) specifically contemplates that the Agency can in its promulgated rule rely on additional information and data that EPA develops after the proposed rule has been published.

In this instance, our FIP proposal was in accord with the requirements of section 307(d) of the Act. In particular, before the proposed rule was published, we included in the docket all the factual data, such as cost estimates and visibility modeling, on which the proposed rule was based. The comment identifies no deficiency in this regard. Instead, according to the comment the supposed deficiency is the failure to include in the docket *for the proposal* the data and information that EPA will develop to respond to comments. But, as discussed above, this is no deficiency; instead section 307(d) specifically contemplates that this will happen.

The argument in the comment regarding EPA's alleged prejudgment of its decision also belies a misunderstanding of notice-and-comment rulemaking. Under the comment's theory, in order to not have "prejudged" the outcome, EPA would have to avoid proposing any particular outcome in its notice of proposed rulemaking. However, under section 307(d)(3), "the notice of proposed rulemaking shall be published in the Federal Register, as provided under section 553(b) [of the APA]." Under section 553(b) of the APA, the "notice shall include" (among other things) "either *the terms or substance of the proposed rule* or a description of the subjects and issues

involved." 5 USC 553(b)(3) (emphasis added). Thus it is of course explicitly permitted under the CAA and the APA for a proposal notice to contain EPA's proposed disapproval of the State's BART determinations and EPA's proposed FIP BART determinations. This does not indicate prejudgment at all; indeed in this action EPA is adjusting certain determinations in response to certain comments, and in fact EPA previously reproposed its action on Wyoming's SIP based upon new information submitted by the public (77 FR 3302) The cases cited by the comment regarding prejudgment concern NEPA analysis and are not on point.

As the commenter noted, regional haze requirements apply both to our action on Wyoming's SIP submittal and our FIP. EPA disagrees that the BART determinations in its FIP, which must meet the same regional haze requirements as the BART determinations in Wyoming's SIP, must be published in a separate rulemaking procedure. To the extent that a comment on our proposed disapproval was identified as also relevant to our proposed FIP, we have responded to it. The commenter was not deprived of procedural rights merely because the commenter could not submit information twice in two separate rulemakings. All affected parties had ample opportunity to submit any pertinent information to EPA.

Regarding the consent decree, we have elsewhere explained that it did not limit or modify EPA's substantive discretion. With respect to the comment's argument that it improperly limited EPA's procedural discretion, any such limits are found in the statutory deadlines and mandatory duties in the Act itself. The case cited in the comment, *Watt v. Energy Action Educ. Found.*, 454 U.S. 151 (1981), did not concern a consent decree and is not on point. In it, the Supreme Court was "unable to find anything, either in the legislative history or in the 1978 Amendments [to the Outer Continental Shelf Lands Act] themselves, that compels the conclusion that the Congress as a whole intended to limit the Secretary of the Interior's discretion" with respect to choice of

bidding systems for oil and gas leases. *Id.* at 168. By contrast, the CAA sets certain statutory deadlines for EPA's action on SIP submittals and FIP promulgations and thereby explicitly limits the Administrator's discretion for final action. We elsewhere respond to comments that EPA's promulgation of its FIP was outside EPA's authority under 110(c) of the Act. Finally, the cited law review article, Marina T. Larson, *Consent Decrees and the EPA: Are They Really Enforceable Against the Agency?*, 1 Pace Envt'l L. Rev. 147 (1983), is also not on point. It discusses a settlement agreement which "set[] forth specific methods and formalized criteria for the [A]dministrator to use in assessing the need for regulation. These rules [would] control the nature of the data collected and its subsequent interpretation, and [would] have a significant influence on the substantive decisions reached." *Id.* at 162. No such constraints have been placed on our methods and use of data in the aforementioned consent decree. We respond elsewhere to comments about procedural due process rights.

3. Compliance with Section 169A(d)

Comment: One commenter argued that section 169A(d) of the CAA requires that before holding a hearing on a proposed regional haze plan, "the State (or the Administrator, in the case of a [FIP]), shall consult in person with the appropriate federal land manager (FLM) or managers and shall include a summary of the conclusions and recommendations of the FLMs in the notice to the public." 42 U.S.C. 7491(d). In its proposed action, EPA recites this land manager consultation requirement as it applies to SIPs, 78 FR 34744, but, EPA notably ignores that this requirement applies equally to FIPs.

The commenter asserted that not once in any of EPA's public notices of the hearings EPA held on its proposed FIP did EPA include a summary of the conclusions and recommendations of the FLMs in the notice to the public. See 78 FR 34738 (June 10, 2013); 78

FR 40654 (July 8, 2013). Consequently, the commenter argued that EPA cannot rely on the State's public notices because the State held its public hearings years before EPA proposed its FIP and because the SIP differs substantially from the FIP.

The commenter argued that EPA's failure to comply with Section 169A(d) can be understood only as arbitrary and capricious. The CAA has required consultation with FLMs, which oversee the Class I areas the regional haze program aims to protect, from the very beginning of the regional haze program, *see* 42 U.S.C. 749l(a)(2), and continuously through the development of each implementation plan, *id.* Sections 749l(d). Congress therefore understood the importance of working closely with FLMs in regional haze planning.

In 1999, EPA plainly understood the significance of consulting the FLMs when it promulgated the RHR. *See* 64 FR 35714, 35747(July 1, 1999) (describing land manager consultation as "important and necessary"). Both times EPA proposed action on Wyoming's SIP—in 2012 and again in 2013—EPA reiterated the need to consult with FLMs when developing a regional haze implementation plan. 77 FR 33022, 33028 (June 4, 2012); 78 FR 34738, 34744-45 (June 10, 2013).

Against this backdrop, the commenter explained, EPA's failure to explain why EPA believed it did not have to consult with the FLMs when promulgating its FIP for Wyoming, let alone comply with the simple consultation process set forth in Section 169A(d), is plainly arbitrary and capricious. Because FLMs play a critical statutory role in the regional haze program, there is a substantial likelihood that EPA's proposed FIP would be significantly different if EPA had complied with Section 169A(d).

Response: EPA agrees that consultation with the FLMs is an important aspect of the regional haze program. EPA has engaged with the appropriate FLMs on all of its regional haze actions,

including its proposed actions on the Wyoming regional haze SIP. While EPA did not include a summary of the FLMs' conclusions and recommendations on the proposed FIP in the public hearing notices, those conclusions and recommendations are readily available to the public in the online docket for this rulemaking.[54]

EPA also disagrees with the commenter that the consultation materials contained in the State's public notices are irrelevant just because the State conducted its public hearings many years ago. The FLMs concluded at that time that the Wyoming regional haze SIP did not adequately protect the State's Class I areas, and these conclusions and recommendations informed EPA when we proposed to disapprove portions of the Wyoming regional haze SIP and issue a FIP.

Finally, there is no basis to the commenter's claim that EPA's proposed FIP would be significantly different if we had included the FLMs' conclusions and recommendations in the public hearing notices. We carefully considered the comments of the FLMs and have responded to them elsewhere throughout this document. As those responses explain in more detail, we have chosen not to change our proposed NO_X BART determinations in all of the ways in which the FLMs requested. We point out, however, that had EPA adopted the FLMs' recommendations, we would be requiring SCR on all of the BART-eligible EGUs in Wyoming, a result that this particular commenter has vigorously opposed.

Comment: The processes Congress required EPA to follow under the regional haze program were circumvented. For example, the CAA requires both states and EPA to consult with FLMs on regional haze implementation plans. Public notice of the FLMs' conclusions and recommendations is to occur before holding a hearing on the plan. While EPA recites this

[54] EPA-R08-OAR-2012-0026-0134, and EPA-R08-OAR-2012-0026-0068.

requirement in its proposed action, it utterly failed to include any FLM consultation on behalf of its agency. EPA held three hearings and not once in any hearing did the EPA indicate it had consulted the FLMs in Wyoming and no conclusions or recommendations of any consultations were provided.

Response: See above response.

4. Public Hearings

Comment: EPA's regional haze plan promulgation regulations require EPA to provide public notice at least thirty days in advance of a hearing on a proposed implementation plan. 40 CFR 51.102(d) (a plan hearing "will be held only after reasonable notice, which will be considered to include, at least 30 days prior to the hearing(s)"); *see also* 40 CFR 51.100(i). Although EPA held three public hearings on its proposed FIP for Wyoming, not once did EPA provide the public at least thirty days advance notice of the hearing. EPA proposed its FIP on June 10, 2013 and provided only fourteen days notice of its hearing on the proposal. 78 FR 34738, 34738. After Governor Mead, Wyoming's Congressional Delegation, and the Wyoming Department of Environmental Quality (DEQ) pointed out to EPA that fourteen days provided far too inadequate notice for the public to understand the proposed FIP and therefore meaningfully participate in the public hearing, EPA agreed to hold two additional hearings. On July 8, 2013, EPA publicly noticed its plans to hold the additional hearings on July 17, 2013 and July 26, 2013. 78 FR 40654, 40654. Thus, although EPA had the opportunity to correct its errors, it failed to do so by again providing less than thirty days notice of its hearings.

Here again, EPA's noncompliance with its own regulatory processes is arbitrary and capricious. EPA cannot ignore the law for its own benefit without at least providing a reasoned justification for doing so. In this case EPA has provided no such explanation, thereby rendering

its failure an arbitrary abuse of power. And by shortcutting public participation, EPA undermined the central democratic purposes of notice-and-comment rule-making. Had EPA honored the law and held itself to the same standards it holds states, the public could have more meaningfully commented on EPA's proposal. As a result of that public input, EPA's proposed FIP might be considerably different, assuming, as we must, that EPA would have considered those comments with an open mind.

DEQ understands that EPA rushed its FIP promulgation process in order to meet the deadlines it consensually established with a third party in litigation to which Wyoming was not a party. But, EPA's outside arrangements do not excuse it from complying with the law, or allow it to shortcut public participation in the promulgation of a rule, especially one that will harm Wyoming. DEQ discourages EPA from imposing its illegally promulgated FIP on Wyoming. But, in the event EPA decides nevertheless to do so, DEQ encourages EPA to re-propose its FIP in a manner that complies with the statutory and regulatory plan development processes. To do otherwise is to arbitrarily hold states to a different plan promulgation standard than EPA itself adheres to, even though the CAA makes no such distinction. Such irrationally unequal treatment is the essence of arbitrary regulation.

Response: EPA disagrees with this comment. First, 40 CFR 51.102(d) implements the requirement in section 110(a)(2) that *state* plans "be adopted by the State after reasonable notice and hearing." *See* 72 FR 38787 (July 16, 2007). When EPA—which is not a state—promulgates a FIP, EPA instead is bound by the requirements in section 307(d) of the Act. EPA has not promulgated specific regulations governing EPA's processes under section 307(d); however, EPA complied with the public hearing requirements in 307(d) as explained below. The definition of "State agency" in 51.100(i) does not contradict this; indeed the commenter

elsewhere protests vigorously elsewhere that states, not EPA, are "primarily responsible for development and implementation of a plan under the Act." 40 CFR 51.100(i). Thus, EPA does not fall under the definition of "State agency." We also note that EPA initially provided a 60-day comment period for this action and then extended it 15 more days; under 40 CFR 51.102. States need only provide a 30-day period for written comments. *See* 72 FR at 38788 ("Whether or not a public hearing is held, the State is required to provide a 30-day period for the written submission of comments from the public.").

In promulgating a FIP under CAA section 110(c), EPA is required to: "give interested persons an opportunity for the oral presentation of data, views, or arguments, in addition to an opportunity to make written submissions; keep a transcript of any oral presentation; and keep the record of such proceeding open for thirty days after completion of the proceeding to provide an opportunity for submission of rebuttal and supplementary information."[55] In this rulemaking, EPA held three public hearings on its proposed FIP. In addition to the public hearing initially scheduled on June 24, 2013 in Cheyenne, Wyoming, additional public hearings were held on July 17, 2013 in Cheyenne, Wyoming and on July 26, 2013 in Casper, Wyoming. The transcripts for those hearings consisted of 321 pages. These hearings were announced in the Federal Register on June 10, 2013 and July 8, 2013,[56] and a pre-publication version of the proposal was posted on EPA's Web site prior to publication in the Federal Register. The proposal was published in the *Federal Register* on June 10, 2013 and was initially scheduled to close on August 9, 2013. The public comment period was extended in response to letters received from the Governor and Congressional delegation, which are in the docket for this

[55] See CAA section 307(d).
[56] 78 FR 34738, and 78 FR 40654.

action, and public comments were accepted through August 26, 2013, 30 days after the last hearing, as required. EPA received over 1900 comments on the reproposal, including over 130 unique comments submitted from organizations, companies, and individuals. The major comments consisted of over 1130 pages, including attachments. The commenters have not explained how their ability to comment was impaired in any way by the opportunities for public comment that EPA provided, including three public hearings and the 75-day comment period.

Comment: EPA failed to follow its own rules for providing public notice of hearings on regional haze implementation plans. Those rules require a minimum of 30 days advance public notice of hearings on implementation plans. The first notice in the *Federal Register* of a public hearing was issued on June 10, 2013, for a public hearing to be held on June 24, 2013. EPA issued a second notice for additional public hearings on July 8, 2013 in the Federal Register. The notice identified July 17, 2013 and July 26, 2013 as dates set. This provided the public nine and eighteen days notice of the respective hearings.

Response: We disagree with this comment, see above response.

5. RHR and BART Guidelines

Comment: Regardless of the effect of AFUDC on cost effectiveness as demonstrated by the Sargent & Lundy sensitivity analyses, EPA has no authority, as part of its interpretation of a non-binding guidance document, to impose restrictions on the categories of costs that states can include when assessing the "costs of compliance" in a BART determination. EPA has failed to make a showing that Wyoming's compliance with Sections 169A(g)(2) or otherwise violates governing law. Including AFUDC is not a lawful ground for disapproving Laramie River Station BART, and it is improper to exclude AFUDC in EPA's FIP analysis for Laramie River.

Response: EPA disagrees with this comment. EPA's revised cost-effectiveness values are consistent with EPA's regulations and the parameters set forth in the Control Cost Manual. EPA explained in promulgating the BART Guidelines that "[s]tates have flexibility in how they calculate costs."See 70 FR at 39127 (July 6, 2005). A state may deviate from the Control Cost Manual provided its analysis is reasonable. EPA independently evaluated Sargent & Lundy cost-effectiveness calculation, explaining elsewhere in this document that the CCM explicitly excludes AFUDC from control costs, and EPA's estimates were correct in excluding AFUDC. *See Oklahoma v. U.S. EPA*, 723 F.3d 1201, 1212 (10th Cir. 2013) ("The EPA therefore had a reasonable basis for rejecting the 2008 Cost Estimates [that were based on the overnight costing method] as not complying with the guidelines.")

Furthermore, as Region 9 explained in responding to similar comments:[57]

> EPA disagrees "with commenters' assertions that AFUDC is a cost that should be incorporated into our cost analysis, as it is inconsistent with CCM methodology. The utility industry uses a method known as "levelized costing" to conduct its internal comparisons, which is different from the methods specified by the CCM. Utilities use "levelized costing" to allow them to recover project costs over a period of several years and, as a result, realize a reasonable return on their investment. The CCM uses an approach sometimes referred to as overnight costing, which treats the costs of a project as if the project were completed "overnight", with no construction period and no interest accrual. Since assets under construction do not provide service to current customers, utilities cannot charge the interest and allowed return on equity associated with these assets to customers while under construction. Under the "levelized costing" methodology,

[57] 77 FR 72512, 72531 (Dec. 5, 2012)(BART for Apache, Cholla and Coronado).

> AFUDC capitalizes the interest and return on equity that would accrue over the construction period and adds them to the rate base when construction is completed and the assets are used. Although it is included in capital costs, AFUDC primarily represents a tool for utilities to capture their cost of borrowing and return on equity during construction periods. AFUDC is not allowed as a capitalized cost associated with a pollution control device under CCM's overnight costing methodology, and is specifically disallowed for SCRs (i.e., set to zero) in the CCM.[58] Therefore, in reviewing other BART determinations, EPA has consistently excluded AFUDC.[59]

Comment: EPA claims that Wyoming should have used actual emissions during the baseline period instead of calculating baseline emissions from the actual average heat input and actual average emission rate. EPA apparently claims that this deviated from the BART Guidelines. 78 FR 34773-34774. However, the Guidelines do not mandate EPA's approach. They say, rather, that the baseline emissions rate "should represent a realistic depiction of anticipated annual emissions for the source" and "in general" states should estimate anticipated emissions based on actual baseline emissions. 70 FR 39167. Nothing in the text of the Guidelines requires states to use any particular approach to estimate future emissions. The Guidelines were constructed to assist the states in making cost assessments, not to mandate the same assessment and the same results in every case by use of mandatory checklists. The word "should" in the Guidelines makes clear there is no mandatory action required. *See Aragon v. United States*, 146 F.3d 819,

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[58] CCM (Tables 1.4 and 2.5 show AFUDC value as zero).

[59] See, e.g., 77 FR 20894, 20916-17 (Apr. 6, 2012) (explaining in support of the North Dakota Regional Haze FIP, "we maintain that following the overnight method ensures equitable BART determinations * * *."); 76 FR 52388, 52399-400 (August 22, 2011) (explaining in the New Mexico Regional Haze FIP that the Manual does not allow AFUDC).

826 (10th Cir. 1998) (describing Air Force Manual 85-14's use of the word "should" as "suggestive, rather than mandatory language" in a Federal Tort Claims Act case); *In re Glacier Bay*, 71 F.3d 1447, 1452-53 (9th Cir. 1995) (interpreting the National Oceanic and Atmospheric Administration's use of the word "should" in manuals and instructions as "suggestive" language conferring hydrographers with discretion); *Culbert v. Young*, 834 F.2d 624, 628 (7th Cir. 1987) (holding that use of the word "should" in a Wisconsin Administrative Code provision governing inmate discipline "only advises the security director on what criteria to consider but does not require him to consider them," and explaining that "[t]he word 'should,' unlike the words 'shall,' 'will,' or 'must,' is permissive rather than mandatory"). *See also Dickson v. Sec'y of Defense*, 68 F.3d 1396, 1401 (D.C. Cir. 1995) ("When a statute uses a permissive term such as 'may' rather than a mandatory term such as 'shall,' this choice of language suggests that Congress intends to confer some discretion on the agency, and that courts should accordingly show deference to the agency's determination.") (emphasis omitted).

EPA is therefore merely disagreeing with a judgment call made by the State, not pointing to violation of a mandatory methodology. And, even though not required to do so, Wyoming did follow the recommendation in the Guidelines. Although EPA contends that the State used a baseline based on annual average heat input for 2001-2003 and an emission rate of 0.27 rather than the "actual annual average" emissions, 78 FR 34773-34774, the State's May 28, 2009 BART Analysis actually says "[b]aseline emissions [are] based on continuous emissions monitoring (CEM) annual averages for 2001-2003."

But even if EPA were correct, EPA would still be wrong in asserting that the State failed to follow the BART Guidelines. The approach that EPA objects to would be an appropriate method to realistically depict anticipated annual emissions. Certainly it would be reasonable to

multiply the actual annual amount of heat in Laramie River coal during the baseline period by the same baseline emission rate of 0.27 lb/MMBtu that was used by EPA's own consultant. 78 FR at 34773; Review of Estimated Compliance Costs for Wyoming Electric Generating (EGUs) - Revision of Previous Memo, memo from Jim Staudt, Andover Technology Partners, to Doug Grano, EC/R, Inc., Feb. 7, 2013 ("Andover Report") at 15 Table 4, *EPA docket cite* EPA-R08-OAR-2012-0026-0086. Any estimate of anticipated emissions is necessarily a projection, and by definition cannot require exclusive reliance on past actual emissions.

That the State's approach to baseline emissions was a realistic projection is borne out by the fact that the annual baseline emissions the State used to calculate cost effectiveness for Laramie River differs from EPA's baseline by only the following *de minimis* amounts: 269 tons higher than EPA's 6051 tons for Unit 1, a difference of only 4%; 8 tons lower than EPA's 6285 tons for Unit 2, a difference of only 0.1%; and 73 tons higher than EPA's 6375 tons for Unit 3, a difference of only 1%. No fair assessment could conclude that such *de minimis* differences violate the Guidelines or yield an "implausible" result so extreme as to be arbitrary and capricious. 78 FR 34773-34776.

If EPA's values are realistic, the State's values are realistic. There is no material difference between them. The objective of a BART determination is to arrive at a technology selection that weighs and takes into account the five BART factors. The negligible difference between EPA's baseline emissions and the State's is not material and therefore is not a valid ground for disapproving the State's NO_x BART for Laramie River, and EPA has made no effort to show otherwise. EPA's role is not to fly speck each and every aspect of the BART process in a search for reasons to disapprove the State's determination.

In fact, EPA proposes to approve other BART determinations made by Wyoming despite the same alleged "errors," unequivocally demonstrating that its disagreement with Wyoming's approach to baseline calculations does not amount to proof of a legal violation by the State. EPA claims that for several Wyoming sources subject to BART, Wyoming committed the same "cost and visibility errors" that EPA claims for Laramie River, but proposes nonetheless to approve the BART determinations for these sources "because we have determined that the State's conclusions were reasonable despite the cost and visibility errors." 78 FR 34750. EPA contradicts itself when it overlooks errors for other sources and yet claims those same "errors" as *per se* reasons to disapprove BART for Laramie River Station. Such inconsistent treatment is erroneous. See *W. States Petroleum v. EPA*, 87 F.3d 280, 282 (9th Cir. 1996). EPA's own behavior therefore demonstrates that the baseline used for Laramie River is not a material departure from any requirement and is not a basis for disapproval of the State's BART determination. EPA is stretching to find any excuse to impose its own technology preferences, contrary to law.

Wyoming's choice of baseline emissions is neither inconsistent with the BART Guidelines nor materially different from EPA's allegedly correct baseline emissions, and therefore is not a valid ground for disapproving Wyoming's NO_x BART for Laramie River.

Response: We disagree with some aspects of this comment, but agree with others. First, we disagree with the commenter's characterization of the BART Guidelines as other than mandatory in the case of Laramie River Station, including in regard to how baseline emissions are calculated. The generating capacity of Laramie River Station of 1,705 MW surpasses the threshold of 750 MW used to determine whether the BART Guidelines must be applied. As stated in the RHR: "The determination of BART for fossil-fuel fired power plants having a total

generating capacity greater than 750 megawatts *must* be made pursuant to the guidelines in appendix Y of this part (Guidelines for BART Determinations Under the Regional Haze Rule)."[60] Moreover, the commenter's attempts to turn "should" into "may" are of no avail. Because the BART Guidelines are mandatory for EGUs larger than 750 MW, EPA's use of the word "should" indicates a mandate, not a suggestion. Elsewhere in the Guidelines, EPA uses "may" when EPA means "may." *See, e.g.* 40 CFR Part 51, App'x Y, II.A.4 ("In order to simplify BART determinations, States *may* choose to identify *de minimis* levels of pollutants at BART-eligible sources (but are not required to do so).") (emphasis added). Furthermore, the Tenth Circuit Court of Appeals has interpreted "should" in the Guidelines to mean "required." *See Oklahoma v. U.S. EPA*, 723 F.3d 1201, 1213 (10th Cir. 2013) ("The guidelines *require* that states provide support for any site-specific costs that depart from the generic numbers in the Control Cost Manual. See 40 CFR pt. 51 app. Y(IV)(D)(4)(a) n.15 ("You *should* include documentation for any additional information you used for the cost calculations, including any information supplied by vendors that affects your assumptions regarding purchased equipment costs, equipment life, replacement of major components, and any other element of the calculation that differs from the *Control Cost Manual*.")") (emphasis added).

Notwithstanding that the BART Guidelines are mandatory for Laramie River Station, we agree that Wyoming's approach, having used both the *actual* NOx emission rate and the *actual* heat input from the baseline period, resulted in a realistic depiction of anticipated annual emissions consistent with the BART Guidelines, that these emissions differed only slightly from baseline emissions estimated by EPA and that, therefore, Wyoming's treatment of baseline emissions by itself was not a basis for EPA to disapprove NOx BART for Laramie River Station.

[60] 40 CFR 51.302(e)(1)(ii)(B) (emphasis added).

Nonetheless, as discussed in response to other comments, we maintain that there were other deficiencies in Wyoming's BART analysis for Laramie River Station that remain a valid basis for our disapproval. Most notably, Wyoming did not consider the visibility impacts of SNCR as required by the CAA and BART Guidelines.

Comment: Against its longstanding 30-year history of interpreting and applying the RHR and Guidelines, EPA has now embarked on a spate of BART disapprovals demonstrating that the agency is now interpreting and applying the Guidelines and CCM very differently than it did in the past, and signaling that EPA has actually decided to reinterpret the statute and Guidelines without notice and comment to the states.

EPA is manufacturing requirements in the Guidelines that do not exist, for the purpose of abandoning the administrative structure conferring state primacy that Congress created with both the CAA generally and the Regional Haze Statute in particular. EPA is doing so by interpreting the BART Guidelines and CCM as setting forth detailed, mandatory regulatory requirements that are not actually in the text, and by seeking to make any deviation from the recommendations in the Guidelines or CCM grounds for voiding states' BART choices.

EPA is attempting to convert recommendations into mandates. This new interpretation of the Guidelines and Cost Manual is erroneous, contrary to their statutory role, unannounced, and calculated to federalize BART decisions by making them all follow identical paths whether or not local considerations and costs warrant separate treatment in control decisions.

Response: Our proposal clearly laid out the bases for our proposed approval and disapproval of the State's BART and reasonable progress determinations, as well as other SIP elements. We have relied on the standards contained in our regional haze regulations and the authority that Congress granted us to review and determine whether SIPs comply with the minimum statutory

and regulatory requirements.[61] To the extent we have found that the State's cost analysis relies on values that do not conform to applicable requirements of the Act and regulations, we have disapproved those elements of the analysis. To the extent the state has considered visibility improvement from potential emissions controls in a way that is inconsistent with the CAA and regulations, we have disapproved those elements of the analysis.

Where, as explained in our proposed notice and final notice, a state determines that a less stringent control technology is the "best available," as was the case here with regard to NOx emissions, the state must justify its decision by explaining how the BART factors led it to choose that level of control over more stringent options. *See* 70 FR 39170-71. While a state has significant discretion regarding how to conduct its BART analysis, EPA must ultimately ensure that the state has demonstrated it has a reasoned basis, consistent with the Act's requirements, for determining that a given emissions control technology is "the best available" for each source. See *Oklahoma*, 723 F.3d at 1208 ("[W[hile it is undoubtedly true that the statute gives states discretion in balancing the five BART factors, it also mandates that the state adhere to certain requirements when conducting a BART analysis.").

In determining SIP adequacy, we inevitably exercise our judgment and expertise regarding technical issues, and it is entirely appropriate that we do so. Courts have recognized this necessity and deferred to our exercise of discretion when reviewing SIPs. See, e.g.,

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[61] EPA is responsible for reviewing State-submitted SIPs and SIP revisions to ensure that they "meet[] all of the applicable requirements of [the Act]." CAA Section 110(k)(3); *see also* CAA Section 110(*l*) (EPA shall not approve SIP revision if it would interfere with "any . . . applicable requirement of this chapter"); *Oklahoma*, 723 F.3d at 1204 (EPA reviews all SIPs to ensure plans comply with the Act). There is nothing unusual about regional haze SIPs in this regard – they, like any other SIPs, must be reviewed by EPA, and may be approved only if they meet all applicable requirements of the Act, including provisions related to visibility. *See Oklahoma*, 723 F.3d at 1207; *North Dakota*, 730 F.3d at 756-57.

Connecticut Fund for the Env't., Inc. v. EPA, 696 F.2d 169 (2nd Cir. 1982); *Michigan Dep't. of Envtl. Quality v. Browner*, 230 F.3d 181 (6th Cir. 2000); *Mont. Sulphur & Chem. Co. v. EPA*, 666 F.3d 1174, 1190 (9th Cir. 2012) *cert. denied*, 133 S. Ct. 409, (2012). Contrary to the commenter's assertion, we have not abandoned the State's primacy. In fact, we have approved the vast majority of the State's determinations. We are only disapproving the State's analyses and decisions that do not conform to the CAA and regulations. We are authorized to do so.

Comment: As early as 1979, EPA recognized that the regional haze program is organized around "goals" and "reasonable progress," and not hard objective requirements: Section 169A of the CAA provides for consideration of the degree or significance of visibility improvement, costs, energy, and other factors in applying retrofit controls to major sources and in making "reasonable" progress toward the national goal. These provisions indicate that some flexibility can be allowed in implementing control programs for remedying existing impairment and that priorities can be established.

Thus, while the BART analysis may include consideration of factors similar to those applied in a BACT analysis, BART does not require any threshold level of control. As EPA acknowledged in its 2004 re-proposal of the BART Guidelines, "for the BART analysis, there is no minimum level of control required." 69 FR. 25184, 25219 (May 5, 2004). The RHR's "national goal" is not a mandate but, rather, a foundation for analytical tools to be used by the states in setting RPGs. The BART Guidelines were therefore developed to assist states in making their own BART determinations by providing analytical tools. They were not designed or intended by Congress to impose inflexible mandates that become tripwires for EPA to use as a means of federalizing BART decisions with set criteria. EPA's current effort to convert the Guidelines into something they were not intended to be is improper and calculated to shift to

EPA authority over BART determinations that Congress reserved to the states. "[A]n agency cannot create regulations which are beyond the scope of its delegated authority." *Nagahi v. INS*, 219 F.3d 1166, 1169 (10th Cir. 2000). Nor can an agency reinterpret regulations for that purpose.

Congress authorized EPA to provide guidelines only as to limited aspects of a state's BART decision-making process, and left the majority of that process to the states' discretion. Specifically, in the subsection immediately preceding the reference to the Guidelines, Congress directed EPA to conduct a study on available methods for implementing the national goal and provide recommendations to Congress for (1) "methods for identifying, characterizing, determining, quantifying, and measuring visibility impairment in Federal areas"; (2) "modeling techniques (or other methods) for determining the extent to which manmade air pollution may reasonably be anticipated to cause or contribute to such impairment"; and (3) "methods for preventing and remedying such manmade air pollution and resulting visibility impairment." CAA Sections 169A(a)(3)(A)-(C), 42 U.S.C. 7491(a)(3)(A)-(C).

In the next subsection, Congress directed EPA to promulgate regulations - but with any regulation of the states' BART determinations confined to those limited areas on which EPA had been directed to conduct studies and make a report to Congress. Specifically, CAA Section 169(b) provides, in pertinent part, that the regulations "shall - (1) provide guidelines to the States, taking into account the recommendations under subsection (a)(3) of this section on appropriate techniques and methods for implementing this section (as provided in subparagraphs (A) through (C) of such subsection (a)(3)), and (2) require each applicable implementation plan for a State ... to contain such emission limits, schedules of compliance and other measures as

may be necessary to make reasonable progress toward meeting the national goal." *Id.* Sections 7491(b)(1)-(2).

Accordingly, Congress only authorized EPA to promulgate regulations or guidelines on the identification and measurement of visibility impairment, the methods for measuring and predicting future visibility impairment, the methods for preventing and remedying air pollution and resulting visibility impairment, and the CAA's general requirement that states develop SIPs to include the BART and reasonable progress determinations required by the RHR. Congress did not authorize EPA to promulgate regulations or guidelines mandating exactly how the states should conduct their BART analyses, and made clear that the purpose of the guidelines was to provide "recommendations" to the states.

Consistent with the statute and regulations, the BART Guidelines contemplate a two-step process: (1) the "Attribution Step," which consists of analyzing which sources are appropriately subject to BART controls; and (2) the "Determination Step," which consists of determining, based on the five statutory BART factors, an appropriate level of control. 70 FR 39108, 39126; *see also Utility Air Regulatory Group*, 471 F.3d at 1335-36 (discussing two-step process). The Guidelines for the Determination Step are designed as a "step-by-step guide" for states to identify the "best system of continuous emissions control technology," taking into account the five BART factors. 70 FR 39127. *See also id*. at 39158 (the Guidelines describe a "process for making BART determinations"). They are merely "helpful guidance" for sources other than power plants with a capacity greater than 750 MW. *Id.* at 39108; *Utility Air Regulatory Group*, 471 F.3d at 1339. Yet, even for larger power plants, the Guidelines are procedural in nature, setting forth criteria for evaluating control alternatives, but not mandating a substantive result. As EPA acknowledges, to mandate a choice of technology would infringe on "those areas where

the Act and legislative history indicate that Congress evinced a special concern with insuring that States would be the decision makers." 70 FR 39137. *See also id*. at 39107 ("The State must determine the appropriate level of BART control").

The flexibility afforded by the Guidelines is critical to ensuring that states maintain primacy in making BART determinations. When EPA re-proposed the Guidelines in 2004, for example, EPA requested comment on a sequential process - similar to a BACT analysis – for considering the five statutory BART factors. 69 FR 25197-25198. In the final rule, however, EPA concluded that "States should retain the discretion to evaluate control options in whatever order they choose, so long as the State explains its analysis of the CAA factors." 70 FR 39130. EPA also expressed that the Guidelines confer authority on the state to make "a BART determination based on the estimates available for each criterion, and as the CAA does not specify how the state should take these factors into account, the states are free to determine the weight and significance to be assigned to each factor." *Id.* at 39123.

EPA further emphasized the flexibility inherent in each step of the BART determination: "States have flexibility in how they calculate costs," *id*. at 39127, and "have the flexibility to develop their own methods to evaluate model results," *id.* at 39108. EPA points out that "States should have flexibility when evaluating the fifth [visibility] statutory factor." *Id*. at 39129. *See also id*. ("Because each Class I area is unique, we believe States should have flexibility to assess visibility improvements due to BART controls by one or more methods, or by a combination of methods ..."). Even the presumptive emission limits for power plants greater than 750 MW "are presumptions only; in making a BART determination, states have the ability to consider the specific characteristics of the source at issue and to find that the presumptive limits would not be appropriate for that source." *Id*. at 39134.

Response: EPA agrees that states play an important role in the regional haze program. However, EPA disagrees that this action conflicts with the State's statutory role or that this rule is beyond EPA's authority. First, the regional haze program explains that EPA "shall ... *require* each applicable implementation plan for a State ... to contain such emission limits, schedules of compliance, and other measures as may be necessary to make reasonable progress toward meeting the national goal." 42 U.S.C. 7491(b)(2). The CAA makes clear that EPA is statutorily obligated to reject a SIP that would "interfere with any applicable requirement concerning attainment and reasonable further progress ... or any other applicable requirement of this chapter." 42 U.S.C. 7410(l). Thus the CAA provides EPA with the authority to review and reject an inadequate regional haze SIP. *Oklahoma v. EPA*, 723 F.3d 1201, 1207 (10th Cir. 2013); *North Dakota v. EPA*, 730 F.3d 750 (8th Cir. 2013).

Second, EPA is required to establish guidelines to ensure that states achieve the visibility goals set forth in the Act. 42 U.S.C. 7491(b)(1). EPA agrees that states have some flexibility in BART determinations, but that flexibility is limited and states must provide EPA with reasoned analysis for their SIP decisions. *Oklahoma v. EPA*, 723 F.3d 1201, 1207 (10th Cir. 2013) (noting that while "it is undoubtedly true that the statute gives states discretion in balancing the five BART factors, it also mandates that the state adhere to certain requirements when conducting a BART analysis"); *North Dakota v. EPA*, 730 F.3d 750 (8th Cir. 2013) (explaining EPA is not required to "approve a BART determination that is based upon an analysis that is neither reasoned nor moored to the CAA's provisions"). The regional haze guidelines provide states with methods to determine BART that EPA considers reasonable, although states may consider methods not provided for in the guidelines in certain circumstances. For example, in explaining a state's flexibility to determine costs, the guidelines note that "if there are elements or sources that

are not addressed by the Control Cost Manual or there are additional cost methods that could be used, we believe that these *could* serve as useful *supplemental information*." 70 FR No. 128 39127. (July 6, 2005). A state, however, must demonstrate that any methods it has used to determine BART that are not found within the guidelines are reasonable.

EPA may, and has, approved state BART determinations that do not rigidly follow the BART guidelines, so long as the state's determinations are reasonable. Here, however, Wyoming's methods were inconsistent with the BART guidelines, unreasonable, and inconsistent with the CAA's statutory and regulatory requirements, as explained elsewhere in these comments. Nothing in this rule displaces a state's discretion to balance the five factors, if the state calculates the factors using reasonable methods that are consistent with the regulatory and statutory requirements of the CAA.

Comment: EPA is now construing the BART Guidelines to treat "recommendations" as "mandates" such that states no longer have the authority to vary from the recommendations, however insignificantly, without finding EPA disapproving their BART determinations. Such an interpretation violates both the plain language of the CAA and its underlying cooperative federalism structure. First, Section 169A(b)(2)(A) provides that BART shall "be determined by the State." 42 U.S.C. 7491(b)(2)(A). Section 169A(g)(2) provides that states are to determine the "costs of compliance" and the "degree of improvement in visibility." *Id.* Section 7491(g)(2). Any interpretation and application of the BART Guidelines and CCM that has the effect, whether directly or indirectly, of mandating particular outcomes or approaches to reaching a BART determination invades state authority. States do the cost of compliance and visibility assessments, not EPA. Treating recommendations as mandates has the effect of forcing all states to follow each recommendation precisely the same way, effectively federalizing the

BART determination by affording EPA the authority to employ the SIP approval process as a means of forcing all states to take the same approach required by EPA in all cases or find their independent decisions overruled. This violates the structure and design by Congress, and conflicts with the congressional commitment of the BART decision to the States. *American Corn Growers*, 291 F.3d at 7-10. This problem did not exist when EPA historically construed the "recommendations" in the Guidelines to be "recommendations" rather than mandates, but EPA's current approach of identifying deviations from the CCM or from the "recommendations" of the Guidelines as "errors of law" destroys state primacy and thus conflicts with the plain language of the statute and is unreasonable and not entitled to deference.

EPA's interpretation of the BART Guidelines violates Section 169A of the CAA because it also restricts state discretion in the decision-making process. It is the states, not EPA, that are authorized to determine BART. 42 U.S.C. 7491(b). In doing so they are directed to take into consideration the five BART factors—costs of compliance, energy and non-air quality environmental impacts of compliance, any existing pollution control technology in use at the source, the remaining useful life of the source, and the improvement in visibility that would be achieved by the use of control technology. *Id.* Section 7491(g)(2). The states must determine how to balance these factors, and how much weight to give each of the factors, on a case-by-case basis.

However, EPA interprets the BART Guidelines as authorizing it to disapprove the State's BART determination based on alleged technical failures to follow each and every paragraph and recommendation in the Guidelines. By relying on isolated instances of alleged deviation from the Guidelines, such an interpretation totally undermines the State's prerogative to determine

how to weigh and balance all factors and therefore conflicts directly with the statutory grant of authority to the states to make BART determinations in accordance with all five BART factors. Section 169A does not tell the states how to take the factors into account, nor does it describe how each of the factors must be treated. The provision directing EPA to provide guidelines to the states, *id.* Section 7491(b)(1), must be read in concert with the broad grant of authority and discretion to states, and does not change the fundamental thrust of the statute. EPA's interpretation that states are constrained to dot every "i" and cross every "t" the way EPA insists directly conflicts with the statute's grant of BART decision making authority to the states. If the BART Guidelines mean what EPA claims they mean, the Guidelines violate the CAA.

Response: As explained elsewhere in this document, we disagree with the commenter's assertions. The CAA does not give states unlimited discretion to determine BART; EPA retains the same supervisory role it has with respect to any SIP submission. We also disagree that our proposal is inconsistent with the *American Corn Growers* decision. We have determined that Wyoming utilized flawed cost assessments and incorrectly estimated the visibility impacts of controls. We have determined these issues resulted in non-approvable BART determinations for the units for which we proposed a FIP. We recognize the State's broad authority over BART determinations, and recognize the State's authority to attribute weight and significance to the statutory factors in making BART determinations. As a separate matter, however, a state's BART determination must be reasoned and based on an adequate record. Although we have largely approved the State's regional haze SIP, we cannot agree that CAA requirements are satisfied with respect to certain specific BART determinations and other necessary FIP elements.[62]

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[62] The commenter cannot challenge EPA's duly promulgated regulations and Guideline. Indeed, the time for such a challenge has long passed, since the Guidelines were promulgated July 6,

Comment: The BART Guidelines provide that the "basis for equipment costs estimates" should be documented. *Id.* at 39166. The Guidelines give states the option of using "data supplied by an equipment vendor (*i.e*., budget estimates or bids) or by a referenced source (such as the Cost Manual, fifth Edition, February 1996, EPA 453/B-96-001)." *Id.*3.

In footnote language, the Guidelines reiterate that costs should be documented, including "any information supplied by vendors that affects your assumptions regarding purchased equipment costs, equipment life, replacement of major components, and any other element of the calculation that differs from the Control Cost Manual." *Id*. at 39167 n.15. EPA relies heavily on this footnote to assert that states, including Wyoming, have failed to comply with the Guidelines because they have not adequately documented strict compliance with the CCM. This is an erroneous and unreasonable interpretation of the Guidelines. When read in conjunction with the CAA- which bestows substantial discretion on the states in making BART determinations - and other statements made in the BART Guidelines and the preamble, this footnote language does not require states to supply vendor quotes or other specific information documenting every single deviation from the CCM, nor does it confer authority on EPA to reject a state's BART determination when the state fails to do so. *Cf. United Savings Ass'n v. Timbers of Inwood Forest Assocs.*, 484 U.S. 365, 371 (1988) (a provision read in isolation "is often clarified by the remainder of the statutory scheme ... because only one of the permissible meanings produces a substantive effect that is compatible with the rest of the law"); *United States v. Boisdore's Heirs*, 49 U.S. 113, 122 (1850) ("[W]e must not be guided by a single sentence or member of a sentence, but look to the provisions of the whole law, and to its object and policy.").

2005, and could only have been challenged within 60 days. 70 FR 39,104; 42 U.S.C. 7607(b), (d)(1)(J).

Treating the CCM as a binding checklist conflicts with the CAA, both in a general sense, by attempting to mandate exactly how a state must evaluate and apply the five BART factors, and in a specific sense, by excluding certain costs from consideration in a BART analysis in the face of statutory language mandating that BART be determined based on the actual "costs of compliance," not some artificial costs of compliance. As to the first issue, EPA itself has recognized that the CCM is "a good reference tool," which can be supplemented "if there are elements or sources that are not addressed by the Control Cost Manual or there are additional cost methods that could be used." 70 FR at 39127. "States have flexibility in how they calculate costs," which is not appropriately circumscribed by recommendations set out in a non-binding manual. *See id. See also id.* at 39153 (States retain discretion in considering "a number of the factors set forth in section 169A(g)(2), including the costs of compliance"). As to the second issue, EPA cannot cite to or rely upon the CCM to challenge any decision by the states taking into account *actual* rather than *theoretical* costs, because the statute requires that real costs be considered. CAA Section 169A(g)(2), 42 U.S.C. 7491(g)(2). The CCM does not impose binding obligations on states undertaking BART determinations, and failure to comply with its overly general and non-source specific recommendations is not grounds for rejection of a state's analysis of the costs of compliance.

Additionally, the CCM has not been subject to notice and comment under the APA, 5 U.S.C. 701-706; it has not been published in the Code of Federal Regulations (CFR); and it is not formally incorporated by reference into the BART Guidelines. Therefore, it is merely a policy statement that is not binding on the states. Furthermore, simply referencing the CCM in the BART Guidelines is not adequate to make that non-binding guidance document legally enforceable. "Agency statements 'having general applicability and legal effect' are to be

published in the Code of Federal Regulations." *NRDC v. EPA*, 559 F.3d 561, 564 (D.C. Cir. 2009), citing 1 CFR 8.1(a). *See also Brock v. Cathedral Bluffs Shale Co.*, 796 F.2d 533, 539 (D.C. Cir. 1986) ("The real dividing point between regulations and general statements of policy is publication in the Code of Federal Regulations, which the statute authorizes to contains only documents 'having general applicability *and legal effect* ...'") (emphasis in original). Accordingly, EPA's assertion that a state has failed to comply with the BART Guidelines by using costing methodology other than that set forth in the CCM is contrary to federal law and is arbitrary and capricious.

Federal regulations require that in order for material to be formally incorporated by reference into the *Federal Register* and the CFR, EPA must seek approval from the Director of the Federal Register. 1 CFR 51.1. Documents are eligible for incorporation only if they meet certain criteria; incorporation of a document "produced by the same agency that is seeking its approval" is generally inappropriate unless the Director of the Federal Register finds that the document also "possess[es] other unique or highly unusual qualities." *Id*. Section 51.7(a)-(b). Furthermore, language incorporating a publication by reference must be "as precise and complete as possible," including a statement that the document is "incorporated by reference" and "[i]nform[ing] the user that the *incorporated publication is a requirement*." *Id*. Section 51.9(b)(1), (3). Finally, dynamic incorporations into the CFR are prohibited. *Id.* Section 51.1(f) ("Incorporation by reference of a publication is limited to the edition of the publication that is approved. Future amendments or revisions of the publication are not included."). *See also* 76 FR 33590, 33593 (June 8, 2011) (OSHA noting that "it cannot incorporate by reference the latest editions of consensus standards without undertaking new rulemaking because such action would ... deprive the public of the notice-and-comment period required by law").

EPA has not complied with the requirements for incorporating the CCM into the regulations directing states to undertake BART Determinations or into the BART Guidelines. The regulations make no mention of the CCM. The BART Guidelines reference the CCM, but do not indicate that EPA was seeking approval for incorporation by reference; and, in any event, it is unlikely that the CCM meets the requirements for incorporation by reference. Additionally, the Guidelines reference the 5th edition of the CCM but direct states to use the most recent version of the CCM, 70 FR 39167 n.14, and dynamic incorporation is expressly prohibited by the regulations governing incorporation by reference, 1 CFR 51.1(f). Where EPA has failed to comply with the requirements for incorporation by reference, the referenced material is "ineffective to impose obligations upon, or to adversely affect" third parties. *NRDC v. Train*, 566 F.2d 451, 457 (D.C. Cir. 1977). Therefore, the CCM does not constitute binding law, and EPA has no authority to reject Wyoming's BART determinations on grounds the State allegedly strayed from the CCM's cost methodology.

Response: EPA disagrees with this comment. First, with regards to notice-and-comment procedures, the BART Guidelines, including the references within them to the Control Cost Manual, have gone through appropriate public comment procedures and the time to challenge the BART Guidelines' references to the CCM has passed. If the commenter believes the BART Guidelines improperly incorporated by reference the CCM, the commenter could have requested judicial review within 60 days of the publication of the BART Guidelines in the Federal Register. We note that the BART Guidelines have indeed been published in the Code of Federal Regulations, in Appendix Y to Part 51 of Title 40. In addition, the reference to the CCM in Appendix Y provides adequate notice to the public that EPA intended the most recent version of the CCM to be used, and provides a link to the CCM itself.

Moreover, the very action that we are completing today has gone through notice-and-comment procedures. Thus, the public has had full opportunity to comment on our application of the CCM. Furthermore, the commenter's arguments that incorporation by reference is necessary for anything with binding legal effect miss the mark. The BART Guidelines do not contain a legally binding requirement to use the CCM, because as we explain next, the Guidelines clearly state that states may deviate from the CCM.

Commenter mischaracterizes EPA's use and application of the Control Cost Manual. EPA's revised cost-effectiveness values are consistent with CAA and RHR requirements. EPA explained in issuing the BART Guidelines that "[s]tates have flexibility in how they calculate costs." See 70 FR at 39127 (July 6, 2005). A state may deviate from the Control Cost Manual provided its analysis is reasonable and the deviations are documented. Here, as discussed elsewhere in this document, Wyoming's cost-effectiveness values were not reasonable. We disagree with commenter's view that our cost analysis is improper, but we agree that the CCM is not the only source of information for the BART analysis. For instance, the reference to the CCM in the BART Guidelines clearly recognizes the potential limitations of the CCM and the need to consider additional information sources:

> The basis for equipment cost estimates also should be documented, either with data supplied by an equipment vendor (i.e., budget estimates or bids) or by a referenced source (such as the OAQPS Control Cost Manual, Fifth Edition, February 1996, EPA 453/B-96-001). In order to maintain and improve consistency, cost estimates should be based on the OAQPS Control Cost Manual, where possible. The Control Cost Manual addresses most control technologies in sufficient detail for a BART analysis. The cost

analysis should also take into account any site-specific design or other conditions identified above that affect the cost of a particular BART technology option.[63]

As to unusual circumstances, the BART Guidelines call for "documentation" to be provided for "any unusual circumstances that exist for the source that would lead to cost-effectiveness estimates that would exceed that for recent retrofits, [64] which as discussed elsewhere in this final notice were not provided.

Comment: If EPA is making a BART determination as part of a FIP, it must comply with the RHR. Section 169A(g)(2) requires the BART determination to take into consideration five statutory factors. These factors "were meant to be considered together" to arrive at a single judgment: a BART emission limit. *Am. Corn Growers*, 291 F.3d at 6. EPA's proposed FIP, however, does not present a discussion, finding, or evaluation of the five statutory factors taken together. Instead, EPA merely states that it proposes to find that Wyoming's BART analysis fulfills all of the BART requirements except as to cost-effectiveness and visibility benefits. EPA then proposes to engraft onto Wyoming's consideration of the five statutory BART factors its own cost-effectiveness and visibility analysis, to arrive at the conclusion that SCR is BART. This fails to comply with the statute. The selection of the BART emission limit is arrived at by considering all five BART factors taken together. This requires, for example, that the selection of SCR as BART represents an acceptable balancing of energy and non-air quality environmental factors. When Wyoming made this assessment, however, it was considering LNBs and OFA, and thus its conclusion - which EPA proposes to approve - noted that "combustion control using LNB with OFA does not require non-air quality environmental

[63] 70 FR 39104, 39166.
[64] 70 FR 39104, 39168.

mitigation for the use of chemical reagents (*i.e.*, ammonia or urea) and there is a minimal energy impact." This weighing of statutory factors does not discuss or apply SCR, and therefore cannot be adopted by EPA to support its own BART emissions limit in its FIP. EPA is therefore proposing a BART emission limit *without* independently considering the five statutory BART factors, in violation of Section 169A(g)(2).

Nor does EPA articulate any reasoning supporting its proposed BART emission limit that applies all of the statutory factors. This violates EPA's obligation to cogently explain and articulate each step in its reasoning for proposed action. *State Farm*, 463 U.S. at 48 ("[A]n agency must cogently explain why it has exercised its discretion in a given manner."). In fact, even as to the cost-effectiveness and visibility improvements EPA relies upon for its BART emission limit, EPA states that they are adopted because they are "in the range of what EPA has found reasonable for BART in other SIP and FIP actions." 78 FR 34776. But EPA does not identify which "actions" it is talking about, EPA does not show how the five factors considered in those other "actions" make those "actions" comparable this action, and EPA does not pay even minimal lip service to the statutory requirement that emission limits must be based upon local considerations arrived at by a careful weighing of statutory factors unique in each case. EPA is just selecting a preferred technology (SCR) because it considers the cost of such technology to be acceptable to impose upon Basin Electric, without regard to whether, when considered for its impacts locally in Wyoming as Congress intended, it is the "best" control option for all of the circumstances fully considered. This violates five-factor decision-making process required by the CAA.

Response: We disagree with this comment. Contrary to commenter's assertions, EPA selected the BART emission limits by considering all five BART factors taken together and has complied

with CAA and RHR requirements. As discussed in our proposal (see for example discussion starting at 78 FR 34774) and in our response to comments in this action (see sections V.B, V.C, and V.D), we clearly consider all five factors.

6. Reasonableness Standard

Comment: EPA cannot sidestep the CAA's mandate for state discretion by developing and applying a new "reasonableness" standard for evaluating and rejecting that discretion. EPA's regional haze FIP action, however, does just that. For example, EPA incorrectly declared "the state's BART analysis and determination must be reasonable in light of the overarching purpose of the regional haze program." (See 78 FR 34743) This overly broad and illegal "reasonableness" standard allows EPA to reject any BART determination that EPA dislikes by merely arguing that a state's BART determination is "unreasonable" and without comparing the state's determination to any firm or fixed standards. EPA's "reasonableness" standard requires statutory and regulatory limitations on EPA's authority to disapprove a reasoned RH SIP. The fallacy of EPA's improper reasonableness standard is made even more apparent in its application by EPA, which simply rejects as "unreasonable" many of Wyoming's BART-related decisions without offering sufficient justification of why that is the case.

In creating and employing its reasonableness standard, EPA goes to an even greater extreme by defining "reasonable" in the most self-serving manner imaginable. In short, EPA defines "reasonable" to mean that EPA agrees with the state's exercise of discretion, and it defines "unreasonable" to mean EPA does not agree with the state. (See e.g., 78 FR 34,767, where EPA substitutes its consideration of costs and visibility improvement for Wyoming's). In this way, EPA attempts to bootstrap itself into the role of the sole decision-maker of what is BART and what is not. The CAA does not countenance such overreaching by EPA.

For all of the criticism that EPA makes concerning the state's analyses, the reality is that the results of the analyses of both agencies are very similar. In some cases, EPA's numbers (such as the cost of SNCR at Wyodak) provide less of a justification for EPA's chosen BART controls than Wyoming's numbers did in its analyses. However, EPA has used its broad and unjustified criticisms of the State's work to discredit the State's studies and usurp the discretion the State has applied to its BART determinations.

We also received numerous earlier comments pertaining to EPA's use of a "reasonableness" standard for evaluating BART determinations. For example, commenters pointed out that EPA incorrectly declared "the State's BART analysis and determination must be reasonable in light of the overarching purpose of the regional haze program." Commenters asserted that the fallacy of this improper reasonableness standard is apparent in its application by EPA, which simply rejects as "unreasonable" many of Wyoming's BART-related decisions without offering a sufficient explanation of why that is the case. Commenters state that EPA makes no attempt to explain how any of Wyoming's BART determinations are "unreasonable," but simply decrees that they are unsupported by any comparison to any standards, regulations, or statutes.

Commenters argued that the reasonableness standard employed by EPA is not found in the CAA, the RHR, its Preamble, or Appendix Y. Commenters go on to point out that nowhere does EPA define or explain what constitutes "reasonable in light of the overarching purpose of the regional haze program", and that this standard has not been defined or subjected to notice and comment rulemaking. Commenters pointed out that the CAA does not authorize EPA to adopt and employ "a reasonable in light of the overarching purpose of the regional haze program" criterion for approving or disapproving a state BART determination as CAA

Section169A(b)(2)(A) only requires the State to consider five statutory factors. Commenters asserted that the CAA does not impose an additional requirement that the final BART determination is “reasonable in light of the overarching purpose of the regional haze program” as determined by EPA and as such EPA’s imposition of this additional criterion is therefore lacking in statutory authority. One commenter stated that there are no numerical minimums that emission rates much achieve in a BART determination and there are no statutory minimum “visibility improvement” obligations.

One commenter went on to point that the failure to define how it will determine reasonableness leads to inconsistent and subjective agency action, as illustrated by EPA’s inconsistent treatment of BART decisions around the country. The commenter pointed to BART decisions in Oklahoma, North Dakota, and Nevada as examples where EPA’s failure to define reasonableness has led to inconsistent BART decisions.

Another commenter argued that throughout its proposal, EPA claims to have reviewed Wyoming's SIP under a "reasonableness" standard. *See, e.g.,* 78 FR 34776 ("we do not consider Wyoming's analyses ... to be reasonable"); *see also id.* at 34778. EPA apparently believes that this standard allows EPA to substitute its judgment for the State's whenever EPA generally alleges that the State's conclusions or methods are not reasonable. Yet EPA cites no statutory or regulatory authority to support its malleable application of this "reasonableness" standard of review. EPA appears to have crafted its flexible reasonableness standard from *Alaska Department of Environmental Conservation v. EPA*, 540 U.S. 461 (2004). That case stands for the proposition that EPA has authority to reject a state decision that “is not based on a reasoned analysis[.]” I*d.* at 490 (internal quotation omitted). EPA has misapplied that standard in its proposal to disapprove Wyoming's SIP.

The commenter further argued that the *ADEC* standard does not allow EPA to disapprove SIPs whenever, in EPA's opinion, some element of the SIP is not reasonable. Instead, EPA must provide SIPs "considerable leeway" and may not "second guess" state decisions[.]" *ADEC*, at 490 (internal citation omitted). Accordingly, EPA may disapprove a SIP under *ADEC* only by showing that the SIP is arbitrary. *See id.* at 490-91. EPA therefore must defer to the Wyoming's determinations in the SIP, and may not simply substitute its judgment for the State's. And, of course, EPA carries the burdens of production and persuasion to show that the State acted unreasonably in light of the statutes and administrative record. *Id.* at 494.

The commenter asserted that EPA has failed to carry those burdens in its proposed partial disapproval of Wyoming's regional haze SIP. The administrative record demonstrates that Wyoming's SIP will achieve the statutory goal of reasonable progress. EPA has not shown otherwise. EPA has shown only that if it had crafted the implementation plan in the first instance, it would have done so differently than Wyoming did. But the law does not allow EPA to simply substitute EPA's preferences for the State's. Before EPA can disapprove the SIP, it must show that the SIP is arbitrary, in light of the statutes and the record, and with consideration for the deference owed the State's determinations. For example, with respect to Jim Bridger Units 1 and 2 the only meaningful difference in outcomes between EPA's proposed FIP and the SIP is a roughly five-year period in which EPA's proposed controls will result in lesser emissions, though without a perceptible visibility improvement. Save for this distinction, the SIP and FIP create essentially equal improvements in visibility. EPA does not explain why a reduction in NO_x emissions that is more expensive but not more effective at improving visibility is more reasonable than the SIP. That lack of explanation renders EPA's proposal arbitrary, and decidedly "unreasonable."

Response: EPA disagrees with this comment. The CAA requires states to submit SIPs that contain such measures as may be necessary to make reasonable progress toward achieving natural visibility conditions, including BART. The CAA accordingly requires the states to submit a regional haze SIP that includes BART as one necessary measure for achieving natural visibility conditions. In view of the statutory language, it is logical that the reasonableness of the State's BART analysis and determination would be evaluated in light of the purpose of the regional haze program. In addition, our regional haze regulations, at 40 CFR 51.308(d)(ii), provide that when a state has established a RPG that provides for a slower rate of improvement in visibility than the URP (as has Wyoming), the state must demonstrate, based on the reasonable progress factors—i.e., costs of compliance, time necessary for compliance, energy and non-air quality environmental impacts of compliance, and remaining useful life of affected sources—that the URP to attain natural visibility conditions by 2064 is not reasonable and that the progress goal adopted by the state is reasonable. 40 CFR 51.308(d)(iii) provides that, "in determining whether the State's goal for visibility improvement provides for reasonable progress towards natural visibility conditions, the Administrator will evaluate" the state's demonstrations under section 51.308(d)(ii). It is clear that our regulations and the CAA require that we review the reasonableness of the State's BART determinations in light of the goal of achieving natural visibility conditions. This approach is also inherent in our role as the administrative agency empowered to review and approve SIPs. Thus, we are not establishing a new reasonableness standard, as the commenter asserts. As we discuss elsewhere, *ADEC* supports the use of this standard, and does not require EPA to apply a sort of "arbitrary and capricious" standard in reviewing Wyoming's SIP submittal. The language regarding the burdens of production and persuasion in *ADEC* are inapplicable, as they refer to a litigation context that is not present here.

Furthermore, this is a SIP review action, and we believe that EPA is not only authorized, but required to exercise independent technical judgment in evaluating the adequacy of the State's regional haze SIP, including its BART determinations, just as EPA must exercise such judgment in evaluating other SIPs. In evaluating other SIPs, EPA is constantly exercising judgment about SIP adequacy, not just to meet and maintain the NAAQS, but also to meet other requirements that do not have a numeric value. In this case, Congress did not establish NAAQS by which to measure visibility improvement; instead, it established a reasonable progress standard and required that EPA assure that such progress be achieved. Here, contrary to the commenter's assertion, we are exercising judgment within the parameters laid out in the CAA and our regulations. Our interpretation of our regulations and of the CAA, and our technical judgments, are entitled to deference. See, e.g., *Michigan Dep't. of Envtl. Quality v. Browner*, 230 F.3d 181 (6th Cir. 2000); *Connecticut Fund for the Env't., Inc. v. EPA*, 696 F.2d 169 (2nd Cir. 1982); *Voyageurs Nat'l Park Ass'n v. Norton*, 381 F.3d 759 (8th Cir. 2004); *Mont. Sulphur & Chem. Co. v. United States EPA*, 2012 U.S. App. LEXIS 1056 (9th Cir. Jan. 19, 2012).

Finally, regarding commenters' assertions that we are being inconsistent, because the comment is not specific about what aspect of our proposed disapproval is believed to be inconsistent with other EPA decisions, it is not possible for EPA to address in this response any specific concerns. As articulated in our proposed rulemaking and further explained in our responses to other comments, EPA's partial approval and partial disapproval of the Wyoming regional haze SIP is consistent with the CAA, the RHR, BART Rule, and EPA guidance.

Comment: In the absence of criteria or standards by which "reasonableness" may be assessed, EPA's claim that the State's BART for Laramie River Station is unreasonable is by definition a mere subjective conclusion without basis or foundation. EPA must instead articulate a standard

grounded in the statute by which it evaluates and disapproves a SIP and then must support its decision with a plausible explanation connecting the facts to its standard.

Response: The CAA requires states to submit SIPs that contain such measures as may be necessary to make reasonable progress toward achieving natural visibility conditions, including BART. The CAA accordingly requires the states to submit a regional haze SIP that includes BART as one necessary measure for achieving natural visibility conditions. In view of the statutory language, it is reasonable for the State's BART analysis and determination to be evaluated in light of the purpose of the regional haze program.

In addition, our regional haze regulations, at 40 CFR 51.308(d)(ii), provide that when a state has established a RPG that provides for a slower rate of improvement in visibility than the URP (as has Wyoming), the state must demonstrate, based on the reasonable progress factors - i.e., costs of compliance, time necessary for compliance, energy and non-air quality environmental impacts of compliance, and remaining useful life of affected sources - that the rate of progress to attain natural visibility conditions by 2064 is not reasonable and that the progress goal adopted by the state is reasonable. 40 CFR 51.308(d)(iii) provides that, "in determining whether the State's goal for visibility improvement provides for reasonable progress towards natural visibility conditions, the Administrator will evaluate" the state's demonstrations under section 51.308(d)(ii). Therefore, it is clear that our regulations and the CAA require that we review the reasonableness of the State's BART determinations in light of the goal of achieving natural visibility conditions. This approach is also inherent in our role as the administrative agency empowered to review and approve SIPs. Thus, we are not establishing a new reasonableness standard, as the commenter asserts.

Here, Wyoming concluded that a limit of 0.21lb/MMBtu for Laramie River Station could be achieved with operation of LNBs with OFA. As presented in the Introduction section and elsewhere in the notice, the State's regional haze SIP determined that NO_X BART for Laramie River Units 1, 2, and 3 is new LNB/SOFA. We proposed to disapprove the State's determination because the State did not reasonably assess the costs of compliance and visibility improvement in accordance with the BART Guidelines. 78 FR 34766. After revising the State's costs and modeling and re-evaluating the statutory factors, we proposed to determine that NO_X BART is LNB/SOFA + SCR, with an emissions limit of 0.07 lb/MMBtu for each unit. As the result of the comments received on our proposal, we have further revised our calculation of the costs of compliance and visibility modeling. For example, as explained in the BART section of this document, we corrected cost estimates for elevation and provided detailed comments regarding how site characteristics were addressed using available satellite imagery and why this is a valid approach for providing estimates that are acceptable for BART analysis and consistent with CAA and regulations. While we accepted some of the revised costs, again as explained in the BART section of this document, we did not accept others. For example, we did not accept cost assumptions where the necessary supporting documentation was not provided. After re-evaluating the BART factors, we continue to find that LNB/SOFA + SCR is reasonable as BART and are therefore finalizing our proposal. As a result, we are finalizing our proposed disapproval of the State's NO_X BART determination for Laramie River Station and finalizing our proposed FIP that includes a NO_X BART determination of LNB/SOFA + SCR, with an emission limit of 0.07 lb/MMBtu (30-day rolling average). The facts presented here and elsewhere in our final notice, provided a basis and foundation, grounded on the CAA and regulations, for the EPA

to reach its decision regarding the unreasonableness of Wyoming's BART for Laramie River Station.

Comment: EPA attempted to use post-hoc, immaterial changes that it calculated in costs and visibility improvements to justify usurping Wyoming's BART decision-making authority. This runs counter to the vast discretion EPA has given to other states' regional haze SIPs. In Oregon, for example, despite EPA and Oregon differing in how each calculated BART costs that resulted in cost variance of over $700 per ton, EPA stated that such difference between the two estimates would not materially affect Oregon's evaluation. The difference between the cost analyses under EPA's FIP action and the Wyoming regional haze SIP similarly is immaterial. Similarly, in Colorado, the State's plan included a cost analysis that, according to EPA, was not conducted in accordance with EPA's Control Cost Manual. In addition, EPA explained that Colorado should have more thoroughly considered the visibility impacts of controlling emissions from one BART unit on the various impacted Class I areas and not focused on just the most impacted Class I area. Nevertheless, EPA approved the State's SIP, explaining that "Colorado's plan achieves a reasonable result overall." EPA should afford Wyoming the same degree of deference it afforded Colorado and Oregon. As demonstrated by the impacts of the Wyoming SIP, it "achieves a reasonable result overall."

EPA's inconsistency is not just limited to its disparate actions between states. In Wyoming, EPA acted inconsistently in its BART determinations between sources within the state. For example, EPA accepted Wyoming's cost and visibility BART analyses for FMC Westvaco and General Chemical, along with the PM BART analyses for PacifiCorp's and Basin Electric's BART units. At the same time, EPA rejected the NO_x BART cost and visibility analyses for PacifiCorp's and Basin Electric's BART units. Wyoming, however, used the same

BART analysis methodology for those BART units at which EPA accepted the Wyoming BART analysis as it did at those BART units for which EPA did not. By rejecting some cost and visibility analyses on the basis that they were improperly performed, while accepting others that were performed in the same manner, EPA acted arbitrarily and capriciously.

Response: We disagree with this comment. In evaluating a State's BART determination, EPA has the discretion to develop additional information, such as cost and visibility analyses. In the end, this additional information, may confirm the State's BART determination as reasonable, or it may lead EPA to disapprove the State's BART determination as unreasonable. However, EPA is not required to develop additional information for all BART determinations in order to review the State's BART determination. If a State's BART determination appears to have reached a reasonable conclusion, taking into account existing information and the potential magnitude or effect of technical flaws in cost or visibility analyses, EPA may approve the BART determination. However, if the potential technical flaws in analyses make it possible that the State's BART determination would be unreasonable, then EPA may develop additional information to try to determine whether the State's BART determination would fall within the range of reasonable outcomes using proper technical analyses. For example, as we explain elsewhere in responding to comments on modeling, in this action EPA was unable to ascertain the visibility benefits of individual NOx controls for the PacifiCorp units from the State's modeling because the emission reductions for multiple pollutants were modeled together, and therefore we were unable to assess the reasonableness of the State's BART determinations.[65]

[65] As we explain later in this document "[t]hat is, since the visibility improvement for each of the State's control scenarios was due to the combined emission reductions associated with SO_2, NO_x, and PM controls, it was not possible to isolate what portion of the improvement was attributable to the NO_x controls alone. For this reason, in the modeling conducted by EPA, we held SO_2 and

Similarly, for the Basin Electric units, we were unable to ascertain the visibility benefits of SNCR. For that reason, we developed additional modeling. In some cases, the additional modeling confirmed the reasonableness of the State's decisions while in others it did not.

With respect to the State's PM BART determinations, the dollar per ton costs for higher-than-current levels of control were generally high (regardless of potential flaws in determining those costs), so existing information was adequate to find that the PM BART determinations were reasonable. With respect to FMC Westvaco and General Chemical, the State's modeling (which as we discuss elsewhere used a conservative estimate of background ammonia which would tend to result in an overestimation of visibility impacts) showed fairly low visibility benefits from NOx controls. Based on consideration of the five BART factors, the State selected combustion controls for these BART sources. EPA also finds these determinations reasonable, and EPA has no reason (nor does the commenter provide one) to think otherwise.

With respect to the comments regarding Oregon and Colorado, although consistency with similar determinations is one hallmark of reasonableness, the BART determinations are very fact-specific and cannot be easily compared across states. For example, in the Oregon action, EPA noted that (among other things) the source would shutdown in 2020, so "it [was] reasonable for the state to consider the sizable capital cost difference between [two technologies], and the relatively small incremental visibility improvement between the two technologies." 76 FR 38900. Thus, EPA could assess on the basis of existing information that the State's BART determination was reasonable. With respect to the Colorado SIP, we disagree with the

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PM emission rates constant (reflecting the "committed controls" for those pollutants identified by Wyoming), and varied only the NO_x emission rate. This allowed us to isolate the degree of visibility improvement attributable to the NO_x control option." See response to comments in the modeling section for further information.

commenter that the Wyoming and Colorado SIPs would achieve comparable visibility improvement.

With respect to consistency generally, in this action we have considered the five factors in the context of each facility. Although one factor (such as visibility improvement or costs of compliance) may be similar for a unit in another state, each factor must be weighed in the context of the other source-specific BART factors.

Comment: Section 169A(g)(2) of the CAA requires states, in determining BART, to "take into consideration the costs of compliance, the energy and non-air quality environmental impacts of compliance, any existing air pollution control technology in use at the source, the remaining useful life of the source, and the degree of visibility improvement which may reasonably be anticipated to result from the use of such technology." 42 U.S.C. 7491(g)(2). The CAA does not require the achievement of any specific degree of visibility improvement, and only requires that a BART determination eliminate or reduce impairment to visibility. *See id.* Section 7491. If the state's determination does so, the state has complied with the statute and nothing authorizes EPA to propose or impose its own BART decision.

EPA's proposed action, however, articulates a number of *additional* grounds that must be met for a SIP to be "approvable." These additional grounds are not found in the text of the CAA and have never been defined or promulgated with notice and comment rulemaking. For example, EPA's proposed action articulates a two pronged test for BART SIP approval: *first*, "a state must meet the requirements of the CAA and our regulations for selection of BART"; and then *second*, "the state's BART analysis and determination must be reasonable in light of the overarching purpose of the regional haze program." 78 FR 34743.

Basin Electric has no problem with the first prong of this test, *i.e.*, that a state's SIP must "meet the requirements of the CAA" and "any [applicable] regulations" - so long as those regulations are confined to the areas Congress allowed EPA to regulate. However, the second prong, *i.e.*, that "the State's BART analysis and determination must be reasonable in light of the overarching purpose of the regional haze program," sets out a new "reasonableness" obligation that is neither defined in nor separately set forth in the Act. Essentially, EPA is proposing to measure a BART determination not just against the statutory criteria but also against EPA's own subjective view whether the result reached is *reasonable enough* to meet the "overarching goal" of the Act. But since EPA acknowledges that neither the Act nor the regulations "mandate specific milestones or rates of progress," 76 FR 58577, EPA's subjective reasonable enough requirement imposes a new legislative standard that either goes beyond or, for the first time, purports to define "the requirements of the Act." This empowers EPA to disapprove a state BART determination and replace it with its own on reasonableness grounds that have never been defined or vetted through public notice and comment.

The same is true with EPA's assertion that Wyoming did not provide "sufficient documentation." 78 FR 34749. EPA is asserting the existence of, and then a failure to meet, a "sufficient documentation" requirement that is both undefined and entirely of EPA's own creation. This allows EPA to extend its regulatory reach to determine and impose its own view of BART when a state's reasoning, according to EPA, fails to meet unannounced and undefined legislative criteria. Such an expansion of EPA's substantive powers is illegal. EPA may not employ evaluative criteria that effectively extend or define the reach of the CAA without first subjecting those criteria to public notice and comment. *See, e.g.*, *Syncor Int'l Corp. v. Shalala*, 127 F.3d 90, 95-96 (D.C. Cir. 1997) (requiring the FDA to subject a rule that extended its

regulatory reach to notice and comment before applying it); *U.S. Tel. Ass'n v. FCC*, 28 F.3d 1232, 1233-34 (D.C. Cir. 1994) (finding that the FCC's application of a new standard was a substantive rule requiring notice and comment); *Am. Mining Congress v. Mine Safety & Health Admin.*, 995 F.2d 1106, 1112 (D.C. Cir. 1993) (outlining the factors to apply in determining when a rule is substantive and thus requires notice and comment).

As the D.C. Circuit Court has explained, when an agency implements a substantive change to its regulations that alters the boundaries of what the agency can regulate, the change must be subject to public notice and comment so that an agency does not expand its power without public involvement. *Appalachian Power Co. v. EPA*, 208 F.3d 1015, 1024 (D.C. Cir. 2000). The same is true when EPA purports, for the first time, to vet a state SIP revision against criteria of its own making not set forth in the governing statute or the existing regulations. Here, EPA is effectively stating that: (1) the most cost-effective (on a dollar per ton basis) control technology must be selected as BART; (2) a state BART determination must be "adequately justified," "sufficiently documented," and "properly made"; and (3) the state's determination must meet EPA's subjective view of "reasonableness" in reaching the non-binding goal of the regional haze Program. Each of these new criteria is outcome determinative, according to EPA, and each must be met for the State to be considered in compliance with Section 169A. As such, these are new legislative rules that cannot be adopted and imposed without first being submitted to notice and comment rulemaking as required by CAA Section 307(d), 4207 U.S.C. 7607.

An important indicator of when public notice is required is that the change would allow the agency to extend its own power: "[A] substantive rule *modifies* or *adds* to a legal norm based on the agency's *own authority* ... And, it is because the agency is engaged in lawmaking that the APA requires it to comply with notice and comment." *Syncor*, 127 F.3d at 95 (emphasis in

original). EPA's current proposal to disapprove Wyoming's BART determination does exactly that. EPA uses its own authority to modify the legal norm for reviewing State BART decisions to give itself the ultimate authority to impose its own favored BART standards.

The need for advance rulemaking is particularly acute when EPA interprets and applies a statute that itself establishes no concrete, objective requirements. No specific rates of progress, technologies, or visibility improvements are mandated by the RHR. Unlike review of a SIP, where EPA applies specifically defined ambient concentrations to determine if the SIP should be approved, there are no objective criteria against which to measure the "reasonableness" of any state BART determination with respect to cost and visibility judgments.

Under EPA's self-defined standards, EPA is left with unfettered discretion to disapprove any decision with which it disagrees on the grounds that it is not "reasonable" enough to meet EPA's preferences. This is why the law requires EPA to first define and promulgate rules explaining what is "reasonable" enough, or what is "sufficiently documented" enough, to support a BART determination. Otherwise, EPA can trump state discretion on the basis of internally conceived and unexamined evaluative criteria that extend EPA's reach without public involvement.

Response: EPA disagrees with this comment. First, even assuming that EPA's proposed action on the Wyoming regional haze SIP articulated new grounds for evaluating a regional haze SIP, the proposed action provides the public with the opportunity to comment. As evidenced by the commenter's submission, the commenter had the opportunity to comment on EPA's approach to evaluating the Wyoming regional haze SIP and to identify any concerns associated with the statement at issue from our proposal and other aspects of our action.

Second, the CAA requires states to submit SIPs that contain such measures as may be necessary to make reasonable progress toward achieving natural visibility conditions, including BART. The CAA accordingly requires the states to submit a regional haze SIP that includes BART as one necessary measure for achieving natural visibility conditions. In view of the statutory language, it is reasonable that the State's BART analysis and determination would be evaluated in light of the purpose of the regional haze program. In addition, our regional haze regulations, at 40 CFR 51.308(d)(ii), provide that when a state has established a RPG that provides for a slower rate of improvement in visibility than the URP (as has Wyoming), the state must demonstrate, based on the reasonable progress factors—i.e., costs of compliance, time necessary for compliance, energy and non-air quality environmental impacts of compliance, and remaining useful life of affected sources—that the rate of progress to attain natural visibility conditions by 2064 is not reasonable and that the progress goal adopted by the state is reasonable. 40 CFR 51.308(d)(iii) provides that, "in determining whether the State's goal for visibility improvement provides for reasonable progress towards natural visibility conditions, the Administrator will evaluate" the state's demonstrations under section 51.308(d)(ii). It is clear that our regulations and the CAA require that we review the reasonableness of the State's BART determinations in light of the goal of achieving natural visibility conditions. This approach is also inherent in our role as the administrative agency empowered to review and approve SIPs. Thus, we are not establishing a new reasonableness standard, as the commenter asserts.

As explained above, our proposal clearly laid out the bases for our proposed disapproval of the State's BART and reasonable progress determinations, and we have relied on the standards contained in our regional haze regulations and the authority that Congress granted us to review and determine whether SIPs comply with the minimum statutory and regulatory requirements. In

determining SIP adequacy, we inevitably exercise our judgment and expertise regarding technical issues, and it is entirely appropriate that we do so. Courts have recognized this necessity and deferred to our exercise of discretion when reviewing SIPs.

Finally, we disagree with the argument that we must approve a BART determination where the SIP reflects consideration of the five factors and the BART selection will result in some improvement in visibility. We think Congress expected more when it required the application of "best available retrofit technology."

Comment: In 2004, EPA represented to the United States Supreme Court that it would act only very rarely to overrule a state decision selecting control technology for specific sources. *ADEC.* Relying upon this representation to rebut doubts expressed by the dissent, the Supreme Court affirmed EPA's decision to overrule a BACT decision made by the State of Alaska on the grounds that the State's decision was not "reasonable" because the record lacked the information necessary to support the State's cost assessment. The *ADEC* Court held that EPA could review state BACT determinations to ascertain whether they were "reasonable in light of the statutory guides and the state administrative record." *Id.* at 494.

EPA now relies upon the Supreme Court's use of the word "reasonable" in the BACT context to assume authority to judge the "reasonableness" of state BART decisions when reviewing SIP revisions under Section 110, and thus to disapprove any BART determination it considers "unreasonable" "in light of the over-arching purpose of the regional haze program." 78 FR 34743. This formulation seriously misconstrues and misstates the Supreme Court's holding and runs counter to the CAA's conferral of authority on the State in selecting BART. "Reasonableness in EPA's subjective view" cannot be applied as a rubric for approving state BART decisions, as it allows EPA to impose its own BART preferences. Rather than adhere to

the core principles of cooperative federalism codified in the RHR by only rarely overruling state technology choices, EPA instead does exactly what it represented to the Supreme Court it would not do - routinely overrule state determinations - and it does so under the rubric of authority to evaluate "reasonableness" on a subjective basis.

Examination of EPA's action in this and related BART proceedings around the country demonstrates that EPA is not using the "reasonableness" standard that was actually approved in *ADEC*. Far from endorsing a generic "reasonableness in EPA's view" standard, the *ADEC* Court echoed the language of APA arbitrary and capricious review and upheld EPA's rejection of a State BACT determination on grounds that the State's determination was not supported by the administrative record. The Court stated that "[o]nly when a state agency's BACT determination is '*not based on a reasoned analysis*' may EPA step in to ensure that the statutory requirements are honored," and that the Act "authorizes EPA to act in the *unusual case* in which a state permitting authority has determined BACT *arbitrarily*." 540 U.S. at 490-91; citation omitted). The Court added that "EPA adhered to that limited role here, explaining why ADEC's BACT determination was '*arbitrary*' and *contrary to [the State]'s own findings*." *Id.* The Court thus held that EPA had properly exercised its authority to reject the State's BACT determination when the State switched from an initial finding that a certain technology was economically feasible to finding that the same technology was economically infeasible with "no factual basis in the record" to support the change. *Id.* at 496-500.

Here, EPA makes no effort to formulate and apply a "reasonableness" standard that appropriately preserves for EPA only the "limited role" of insuring that a state decision is not arbitrary and capricious and lacking in record support. Instead, EPA scours the record for

inconsequential actions taken by states which it can portray as "inconsistent with" the massively complex, out-dated, and non-binding CCM or with the largely advisory Guidelines so that EPA can declare the state's decision to be "unreasonable" and take over the choice of BART technology. EPA does not demonstrate any arbitrary or capricious conduct, any lack of reasoned decision making, or any other documented failure by the State to follow the requirements of the statute, as contemplated by the standard actually approved in *ADEC*. As a result, EPA is not employing the "reasonableness" test properly, and with that error is arrogating power Congress left to the States, precisely as predicted by the *ADEC* dissent. In state after state, EPA is now striking down state BART decisions and cloaking its disregard for state primacy by adjudging those decisions as "unreasonable," purportedly in reliance upon authority granted by *ADEC*. But it strains credulity for EPA to assert that state after state is making essentially the same repeated arbitrary and capricious decisions, the remedy for which is almost always mandatory imposition by EPA of its preferred technology choice: SCR. EPA's "reasonableness" test is therefore fundamentally erroneous. EPA may not exercise authority "in a manner that is inconsistent with the administrative structure that Congress enacted into law," *ETSI Pipeline Project*, 484 U.S. at 517, by applying a subjective reasonableness standard to federalize BART decisions.

Response: We responded to similar comments elsewhere in this document.

Comment: Because EPA's proposed disapproval of Wyoming's BART determination for Laramie River Station is inconsistent with EPA's prior approval of other state BART choices, EPA's proposed decision is an abuse of discretion and not entitled to deference from a reviewing court.

For instance, in a CAA case involving EPA approval of state Title V programs, the Ninth

Circuit reversed EPA's disapproval of one state's program where EPA's decision "conflict[ed] substantially with numerous EPA decisions in other states and localities." *W. States Petroleum*, 87 F.3d at 282. In that case, EPA had conditioned final approval of Washington's proposed Title V program on the State's repeal of certain insignificant emissions units ("IEU") exemptions. EPA eventually approved the State's Title V program, but disapproved the IEUs exemptions as inconsistent with the applicable regulations. *Id.* at 283. Industry members and the State challenged EPA's disapproval on the basis that EPA's decision was inconsistent with its prior interpretation and application of the regulations in other states. *Id.* at 282-83. Specifically, EPA had condoned the exemption of IEUs from the permit content requirements of the regulations in at least eight other state and local programs. *Id.* at 283. Based on this evidence, the Ninth Circuit held that EPA's rejection of Washington's IEU rules was "undeniably a change in agency interpretation." *Id.* at 284. Accordingly, EPA was required to support its change by "reasoned analysis," which it did not do. *Id.* (EPA "may not depart, sub silentio, from its usual rules of decision to reach a different, unexplained result in a single case"). The court held that EPA abuses its discretion where it approves numerous state programs that include the very same aspects forming the basis for EPA's denial of another state's program. *Id.* at 285.

Other courts have similarly expressed that an agency acts arbitrarily and capriciously when it departs from prior interpretations or precedent without adequately explaining the reasons for its departure. *See, e.g.*, *Cnty. of Los Angeles v. Shalala*, 192 F.3d 1005, 1022 (D.C. Cir. 1999) ("A long line of precedent has established that an agency action is arbitrary when the agency offer[s] insufficient reasons for treating similar situations differently."); *Shaw's Supermarkets, Inc. v. N.L.R.B.*, 884 F.2d 34, 41 (1st Cir. 1989) ("Unless an agency either follows

or consciously changes the rules developed in its precedent, those subject to the agency's authority cannot use its precedent as a guide for their conduct; nor will that precedent check arbitrary agency action."); *Puerto Rican Cement Co. v. EPA*, 889 F.2d 292, 298 (1st Cir. 1989) (noting "the well-established legal doctrine that an agency 'must either follow its own precedents or explain why it departs from them'") (citation omitted); *Int'l Internship Programs v. Napolitano*, 853 F. Supp.2d 86, 94 (D.D.C. 2012) ("[I]f an agency adopts 'a new position inconsistent with' an existing regulation, or effects 'a substantive change in the regulation,' the agency must comply with the notice and comment requirements of the APA.") (citation omitted). Moreover, consistency is a factor to be weighed in determining how much deference an agency's interpretation is entitled to receive. *Good Samaritan Hosp. v. Shalala*, 508 U.S. 402, 417 (1993) ("[T]he consistency of an agency's position is a factor in assessing the weight that position is due."). When an "Agency's regulations reflect the Agency's own longstanding interpretation," a court "will normally accord particular deference" to such "interpretation of 'longstanding' duration." *Barnhart v. Walton*, 535 U.S. 212, 219-20 (2002). But "the case for judicial deference is less compelling with respect to agency positions that are inconsistent with previously held views." *Pauley*, 501 U.S. at 698. "An agency interpretation of a relevant provision which conflicts with the agency's earlier interpretation is 'entitled to considerably less deference' than a consistently held agency view." *I.N.S. v. Cardoza-Fonseca*, 480 U.S. 421, 446 n.30 (1987). *See also Watt v. Alaska*, 451 U.S. 259, 273 (1981) ("The Department [of Interior]'s current interpretation, being in conflict with its initial position, is entitled to considerably less deference."); *W. States Petroleum*, 87 F.3d at 285 (the court "need not defer to the EPA because the EPA has abused its discretion in departing from its own prior standards").

Here, EPA has taken an inconsistent approach in interpreting the RHR, the Guidelines, and the CCM. In particular, EPA's current interpretation of its role and the states' role under these provisions conflicts with its prior, long-held understanding that states serve the primary role in determining BART and that EPA should not interfere with the many judgments that go into making BART determinations.

More specifically, EPA's application of its improper and subjective "reasonableness" standard when reviewing BART determinations in the SIP approval process has yielded inconsistent, and therefore arbitrary and capricious, results. Here, EPA identifies what it describes as "cost and visibility errors for EGUs" in Wyoming's SIP sufficient to permit EPA to disapprove the BART determination for Laramie River, yet EPA proceeds to approve other Wyoming BART decisions as "reasonable" "despite the[se] ... errors." 78 FR 34750. Either EPA is applying the law arbitrarily and capriciously, or it is simply approving as "reasonable" only those choices with which it agrees, either of which is erroneous. EPA must be reasonably consistent in reviewing state BART determinations.

Response: We responded to similar comments above.

Comment: EPA's implementation of the RHR does not satisfy the CAA's requirements of consistency. The conclusions reached by EPA on similar issues vary from case to case in ways that cannot be explained by statute, regulation, or guiding principle. EPA seems to act on BART determinations with an eye towards achieving its desired outcome rather than implementing the CAA even-handedly. This is the definition of caprice. States, regulated entities, and the public are left guessing as to what will be required in any given case. Because EPA has been so inconsistent in the current case and in its overall administration of the RHR, its proposal to

disapprove Wyoming's BART determinations for Laramie River and to impose a FIP is arbitrary and capricious and must be abandoned.

Response: We responded to similar comments above.

7. Reliance on Emission Reductions

Comment: EPA's regional haze FIP action is also illegal, arbitrary, and capricious because it relies upon factors outside of the BART five-factor analysis. Nowhere in the five-factor analysis, or anywhere in the Appendix Y Guidelines, is there any support for EPA using an "emissions reduction" factor. But this is exactly what EPA has done in its FIP. For example, EPA cited "emission reductions" as the basis for the FIP BART NO_x decisions for Dave Johnston Unit 3 (*See* 77 FR 33052), Wyodak (*See* 77 FR 33055) and Laramie River (*See* 77 FR 33001), among others. In doing so, however, EPA failed to account for the fact that the regional haze program is not an emissions reduction program *per se*, but is a visibility improvement program.

Additionally, it is improper for EPA to reject Wyoming's BART determinations, which relied upon the proper balancing of all five BART factors, and replace those BART determinations with EPA's analysis, which relied upon factors outside the five-factor analysis, such as emissions reductions. (*See e.g.*, 77 FR at 33,052.) Courts have held that when an agency relies on factors "which Congress has not intended it to consider," then such action is arbitrary and capricious. *Arizona Public Service Co. v. US EPA*, 562 F.3d 1116, 1123 (10th Cir. 2009).

Earlier comments asserted that EPA's regional haze FIP is also illegal, arbitrary, and capricious because it relies upon factors outside of the BART five-factor analysis. Nowhere in the five-factor analysis, or anywhere in Appendix Y, is there any support for EPA using an "emissions reduction" factor. But this is exactly what EPA has done. For example, EPA cites

"emission reductions" as the basis for the regional haze FIP BART NO_x decisions for Dave Johnston Unit 3, Wyodak, and Laramie River Station, among others. In doing so, however, EPA fails to account for the fact that the regional haze program is not an emissions reduction program *per se*, but is a visibility improvement program.

EPA's over-reliance on "emissions reductions" outside of the mandated BART factors has caused EPA to overstep the boundaries of the regional haze program. This is evidenced by the virtually non-existent visibility improvements associated with SNCR at Wyodak and Dave Johnston that EPA approved because of the associated emission reductions. Additionally, it is improper for EPA to reject Wyoming's BART determinations, which relied upon the proper balancing of all five BART factors, and replace those BART determinations with EPA's analysis, which relied upon factors outside the five-factor analysis. Courts have held that when an agency relies on factors "which Congress has not intended it to consider," then such action is arbitrary and capricious. *Arizona Public Service Co. v. US EPA*, 562 F.3d 1116, 1123 (10th Cir. 2009).

Response: We disagree with the commenter's characterization of the role of emission reductions in the BART analyses. The RHR provides that:

> The determination of BART must be based on an analysis of the best system of continuous emission control technology available and associated emission reductions achievable for each BART-eligible source that is subject to BART * * * [66]

Thus, the BART Guidelines clearly contemplate the assessment of emission reductions. Emission reductions are a consideration in calculating both average and incremental cost effectiveness in order to evaluate the cost of compliance (one of the five factors). 70 FR 39167

[66] 40 CFR 51.308(e)(1)(ii)(A).

and 39168. Contrary to the commenters' assertions, however, our disapproval of Wyoming's DEQ's BART analyses is not "based" on emission reductions, rather the analyses was based on the best system of continuous emission control technology and associated emission reductions achievable, as used in developing the BART factor information. For example, as discussed elsewhere in this section and final notice, contrary to the Guidelines' admonition that "cost estimates should be based on the CCM, where possible," the control cost calculations supplied by the utilities and relied upon by Wyoming included costs not allowed by the CCM, such as owner's costs and Allowance for Funds Utilized During Construction (AFUDC). Thus, Wyoming's consideration of the "cost of compliance" for these units was not consistent with the Guidelines. Furthermore, as explained elsewhere in this document, Wyoming's consideration of visibility benefits was inconsistent with the Guidelines because the State did not provide visibility modeling from which the visibility improvement from individual controls could be ascertained. EPA's analyses comports with the CAA and RHR requirements; therefore, we did not consider factors outside the Agency's authority.

In regard to EPA's disapproval of Wyoming's BART decisions on five units, EPA's decision was based on a careful weighing of the five factors, including cost of compliance (average and incremental) and visibility improvement. Just because EPA points out the emission reductions does not mean that it has cited "emission reductions" as the only basis for the regional haze FIP BART NO_x decisions for these units.

8. Presumptive Limits

Comment: EPA's regional haze FIP is improper because it requires post-combustion NO_x controls as BART, when EPA guidelines make clear that only combustion controls for NO_x are contemplated. (*See e.g.* 77 FR at 33,053.) EPA's Preamble and other guidance confirm that the

combustion controls of LNBs and OFA (in some form) are "BART technology" for the BART units. In the Preamble and the RHR, EPA stated that, except for cyclone boilers, the "types of current combustion control technology options assumed include low NO_x burners, over-fire air, and coal reburning." 70 FR 39134; *see also* 39,144 ("For all other coal-fired units, our analysis assumed these units will install current combustion control technology.") (emphasis added). In fact, in the Technical Support Document used to develop the presumptive BART NO_x emissions limits, EPA explained that the "methodology EPA used in applying current combustion control technology to BART-eligible EGUs" included applying "a complete set of combustion controls. A complete set of combustion controls for most units includes a low NO_x burner and over-fire air." ("Technical Support Document, Methodology for Developing NO_x Presumptive Limits," EPA Clean Air Markets Division, pg. 1 (dated June 15, 2005)).

EPA's Preamble and Appendix Y identify post-combustion controls for NO_x, such as SCR and SNCR, as "BART technology" for only "cyclone" units. EPA made it clear that for "other units, we are not establishing presumptive limits based on the installation of SCR." 70 FR 39136. Therefore, EPA's presumptive "BART technology" is LNBs and some type of OFA. EPA further elaborated in the Preamble on SCR costs, stating that although "States may in specific cases find that the use of SCR is appropriate, we have not determined that SCR is generally cost-effective for BART across unit types." *Id.; see also* 40 CFR Part 51, Appendix Y, Section IV.E.5.[67] Because EPA improperly requires post-combustion controls in its regional

[67] Commenters also suggest that, EPA has methodically changed or selectively ignored the requirements from those which were established in 40 CFR Part 51 and Appendix Y, which were published in 2005. The states' SIPs, written shortly after that period, were based on the rules and guidance provided at that time. Since then, however, EPA has arbitrarily and continually changed its interpretation of the regional haze regulations in order to achieve emission reductions and other objectives well beyond those allowed by the regional haze program. Here are a few

haze FIP, EPA should withdraw this requirement and approve the Wyoming SIP. If EPA desires to impose post-combustion controls as BART NO_x, it must first amend Appendix Y through a proper rulemaking procedure.

Commenters further assert that, when EPA issued the RHR, it established presumptive NO_x BART limits for power plants based on EPA's conclusions about the cost effectiveness of certain emissions control technologies, including SCR and combustion controls. 70 FR at 39131, 39134- 39136. These limits are based on EPA's acknowledgment that NO_x controls vary considerably and only in "relatively rare cases" would SCR be appropriate. 69 FR 25184, 25202 (May 5, 2004). EPA's own pronouncement on the cost effectiveness of SCR belie its finding that SCR is cost effective at Laramie River Station.

The presumptive limits for NO_x are differentiated by boiler design and type of coal because NO_x control technologies are not "one size fits all" and cost effectiveness is variable. *Id*. at 39134. As EPA noted in proposing presumptive NO_x BART limits, "the removal efficiencies

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examples of how EPA's position has changed over the past few years with respect to the guidance given for determining NO_x BART controls.

Appendix Y provides a presumptive BART NO_x rate differentiated by boiler design and type of coal burned. EPA now requires post-combustion controls significantly more aggressive than the presumptive rates prescribed in Appendix Y. Appendix Y makes distinctions for unit size, with more aggressive controls targeted at the largest units. In Wyoming, EPA now proposes to require SCR on units as small as 160 megawatts. The preamble to the regional haze rules suggests that 75 percent of the electric generating units would have BART NO_x controls cost between $100 and $1,000 per ton. EPA is now imposing costs, based on its own calculations, of $3,700 to $6,000 per ton on 100 percent of PacifiCorp's Wyoming BART-eligible units.

SCR controls were only expected to be cost-effective controls for cyclone units with high NO_x emission rates. EPA is now proposing post-combustion NO_x controls on every BART-eligible unit in Wyoming, including the installation of eleven SCRs. EPA must stop changing its interpretations of the regional haze rules and guidelines that were formalized in 2005 and move ahead with approving the Wyoming BART analysis and the regional haze SIP which complies with those rules and guidelines.

and costs associated" with NO_x controls "vary considerably, depending upon the design and operating parameters of the particular boiler being analyzed." 69 FR at 25202. For that reason, EPA proposed (and ultimately finalized) presumptive NO_x BART limits that would not require post-combustion controls: "States should require the lowest emission rate that can be achieved without the installation of post-combustion controls" because they are "applicable to most EGUs, are relatively inexpensive, and are already widely applied." *Id*. Indeed, EPA "recognize[d] that a small number of the largest power plants may need to install an SCR unit to meet this control level. *In such relatively rare cases, a State, at its discretion, may find SCR to be appropriate if the source causes visibility impacts sufficiently large to warrant the additional capital cost*." *Id.* (emphasis added).

EPA's presumptive BART determinations for coal-fired EGUs of various boiler configurations demonstrate that emissions control devices with an average cost effectiveness greater than $1,350 per ton are not cost effective. Sargent & Lundy analyzed the presumptive BART limits in EPA's "Technical Support Document for BART NO_x Limits for Electric Generating Units Excel Spreadsheet" and EPA's "Technical Support Document – Methodology for Developing BART NO_x Presumptive Limits," and compiled EPA's cost effectiveness thresholds for each boiler design and coal type. Sargent & Lundy, "BART Cost Effectiveness Thresholds" (Jan. 6, 2010). Exhibit 17 to commenter 0148. The report was prepared to supplement North Dakota's BART determination for Basin Electric's Leland Olds Station Units 1 and 2, but is equally applicable to any BART determination for coal-fired utility boilers, including Laramie River Station . Sargent & Lundy concludes that based on EPA's own assumptions about acceptable cost effective levels, "a threshold of $1,350/ton should be used to establish the cost-effectiveness of NO_x retrofit control technologies." *Id.* at 12.

Sargent & Lundy's report demonstrates that EPA consistently found control technologies to be cost effective if the cost of NO_x removal was less than $1,350/ton, and not to be cost effective if the cost of NO_x removal was greater than $1,350/ton. *Id*. at Figure 3 and accompanying text. For example, for all boiler categories other than cyclone units, SCR had an overall average cost effectiveness of $1,749/ton NO_x removed and was considered not to be cost effective. *Id.* at 11. Combustion controls at non-cyclone boilers had an overall average cost effectiveness of $535/ton NO_x removed and were found to be cost effective. *Id.*

SCR is not cost effective at Laramie River Station because it greatly exceeds the $1,350/ton threshold used by EPA in its presumptive BART determinations. EPA's own flawed cost effectiveness analysis estimates that installation of SCR at Laramie River Station would range from between $3,589 and $3,903 per ton of NO_x removed—far above the $1,350/ton threshold used in its presumptive BART determination. 78 FR at 34775-34776. EPA does not mention its presumptive BART limits in its proposed disapproval of Wyoming's BART determinations, and offers no explanation for departing from the presumptive levels and the associated use of combustion controls. 78 FR at 34772-34777. Moreover, when Sargent & Lundy estimated costs of SCR at Laramie River Station based on a detailed scoping-level study, it found that costs per ton of NO_x removed would range from $8,531 to $9,048, an amount seven times greater than the threshold used in the presumptive BART determination. Sargent & Lundy Evaluation, Table 7. *See also* Section XVIII.A.

We received numerous comments earlier that EPA's regional haze FIP is improper because the BART units are meeting the presumptive limits in the BART guidelines based on the installation of combustion controls. Commenters go on to assert that the BART Guidelines only require the installation of LNBs/OFA and that EPA determined in the guidelines that SCR was

generally not cost-effective for BART. One commenter noted that EPA has completely ignored the presumptive BART limits in the proposed action and that this is contrary to the express requirements in both the RHR and the BART Guidelines. The commenter goes on to say that EPA's attempt to completely ignore the BART limits makes the presumptive BART limits meaningless and this is contrary to the requirements of the CAA and the clear intent of the BART Guidelines. One commenter asserted that the BART Guidelines show that an alternative analysis is required only when a source cannot meet the presumptive limits, and that while a state may choose to establish a limit that is more stringent than the BART limit, there is nothing in the BART Guidelines that would require a state to do so.

Commenters asserted that EPA adopted the presumptive BART limits to establish the specific control levels required for EGUs. Commenters point out that EPA has not repealed the presumptive limits from the promulgated BART Guidelines, but in this action EPA does not even deign to acknowledge the existence of the presumptive limits, as if the presumptive BART limits were no longer a binding regulation. Commenters argued that unless and until EPA goes through notice and comment rulemaking to remove the presumptive emissions limits and establish other requirements consistent with the CAA, then EPA must approve a state's BART determination that meets the presumptive regulatory limits.

Response: We disagree with the commenters. The CAA states the following regarding emission limits for fossil-fuel fired generating power plants having a total generating capacity in excess of 750 MW:

> In the case of a fossil-fuel fired generating power plant having a total generating capacity in excess of 750 megawatts, the emissions limitations required under this paragraph shall

be determined pursuant to guidelines, promulgated by the Administrator under paragraph (1).

EPA disagrees that the CAA mandates specific control levels (*i.e.*, presumptive emission limits) for power plants with a total generating capacity of 750 MW or greater. Rather, the CAA directed EPA to develop guidelines for states to establish BART emission limits, and required that power plants having a total generating capacity in excess of 750 MW follow the guidelines when establishing BART emission limits. In response, in 2005 EPA promulgated the BART Guidelines, which provide a detailed description of how a state must approach the BART determination process for certain large EGUs, and required that the determination of fossil-fuel fired power plants having a total generating capacity greater than 750 MW must be made pursuant to the BART Guidelines. As such, the plain reading of the CAA language makes it clear the intent was to make the BART Guidelines mandatory for EGUs larger than 750 MW, as opposed to presumptive limits.

Compliance with EPA's "presumptive" NOx emission limits does not excuse a state from performing such an analysis, because the presumptive limits serve as a floor, not a ceiling, for BART. Furthermore, the presumptive limits in the Guidelines do not supplant the Act's mandate to consider the five statutory factors, as codified in the RHR.[68] Additionally, commenters provide no showing that the assumptions underlying EPA's older, generic calculations representative of hundreds of plants in fact represent BART, under current circumstances, at

[68] Given the statutory mandate, a state may only avoid full consideration of the five statutory factors if an initial consideration demonstrates that further analysis is moot—for example, where the state demonstrates that the subject unit already employs the "most stringent control available." 70 FR at 39165. Where these unique circumstances are not present, a state's failure to consider the five factors (for large EGUs, by complying with the BART Guidelines' five-step analysis) is grounds for disapproval. CAA Section 110(k)(3), (*l*); *see Oklahoma*, 723 F.3d at 1207-08.

these particular plants. Moreover, far from rendering the presumptive limits "meaningless," EPA's interpretation is in fact necessary to effectuate the purpose of the Haze Rule. The fundamental purpose of the BART requirement is to determine the "*best* system of continuous emission control technology *available* and associated emission reductions achievable for each BART-eligible source." 40 CFR 51.308(e)(1)(ii)(A) (emphasis added). To allow states to adopt the presumptive limits without any assessment of whether those limits represent the "best" control for a particular EGU at the time of the determination would be unreasonable in light of the overarching purpose of the Haze Rule and the CAA's visibility requirements. The presumptive limits ensure that states aim to achieve, at a minimum, the level of emissions reduction that was available and cost-effective at the time the BART Guidelines were adopted. EPA elaborated in the BART Guidelines themselves, clarifying that the Agency expected states to not only meet, but in appropriate cases exceed the presumptive limits: "While these [presumptive] levels may represent current control capabilities, we expect that scrubber technology will continue to improve and control costs continue to decline. You should be sure to consider the level of control that is *currently best achievable at the time that you are conducting your BART analysis*." 40 CFR pt. 51, App. Y, at IV.E.4 (emphasis added). Therefore, EPA's proposed rulemaking on the Wyoming regional haze SIP is not contrary to the requirements of the CAA and regulations.

Additionally, for each source subject to BART, the RHR, at 40 CFR 51.308(e)(1)(ii)(A), requires that states identify the level of control representing BART after considering the factors set out in CAA section 169A(g), as follows: "[s]tates must identify the best system of continuous emission control technology for each source subject to BART taking into account the technology available, the costs of compliance, the energy and non-air quality environmental impacts of

compliance, any pollution control equipment in use at the source, the remaining useful life of the source, and the degree of visibility improvement that may be expected from available control technology." 70 FR 39158. In other words, the presumptive limits do not obviate the need to identify the best system of continuous emission control technology on a case-by-case basis considering the five factors. A state may not simply "stop" its evaluation of potential control levels at the presumptive level of control if more stringent control technologies or limits are technically feasible. We do not read the BART guidelines in appendix Y to contradict the requirement in our regulations to determine "the degree of reduction achievable through the application of the best system of continuous emission reduction" "on a case-by-case basis," considering the five factors. 40 CFR 51.301 (definition of Best Available Retrofit Technology); 40 CFR 51.308(e).

Also, our interpretation is supported by the following language in our BART guidelines: "While these levels may represent current control capabilities, we expect that scrubber technology will continue to improve and control costs continue to decline. You should be sure to consider the level of control that is currently best achievable at the time that you are conducting your BART analysis." 70 FR 39171.

The presumptive limits are meaningful as indicating a level of control that EPA generally considered achievable and cost effective at the time it adopted the BART guidelines in 2005, but not a value that a state could adopt without conducting a five factor analysis considering more stringent, technically feasible levels of control.

Commenters focus on narrow passages of the BART guidelines to support their view that the presumptive limits represent the most stringent BART controls that EPA can require for regional haze. However, these passages must be reconciled with the language of the RHR cited

above, as well as other passages of the BART guidelines and associated preamble. A central concept expressed in the guidelines is that a state is not required to consider the five factors if it has selected the most stringent level of control; otherwise, a state must fully consider the five factors in determining BART. 40 CFR part 51, appendix Y, section IV.D.1, step 1.9.

Undoubtedly, as the commenters note, the presumptive limits for NO_x represent cost effective controls, but it is well-understood that limits based on combustion controls do not represent the most stringent level of control for NO_x. Thus, a state which selects combustion controls and the associated presumptive limit for NO_x as BART may only do so after rejecting more stringent control technologies based on full consideration of the five factors. Our interpretation reasonably reconciles the various provisions of our regulations. We have clearly communicated our views on this subject in other states, and, following our interpretation, Wyoming conducted an analysis of control technologies that would achieve a more stringent limit than combustion controls.

In promulgating a FIP for the Wyoming BART sources, we arrived at an emission limit based on consideration of the five factors. Contrary to the commenter's suggestion, EPA's BART guidelines do not establish a presumptive cost effectiveness level that is a "safe harbor" or "shield" for state BART determinations, or that EPA, when promulgating a FIP, may not exceed in determining BART. Once a FIP is required, we stand in the state's shoes. This is not EPA establishing a new presumptive limit or national rule; it is EPA, acting in the State's shoes, conducting a reasonable source-specific consideration of cost and the other regulatory factors.

9. Compliance with 40 CFR 51.308

Comment: EPA should have judged Wyoming's BART determinations on the basis of whether or not the Wyoming BART determinations are "necessary" to make "reasonable progress."

EPA's RHRs provide two regulatory paths to address regional haze. (See 77 FR 30953, 30957 (May 24, 2012).) "One is 40 CFR 51.308, requiring states to perform individual point source BART determinations and evaluate the need for other control strategies." *Id*. "The other method for addressing regional haze is through 40 CFR 51.309, and is an option for nine states termed the 'Transport Region States' which include: ... Wyoming, ... By meeting the requirements under 40 CFR 51.309, states are making reasonable progress toward the national goal of achieving natural visibility conditions for the 16 Class I areas on the Colorado Plateau." *Id*. Wyoming submitted the Wyoming regional haze SIPs under Section 309. Therefore, the requirements of Section 308 only apply to the extent required by Section 309. Importantly, NO_x emissions and controls under Section 309 are treated differently than NO_x emissions and controls under Section 308. This is because Congress and EPA purposefully focused Section 309 on addressing the issue of SO_2 emissions, the predominant cause of regional haze on the Colorado Plateau in the western US. By contrast, Section 309 recognizes that NO_x emissions have a significantly smaller impact on visibility on the Colorado Plateau. In fact, the WRAP report estimated that "stationary source NO_x emissions result in nitrates that probably cause about 2 to 5 percent of the impairment on the Colorado Plateau." Several illustrations in the WRAP NO_x report show that nitrate emissions have very little impact on Class I areas in or near Utah and Wyoming. The WRAP report also explains that "NOx controls will have a relatively small impact on PM and visibility in the West."

The Wyoming SIP, including BART determinations for NO_x, is consistent with the WRAP's NO_x information, and also properly acknowledges the relatively small impact nitrates from stationary sources like PacifiCorp's BART units have on visibility impairment in Wyoming. Wyoming's SIP, page 62, states that "the majority of nitrate stems from mobile

sources." The SIP also explains that in all but one Class I area "contributions from other states and Canada are much larger than contributions from inside Wyoming." *Id*. Wyoming correctly determined, consistent with the WRAP reports and other data, that controlling NO_x emissions from stationary sources like PacifiCorp's BART units would yield very little visibility improvement in Wyoming. EPA's own regional haze visibility map shows that visibility in Wyoming is among the best in the country.

In light of the above information, it is understandable that Section 309 focuses on addressing SO_2 emissions. Indeed, WRAP focused their efforts primarily on SO_2 emissions because the research indicated this pollutant had the greatest impact on visibility. "Recommendations for Improving Western Vistas," authored by the Grand Canyon Visibility Transport Commission, (June 10, 1996) at page 32 (identifying sulfates as "the most significant contributor to visibility impairment" from stationary sources). In a separate action, EPA acknowledged that Wyoming has complied with the Section 309's SO_2 requirements and made great progress towards improving and protecting visibility as a result. For all of these reasons, Section 309 takes a different approach to NO_x emissions than does Section 308, placing much less emphasis on the need for significant reductions in NO_x emissions and instead focusing almost all attention and resources in the western U.S. on reducing SO_2 emissions. EPA's FIP, with its incredibly expensive and unneeded NO_x control equipment, ignored the focus and intent of Section 309 and refused to acknowledge the discretion available to Wyoming to balance this information in making its BART determinations.

Additionally, as a result of the lesser emphasis in Section 309 on NO_x emissions, Section 51.309(d)(4)(vii) requires a regional haze SIP to "contain any necessary long term strategies and

BART requirements for stationary source ... NO_x emissions." Section 308, by contrast, does not include a similar "necessary to achieve reasonable progress" threshold for BART. The difference between the two requirements is both intentional and meaningful. If a state like Wyoming finds that a particular BART requirement is not "necessary" to make "reasonable progress," then that BART requirement should not be required as part of the regional haze SIP. This interpretation is supported by EPA's own position in *Central Arizona Water Conservancy District v. United States*, 990 F.2d 1531 (9th Cir. 1993). There, "EPA chose not to adopt the emission control limits indicated by the BART analysis, but instead to adopt an emissions limitations standard that would produce greater visibility improvement at a lower cost." *Id*. at 1543. The court agreed with EPA, stating that "Congress's use of the term 'including' in Section 7491(b)(2) prior to its listing BART as a method of attaining 'reasonable progress' supports EPA's position that it has the discretion to adopt implementation plan provisions other than those provided by BART analyses in situations where the agency reasonably concludes that more 'reasonable progress' will thereby be attained." Id. This same rationale applies to the term "necessary" in Section 309. Therefore, in rejecting Wyoming's regional haze SIP and adopting a FIP, EPA is required to show that the Wyoming SIP will not achieve "necessary reasonable progress" towards the visibility goal, and EPA's FIP will. EPA has failed to provide any support for such a position.

Other comments suggest that by meeting the requirements under 40 CFR 51.309, states are making reasonable progress toward the national goal of achieving natural visibility conditions for the 16 Class I areas on the Colorado Plateau. Wyoming submitted its regional haze SIPs under section 51.309. Therefore, the requirements of section 51.308 only apply to the extent required by section 51.309.

Wyoming's regional haze SIP is consistent with WRAP's NO_x information, and also emphasizes the relatively small impact nitrates that stationary sources have on visibility issues in Wyoming. Wyoming correctly determined, consistent with the WRAP reports and other data, that controlling NO_x emissions from stationary sources like PacifiCorp's units would yield very little visibility improvement in Wyoming. Section 51.309 understandably is intended to focus on SO_2 due to the greater visibility impact from SO_2. In a separate action, EPA acknowledged that Wyoming has complied with the section 51.309's SO_2 requirements and made great progress towards improving and protecting visibility as a result.

As a result of the lesser emphasis in section 51.309 on NO_x emissions, 40 CFR 51.309(d)(4)(vii) requires a regional haze SIP to "contain any necessary long term strategies and BART requirements for stationary source … NO_x emissions." Section 51.308, by contrast, does not contain a similar "necessary" threshold for BART. If a BART requirement is not "necessary" for a section 51.309 state, such as Wyoming, to make "reasonable progress," then it is not required as part of the regional haze SIP. In other words, section 51.309 allows a state even more discretion because of this "necessary" requirement than would otherwise be allowed under section 51.308. Wyoming has authority to adopt those regional haze SIP provisions that it believes provide for "reasonable progress," even when those plan provisions do not align directly with BART as that may be determined under Section 51.308.

40 CFR 51.309(d)(4)(vii) provides that "[a]ny such BART provisions may be submitted pursuant to either 51.308(e)(1) or 51.308(e)(2)." By using the permissive term "may," EPA makes clear that such a submission, under either subsection, is voluntary and not mandatory for section 51.309 states. For this reason, Wyoming, as a WRAP state, was never required to comply with 40 CFR 51.308(e)(1)(ii)(A) and is only required to include whatever BART NO_x

determinations are "necessary," as determined by the State. If Wyoming's section 51.309's SO_2 controls already provide the adequate level of visibility improvement and protection, then, by definition, little or no BART NO_x controls would be "necessary." EPA has failed to show how any "necessary" NO_x controls were excluded from the Wyoming regional haze SIP; therefore it should approve Wyoming's regional haze SIP.

Response: We disagree with these comments. As explained in our proposed rulemaking for section 51.309(d)(4)(viii), we explained that the provision "is intended to clarify that if EPA determines that the SO_2 emission reductions milestones and backstop trading program submitted in the section 51.309 SIP makes greater reasonable progress than BART for SO_2, this will *not* constitute a determination that BART for PM or NO_x is satisfied for any sources which would otherwise be subject to BART for those pollutants" (emphasis added). 70 FR 44169 (Aug. 1, 2005). EPA does not interpret this rule to mean that there are different BART requirements for section 308 and 309 regional haze SIPs. EPA's rulemaking made no finding that BART determinations conducted for a state submitting a SIP under section 51.309 should be conducted any differently than a state submitting a FIP under only section 308. The use of the word "necessary" in section 51.309(d)(4)(viii) was to explain that some states may have BART NO_x emission limitations, while others may not. As already explained elsewhere in proposal and our response to other comments, Wyoming did not conduct a proper evaluation of the five statutory factors, as required by 40 CFR 51.308(e)(1)(ii)(A) and section 169A(g) of the CAA.

EPA also disagrees with commenter's assertion that a BART submission is discretionary. 40 CFR 51.309(d)(4)(viii) is clear in that the implementation plan "must" contain BART requirements. The proposed rulemaking explained that the provision that provides that "[a]ny such BART provisions may be submitted pursuant to either Section 51.308(e)(1) or

51.308(e)(2)," was included to "allow States the flexibility to address these BART provisions either on a source-by-source basis under Section 51.308(e)(1), or through an alternative strategy under Section 51.308(e)(2)." 70 FR 44169 (Aug. 1, 2005).

Moreover, EPA's proposal made clear that "[i]n limited circumstances, it may be possible for a State to demonstrate that an alternative program which controls only emissions from SO_2 could achieve greater visibility improvement than application of source-specific BART controls on emissions of SO_2, NO_x and/or PM. We nevertheless believe that such a showing will be quite difficult to make in most geographic areas, given that controls on SO_2 emissions alone in most cases will result in increased formation of ammonium nitrate particles." 70 FR 44169 (Aug. 1, 2005). Wyoming's RH SIP does *not* include a demonstration that the backstop SO_2 trading program under Section 51.309 achieves greater visibility improvement than application of source-specific PM BART controls. Therefore, Wyoming's Section 51.309 SIP does not provide the adequate level of visibility improvement to meet the BART requirements.

With respect to the relationship of BART and requirements for reasonable progress under 40 CFR 51.308, EPA interprets the reasonable progress requirements to apply to BART sources. As explained in our guidance, due to the similarity of the BART and reasonable progress factors, states may reasonably rely on their BART determinations to show reasonable progress for those sources for the first planning period. However, BART is an independent requirement of the statute and the RHR. We have disapproved certain BART determinations by Wyoming not due to a failure to make reasonable progress, but due to a failure to consider the BART factors appropriately.

10. Legal Analysis

Comment: We received comments that the proposed rule is costly and that preliminary calculations by the State of Wyoming showed that the BART and long-term strategies under the proposed rule will cost over $170 million on an annualized basis; with total capital cost will be over $1 billion, and annual operating costs of nearly $600 million. Commenters went on to say that since the rulemaking action will exceed $100 million dollars in annual costs it should be reviewed according to the standards established in Executive Orders 12866 and 13563. ***

Another commenter notes that EPA has also failed to conduct any analysis of the impacts under the Unfunded Mandates Reform Act (UMRA). In addition to the capital costs of nearly $750,000,000 for Laramie River Station alone, the annual operating costs of an SCR system at Laramie River Station are over $ 15,000,000. The commenter asserts that this amount is nearly double that projected by EPAs expert Andover of just under ($5,000,000), using generalized information. These annual operating costs, on top of the capital costs, for the three units at Laramie River Station alone, are significant, and when coupled with the impacts for the remaining five PacifiCorp units, far exceed the thresholds of the UMRA.

The UMRA is designed to ensure that Congress and federal agencies analyze the impact of proposed statutes and regulations on local governments and other entities before taking action. Where the estimates indicate at least a $50 million per fiscal year direct cost of all intergovernmental mandates, or a $ 100 million per fiscal year direct cost of private sector mandates, an analysis is required to evaluate the impact on local governments and private entities, and if necessary, the mandate must be funded. Western Minnesota, Missouri River Energy Services, and the governmental entities they serve - together with the others served by the remaining co-owners of Laramie River Station - will feel an annual impact in excess of $50 million per year should the EPA's FIP become final. Failure of EPA to conduct any analysis of

the impact of imposing an unfunded mandate on the small governmental entities served by Laramie River Station, and the other BART units in Wyoming shows a blatant disregard for the regulatory process and protections that are to be accorded such significant rulemakings.

Earlier comments argued that the UMRA has been applied to EPA actions where the costs to regulated entities in numerous states have been aggregated. Based upon this precedent, PacifiCorp believes that EPA should aggregate all regional haze compliance costs across Wyoming, Utah, Colorado and Arizona for PacifiCorp, which would easily exceed the $100 million threshold. At a minimum, EPA should aggregate costs for EPA's FIPs in Wyoming and Arizona, which would also exceed the $100 million threshold.

Additional earlier comments suggested that the UMRA requires federal agencies to identify unfunded federal mandates. For rules that contain federal mandates, such as EPA's regional haze FIP action requiring expensive pollution controls, title II of UMRA requires the agencies to prepare written statements, or "regulatory impact statements," (RIS) containing specific descriptions and estimates, including a qualitative and quantitative assessment of the anticipated costs and benefits of the mandate. This requirement is triggered by any rule that "may result in the expenditure by state, local, and tribal governments, in the aggregate, or by the private sector, of $100,000,000 or more (adjusted annually for inflation) in any 1 year…" 2 U.S.C.1532(a).

When a RIS is required, the agency is also required to "identify and consider a reasonable number of regulatory alternatives and from those alternatives select the least costly, most cost effective, or least burdensome alternative that achieves the objectives of the rule" or explain why that alternative was not selected. 2 USCA Section1535.

Here, EPA has failed to comply with the UMRA, arguing that the regional haze FIP "does not contain a federal mandate that may result in expenditures that exceed the inflation adjusted UMRA threshold of $100 million." EPA is wrong. PacifiCorp currently anticipates spending more than $100 million dollars in at least 2014 ($104 million), 2015 ($175 million), and 2016 ($154 million) to comply with EPA's regional haze FIP for Wyoming (based on alternative "one" for the Jim Bridger plant). If the regional haze compliance costs imposed by EPA's proposed FIP in Arizona and EPA's approval of the Colorado regional haze SIP are factored in, the costs to PacifiCorp in a given year would be significantly higher. Also, when the BART NO_x and PM determinations are approved by EPA for Utah, these costs to PacifiCorp in a given year could be much, much higher.

Response: We disagree with this comment. Under section 202 of the UMRA, before promulgating any final rule for which a general notice of proposed rulemaking was published, EPA must prepare a written statement, including a cost-benefit analysis, if that rule includes any "Federal mandates" that may result in expenditures to State, local, and Tribal governments, in the aggregate, or to the private sector, of $100 million or more (adjusted for inflation) in any one year. EPA has determined that this rule does not contain a Federal mandate that may result in expenditures that exceed the inflation-adjusted UMRA threshold of $100 million (in 1996 dollars) by State, local, or Tribal governments or the private sector in any one year. We estimate that the total annual costs in the aggregate are approximately $93 million (see Table 1).

Comment: EPA's regional haze FIP states that EPA's proposed action is not subject to Executive Order 13211, "Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use" (66 FR 28,355 (May 22, 2001)), because the proposed action "is not a significant regulatory action under Executive Order 12866." 78 FR 34790. EPA further claims

the proposed regional haze FIP is not a "significant regulatory action" under Executive Order 12866 because the "proposed FIP applies to only five facilities" and is "therefore not a rule of general applicability." EPA is incorrect, and should withdraw its regional haze FIP.

Executive Order 13211 provides that agencies shall submit a statement of energy effects for matters "identified as significant energy actions." A "significant energy action" is defined as "any action by an agency … that promulgates or is expected to lead to the promulgation of a final rule or regulation … *that is a significant regulatory action under Executive Order 12866 or any successor order*" and "likely to have a significant adverse effect on the supply, distribution, or use of energy"; or is "designated by the Administrator of the Office of Information and regulatory Affairs as a significant energy action." *Id.* Section 4(b) (emphasis added). Executive Order 12866, in turn, which concerns Regulatory Planning and Review, defines a "significant regulatory action" as any regulatory action that is likely to result in a rule that may: (1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities. 58 FR 51735, 51738 (Oct. 4, 1993)

According to PacifiCorp's current estimates (excluding allowance for funds used during construction (AFUDC)), it will spend more than $100 million dollars in capital costs alone in 2014 ($225 million), 2015 ($139 million), 2017 ($146 million) and 2018 ($118 million) to comply with EPA's regional haze FIP for Wyoming (based on alternative "one" for the Jim Bridger plant). If regional haze compliance costs currently imposed or approved by EPA on PacifiCorp's BART Units in Arizona and Colorado are factored in, the total capital cost impacts to PacifiCorp in any given year would be significantly higher; increasing to approximately $246

million in 2014, $190 million in 2015, $168 million in 2016, $181 million in 2017, and $118 million in 2018. Also, because the BART NO_x and PM determinations have not yet been approved by EPA for PacifiCorp's BART Units in Utah, EPA's ultimate BART requirements in Utah likely will add even more costs in overlapping installation and compliance years, with total project costs for SCR installations on PacifiCorp's Utah units currently estimated to cost in excess of $150 million per unit to install (again, excluding AFUDC). Based upon these basic costs alone, there is no doubt that EPA's FIP meets the definition of a "significant regulatory action." Other large costs, including those related to EPA's BART determinations for Basin Electric, also should be factored into this analysis together with PacifiCorp's costs because they are part of the same "sector of the economy." Also, as demonstrated by PacifiCorp's July 12, 2012, submittal in this docket, EPA's regional haze FIP will have an adverse effect on the supply and distribution of electricity within PacifiCorp's system. Therefore, EPA's determination that Executive Order 13211 did not apply is incorrect, and arbitrary and capricious.

Moreover, EPA has admitted in the proposed rule that system-wide "affordability" costs should be part of the BART analysis. 78 FR 34756. Because EPA's FIP is a "significant regulatory action," EPA must prepare a "Statement of Energy Effects" for the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget. (*See* Executive Order 13211, Section 2.) Because EPA did not do so, the regional haze FIP is improper.

Executive Order 12866, in turn, which concerns Regulatory Planning and Review, defines a "significant regulatory action" as any regulatory action that is likely to result in a rule that may: (1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the

environment, public health or safety, or State, local, or tribal governments or communities"

Also, as demonstrated by PacifiCorp's July 12, 2012 submittal in this docket, EPA's regional haze FIP action will have an adverse effect on the supply and distribution of electricity within PacifiCorp's system. Therefore, EPA's determination that Executive Order 13211 did not apply is incorrect, and arbitrary and capricious.

Moreover, because EPA's regional haze FIP action is a "significant regulatory action," before imposing its regional haze FIP EPA must first prepare a "Statement of Energy Effects" for the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget. Such a statement must include a "detailed statement" by the agency concerning "any adverse effects on energy supply, distribution, or use (including a shortfall in supply, price increases ...) should the proposal be implemented," and "reasonable alternatives to the action with adverse energy effects and the expected effects of such alternatives on energy supply, distribution, and use." Accordingly, based on an analysis of the relevant factors, EPA's regional haze FIP is improper because EPA failed to conduct the required regulatory analysis and failed to prepare the required documentation.

Executive Order 12866, in turn, which concerns Regulatory Planning and Review, defines a "significant regulatory action" as any regulatory action that is likely to result in a rule that may: (1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities"

Response: EPA disagrees that Executive Order 13211 applies to this action. Order 13211 is only applicable to an agency regulation that is a "significant regulatory action" under Executive Order 12866. Executive Order 13211 (4)(b). Order 13211 also explicitly adopts the definitions

of “regulation” and “rule” as explained in Executive Order 12866. Executive Order 13211 (4)(a). However, this action does not fit within the definition of Executive Order 12866, which defines a “regulation” or “rule” as an “agency statement of general applicability.” Executive Order 12866 (3)(d). Here, EPA’s action was individually tailored for a limited number of BART eligible sources in Wyoming and is not generally applicable. Thus this action is not governed by Order 12866 and, therefore, is also not governed by Executive Order 13211. As discussed in more detail in Statutory and Executive Orders Review section of this document, the costs for this action are about $93 million annually.

Moreover, as explained in more detail elsewhere, EPA took the cost of compliance into consideration when making BART determinations to ensure this rule’s requirements are beneficial and not unduly burdensome. The commenter is correct that EPA may, in its discretion, consider system affordability costs beyond the direct compliance costs on an individual facility in extraordinary circumstances. As explained in the Basis for Final Action section and elsewhere in the proposed and final actions, we proposed to approve the State’s BART and reasonable progress determinations for Jim Bridger Units 1 and 2, but on a different basis.[69] In response to our proposal, we received both supportive and adverse comments regarding whether the affordability provisions of the BART Guidelines should apply to Units 1

[69] There, we indicated that given the number of SCR retrofits PacifiCorp had to perform in Wyoming and in other states, it might not be affordable for PacifiCorp to install two additional SCRs on Jim Bridger Units 1 and 2 within the five-year BART compliance period. We requested additional information from commenters regarding whether the affordability provisions of the BART Guidelines should be applied to Units 1 and 2. In the alternative, we proposed to find that NO_X BART for Units 1 and 2 was an emission limit of 0.07 lb/MMBtu (30-day rolling average) based on the installation of LNB/SOFA + SCR with a compliance deadline of five years. Under this scenario, we acknowledged that the cost-effectiveness of LNB/SOFA + SCR at Units 1 and 2 was within the range of what EPA and the State itself had found reasonable in other BART determinations. We also considered the significant visibility improvement demonstrated by the State’s modeling to warrant LNB/SOFA + SCR as BART.

and 2. As explained in more detail in our responses to these comments, we agree that PacifiCorp did not make a sufficient showing that it could not afford to install LNB/SOFA + SCR on Units 1 and 2 within the five-year compliance period. Nevertheless, we also received new information regarding the costs of compliance and visibility benefits associated with Jim Bridger and have revised our cost estimates and visibility modeling for all four units accordingly. Using this revised information, we re-evaluated the five BART factors. Ultimately however, while we believe that these costs and visibility improvements could potentially justify LNB/SOFA + SCR as BART, because this is a close call and because the State has chosen to require SCR as a reasonable progress control, we believe deference to the State is appropriate in this instance. We are therefore finalizing our approval of the State's determination to require SCR at Jim Bridger Units 1 - 4, with an emission limit of 0.07 lb/MMBtu (30-day rolling average), as part of its LTS. We also note that, neither the CAA nor the regional haze regulations require EPA to consider costs beyond an individual facility's direct compliance costs. 42 U.S.C.A. Section 7491(g)(1), (2); 40 CFR 51.301. Further, nothing in the Order is to be construed to impair or otherwise affect the authority granted by law to EPA, nor does it create any right or benefit enforceable at law.[70]

Comment: The EPA's FIP fails to account for the significant economic impacts on small entities as required by the Regulatory Flexibility Act. The estimated capital cost alone to install SCRs at Laramie River Station only is nearly $750,000,000. For Western Minnesota and its members the total impact would result in an increase in wholesale electric rates of twelve percent, which includes a ten percent increase due to the capital costs for installation of the SCRs and an

[70] For example, EO 12866 (Sec. 10, Judicial review) explicitly states, "This Executive order is intended only to improve the internal management of the Federal Government and does not create any right or benefit, substantive or procedural, enforceable at law or equity by a party against the United States, its agencies or instrumentalities, its officers or employees, or any other person."

additional increase of two percent annually for operating expenses. The members of Western Minnesota and Missouri River Energy Services are small governmental units, which must be given consideration under the Regulatory Flexibility Act.

Under the Regulatory Flexibility Act, EPA is required to analyze the economic impact of proposed regulations when there is likely to be a significant economic impact on a substantial number of small entities, and to consider regulatory alternatives that will achieve the agency's goal while minimizing the burden on small entities. The certification that EPA has provided with this proposed rule is perfunctory at best, and does not seek to analyze the actual elements required by the Regulatory Flexibility Act.

The EPA has wholly failed to conduct any regulatory flexibility analysis pursuant to the Regulatory Flexibility Act, which further demonstrates the arbitrariness of this proposed FIP. If it had, it would acknowledge that the Wyoming SIP for NO_x provides a reasonable alternative that has a far less significant economic impact on small entities while providing virtually the same improvement in visibility.

Response: EPA disagrees with this comment. Courts have interpreted the Regulator Flexibility Act to require a regulatory flexibility analysis only when a substantial number of small entities will be subject to the requirements of the agency's action. See, e.g., *Mid-Tex Elec. Co-op, Inc. v. FERC*, 773 F.2d 327, 342 (D.C. Cir. 1985). The economic analysis described in the Regulatory Flexibility Act is not required; however, if the head of an agency certifies that the rule will not have a significant economic impact on a significant number of small entities. 5 U.S.C. 605(b). As the commenter noted, such certification was made by EPA and published in the Federal Register as required by the act. No other action is required by EPA because the agency is not

imposing any requirements on small entities. Here, only a limited number of entities have incurred compliance obligations under this action, and none of those entities are “small entities.”

EPA still seeks to minimize the impact of its actions have on small entities. EPA sought comments regarding the economic impact from all entities affected by this action and carefully considered all relevant information. As described elsewhere, EPA believes that this action is necessary to achieve the objectives of the CAA and that the visibility improvements justify the costs of this rule, as established in the Act and implementing regulations.

Comment: The underlying purpose of Executive Order 12866 (Order) is to foster a regulatory regime that respects the role of local government, recognizes that the private sector is the “best engine for economic growth,” and appreciates the need to develop regulations that do not impose “unacceptable or unreasonable costs on society.” Exec. Order No. 12,866, 58 FR 51735 (Oct. 4, 1993). The Order requires agencies that propose a significant regulatory action to consider a multitude of quantitative and qualitative factors during the ru1emaking process. *Id*.

A “significant regulatory action” is one in which the resulting rule is likely to "[h]ave an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs ... or State, local, or tribal governments or communities." 58 FR 51735.

Allow us, by way of example, the opportunity to outline the significance that the proposed rule will have on one of Wyoming’s counties. The Laramie River Station (Station), one of the five targeted EGUs under the proposed FIP, is the largest employer in Platte County. These are good paying jobs that include health and retirement benefits for the Station's employees. In a rural county with 8,800 people, where the average annual household income is $46,916, there is concern that the use of a control regime as proposed in the FIP may make

operation of the Station substantially cost-prohibitive and therefore jeopardize some of the best jobs in Platte County. Moreover, the retrofitting outlined in the proposed rule will likely increase the electric rates of some of Wyoming's most vulnerable citizens.

The Station also provides a significant source of revenue for Platte County. In the 2012 Fiscal Year, the Station provided over $3.7 million in state assessed taxes. This is a significant source of revenue for Platte County, revenue that is needed to sustain essential government functions, such as operation of the county jail, maintaining county roads and bridges, and county health services. Platte County is but one example. Each of the other potentially affected counties (Converse, Lincoln, and Campbell) share those three principal concerns: (1) the targeted EGUs provide a significant source of employment to county residents, (2) volatility of electric rates on some of Wyoming's most vulnerable citizens, and (3) the EGUs provide a significant source of revenue in order to sustain essential county services.

For these reasons, Wyoming's County Commissioners cannot accept EPA's conclusion that the proposed rule is not a significant regulatory action. Accordingly, because the proposed rule is a significant regulatory action, it should be subject to review in accordance with Executive Order 12866 and, by extension, Executive Order 13563.

Response: Executive Order 13563 is supplemental to and reaffirms the principles, structures, and definitions governing contemporary regulatory review that were established in Executive Order 12866 of September 30, 1993. In general, the Order seeks to ensure the regulatory process is based on the best available science; allows for public participation and an open exchange of ideas; promotes predictability and reduces uncertainty; identifies and uses the best, most innovative, and least burdensome tools for achieving regulatory ends; and takes into account benefits and costs, both quantitative and qualitative. However, nothing in the Order shall be

construed to impair or otherwise affect the authority granted by law to the Agency. In our review process the cost of compliance was one of the elements addressed to ensure that the requirements to achieve the goals stated in the CAA were beneficial and not burdensome to the regulated entity. Please refer elsewhere in our response to comments (e.g., Introduction and BART sections) for a detailed analysis of the elements required by the CAA and RHR for BART determinations.

Comment: EPA, through this proposed rule, fails to recognize, or even to make an effort to understand, the burden imposed upon Wyoming and its local governmental entities. If it had done so, it would have acknowledged the fundamental value and attainable progress derived from Wyoming's regional haze SIP. Instead, what EPA proposes is a disingenuous and poorly crafted rule that ignores fundamental realities existing in the counties of Wyoming, that they are rural, traditionally low-income, and the economic drivers are typically limited to tourism, agriculture, or industry. As such, the proposed rule would create a disproportionate impact on those communities playing host to industry.

"Not in my backyard" is simply not an option for many rural communities. It therefore poses a fundamental question of equity, a concern reiterated in Executive Order 13563. Executive Order No. 13,563, 76 FR 3821 (Jan. 18, 2011). Concerns regarding equity require the EPA to consider who is bearing the cost of the proposed rule. The bottom line is that increased energy costs that will result from the proposed FIP will disproportionately hurt our local economies.

Additional comments argue that EPA is required to seek views of appropriate local officials' before imposing regulatory requirements that might significantly or uniquely affect a particular governmental entity. EPA must then seek to minimize any burdens that significantly

or uniquely affect the local governmental entity in a manner that is consistent with achieving the underlying regulatory objective.

Response: EPA disagrees with this comment. Executive Order 13563 is supplemental to and reaffirms the principles, structures, and definitions governing contemporary regulatory review that were established in Executive Order 12866. Executive Order 13563 Section 1(b). In general, the Order seeks to ensure the regulatory process is based on the best available science; allows for public participation and an open exchange of ideas; promotes predictability and reduces uncertainty; identifies and uses the best, most innovative, and least burdensome tools for achieving regulatory ends; and takes into account benefits and costs, both quantitative and qualitative. However, nothing in the Order shall be construed to impair or otherwise affect the authority granted by law to EPA, nor does it create any right or benefit enforceable at law. Executive Order 13563 Section 7(b), (d). Each BART source was examined and the cost of compliance was one of the factors addressed to ensure the rule's requirements are beneficial and not unduly burdensome to the regulated entities. We also note the following: (1) there will likely be beneficial effects on tourism due to improved visibility at the Class I areas;[71] (2) emission controls can be installed over a period of time; and (3) in this final action we are mostly approving the provisions of the State's SIP. Moreover, as explained above, courts have

[71] Results of visitor surveys from 22 studies demonstrate that clean air and scenic vistas in national parks consistently rank as the top priorities of 90 percent or more of visitors. "National Park Service Visitor Values & Perceptions of Clean Air, Scenic Views & Dark Night Skies 1988-2011," Natural Resource Report NPS/NRSS/ARD/NRR-2013/632 (Feb. 2013), pp. 16-23 (including specific studies focused on Wyoming's national parks). Additionally, as explained in recent National Park Service (NPS) and U.S. Forest Service (USFS) reports, the national parks and U.S. Forest Service lands are important economic engines for local communities and businesses, with visitors generating significant economic activity and support thousands of jobs. *See*, "Economic Benefits to Local Communities from National Park Visitation, 2011," National Park Service, Natural Resource Report NPS/NRSS/ARD/NRR-2013/632 (Feb. 2013)(NPS 2013 Report); and "National Visitor Use Monitoring Results, National Summary Report," USDA Forest Service (May 20, 2013 update). In 2011, the NPS report indicates that non-local visitor spending to the national parks in Wyoming was $621 million, creating more than 9,000 jobs. NPS 2013 Report, p.26. The Grand Teton National Park alone had more than 2.5 million visitors who spent $463 million which created more than 6,000 jobs. NPS 2013 Report, p.19.

interpreted the Regulatory Flexibility Act to require a regulatory flexibility analysis only when a substantial number of small entities will be subject to the requirements of the agency's action. While EPA has not made a determination that a substantial number of small entities will be subject to the requirements of this final action, we nevertheless seek to minimize the impact our actions have on small entities. EPA sought comments regarding the economic impact from all entities affected by this action and carefully considered all relevant information. As described elsewhere, EPA believes that this action is necessary to achieve the objectives of the CAA and that the visibility improvements justify the costs of this rule, as established in the Act and implementing regulations. Please refer elsewhere for a detailed analysis of the elements required by our regulations for BART determinations.

Comment: In imposing these additional costs the proposed action will unnecessarily impact power generation in Wyoming and lead ultimately to increased utility costs for Wyoming residents. Along these lines, we believe the proposed action fails to comply with Executive Order 13132. The notice of proposed action states: "Under Executive Order 13132, EPA may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the federal government provides the funds necessary to pay the direct compliance costs incurred by state and local governments, or EPA consults with state and local officials early in the process of developing the proposed regulation." The notice switches that standard by concluding: "This rule will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132, because it merely addresses the State not fully meeting its obligation to prohibit emissions from interfering with other states measures to protect visibility

established in the CAA. Thus, Executive Order 13132 does not apply to this action." (78 FR 34790).

The conclusion that Executive Order 13132 does not apply to this action appears inconsistent with the standard of the Order. The regulation will impose substantial direct compliance cost on local governments and there is no provision for funding those costs by the federal government. The Wyoming Municipal Power Agency (WMPA) is a joint powers board created by eight Wyoming municipalities to generate and transmit electricity for the residents of those municipalities. Through a partnership, WMPA and thus each of those municipalities, own a substantial interest in the Laramie River Station. WMPA estimates that the EPA's proposal would cost an estimated $600 million for the Laramie River Station. When costs are imposed upon a facility, owners of that facility must initially bear those costs. Whether the generating facility is owned 100% by a single municipality, or shared through a partnership or cooperative, as a result of that ownership interest a substantial direct compliance cost is imposed on the municipal owners.

Response: EPA disagrees that Executive Order 13132 applies to this action. The Order only applies to agency actions that fit within the Order's definition of "policies that have federalism implications." The Order defines such actions as rules "that have substantial direct effects on states, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government." Executive Order 13132 Section (1)(a). In contrast, this action merely addresses Wyoming's existing obligations under the CAA and thus does not impose any additional burdens beyond that which the law already requires. Because this rule does not fit within the definition of "policies that have federalism implications," the Order does not apply to this action.

Moreover, the additional elements of the standard urged by the commenter do not apply to this action. EPA must consult a state or provide funding only if a regulation that has federalism implications (1) imposes substantial direct compliance costs on state and local governments, and (2) is not required by statute. Executive Order 13132 Section (6)(b). First, as the commenter noted, the regulation imposes compliance costs on Laramie River Station, not directly on state or local governments. Municipalities may possibly be indirectly impacted because of their membership in WMPA, which in turn retains a 1.37% ownership interest in Laramie River Station through a partnership with the Missouri Basin Power Project. However, this action does not impose any direct compliance costs on local governments. Second, the CAA requires that states promulgate adequate SIPs to achieve the CAA's visibility goals, and further requires EPA to promulgate FIPs if a state fails to meet its obligations. 42 U.S.C. 7492(3)(2), Section 7410(c)(1); *see also WildEarth Guardians v. Jackson*, No. 11-CV-00001-CMA-MEH, 2011 WL 4485964 at *6 (D. Colo. Sept. 27, 2011) (finding EPA's duty to either approve a state regional haze SIP or promulgate a FIP is nondiscretionary). Because this action does not have federal implications, does not impose direct compliance costs on local governments, and is required by statute, Executive Order 13132 does not apply to this action.

Comment: EPA did not properly vet its proposed FIP against a number of requirements detailed throughout Presidential Executive Orders and within the CAA. Though Presidential Executive Orders are not binding by law, they foster an open, transparent rule-making process. For example, Executive Order 12866 states, "The American people deserve a regulatory system that works for them, not against them: a regulatory system that ... improves the performance of the economy without imposing unacceptable or unreasonable costs on society." Accordingly, the Order requires federal agencies, including EPA, to develop regulations "in the most cost

effective manner" and to "adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs." An additional $1.2 billion in costs under EPA's proposal in exchange for no perceptible change in visibility does not qualify as "a reasoned determination that the benefits of the intended regulation justify its costs."

EPA's proposed action will result in over $170 million annual adverse economic impact, well over the $100 million annual threshold identified in Executive Order 12866. EPA failed to properly consider material effects its proposed action will have on the economy, productivity, competition, and jobs. By forcing unnecessarily expensive technologies, electricity rates will rise even further, putting additional strain on businesses and millions of customers that receive electricity from the generating stations in Wyoming.

Response: EPA disagrees with this comment. As explained elsewhere, this action does not fit within the definition of Executive Order 12866. The Order defines a "regulation" or "rule" as an "agency statement of general applicability." Executive Order 12866 (3)(d). Here, EPA's action was individually tailored for a limited number of BART eligible sources in Wyoming, and thus is not generally applicable and not governed by Order 12866. Moreover, as explained in more detail in the BART section, EPA took the cost of compliance into consideration when making its BART determinations to ensure the rule's requirements are beneficial and not unduly burdensome.

11. Consideration of Existing Controls

Comment: Several commenters asserted that EPA did not properly taken into account the existing pollution control technology in use at the BART-eligible EGUs, as required by CAA section 169A(g)(2) and the BART Guidelines. These commenters alleged that EPA was required to consider updated combustion controls, which were installed to comply with Wyoming's

regional haze SIP, by adjusting the baseline emissions rate for each facility to account for any emissions reductions that have been achieved since the 2001-2003 baseline period. The commenters suggested that had EPA relied on available 2011-2012 emissions data, which reflect the NO_X reductions achieved by some of these newly installed controls, the cost-effectiveness values for SNCR and SCR would have been higher, while the visibility improvement associated with SNCR and SCR would have been lower.

For example, one commenter stated that the baseline emission rate for NO_X in 2001-2003 was 0.27 lbs/MMBtu at Laramie River, but that the emission rate had dropped to 0.19 lb/MMBtu after the installation of over-fire air and low NO_X burners. This commenter asserted that, had EPA adjusted the baseline to the latter emission rate, the average cost-effectiveness for SNCR would be between $6,967/ton and $7,014/ton, while the average cost-effectiveness for SCR would be between $8,531/ton and $9,048/ton. Based on these values, the commenter argued that neither SNCR nor SCR is cost-effective and therefore both technologies should be eliminated as NO_X BART for Laramie River.

Another commenter pointed to other EPA regional haze actions where EPA adjusted baseline emissions to account for recently installed controls, such as EPA's final actions on the Arizona regional haze SIP, 77 FR 72512, and Montana regional haze FIP, 77 FR 57864. This commenter argued that because EPA had adjusted baseline emissions for some Arizona and Montana EGUs to account for controls recently installed to satisfy consent decrees obligations or CAA requirements unrelated to regional haze, EPA was required to do so for Wyoming's EGUs as well.

One commenter submitted additional comments, after the close of the public comment period, in response to the decision of the U.S. Court of Appeals for the Eighth Circuit in *North*

Dakota v. EPA, 730 F.3d 750 (8th Cir. 2013). This commenter again asserted that EPA had failed to consider the low NO_X burners and over-fire air the commenter had installed at its facilities to comply with the Wyoming regional haze SIP. The commenter argued that EPA's alleged failure to consider these controls violates the holding in *North Dakota*, that "any existing pollution control technology" includes all existing controls, including those that are voluntarily installed by the source. Moreover, the commenter explained, the low NO_X burners and over-fire air at its facilities were not voluntary controls because they were installed to meet CAA requirements, were federally enforceable, and were incorporated into the Wyoming regional haze SIP.

A final commenter also submitted late comments in response to the decision in *North Dakota* and the previous commenter's letter. This commenter argued that the *North Dakota* decision does not require EPA to account for existing controls by factoring their associated emissions reductions into baseline emissions. The commenter explained that using a consistent baseline prevents certain sources from claiming credit for minor emission reduction measures taken in the midst of the ongoing regional haze planning process, thereby making more stringent controls appear less beneficial. The commenter also explained that the fixed baseline period of 2001-2003 allows EPA to make "apples-to-apples" comparisons of the cost-effectiveness and visibility benefits of evaluated technologies across all BART sources. The commenter pointed out that EPA's method of evaluating combustion controls as a BART option, not as part of the emission baseline, was identical to the approach that Wyoming and the sources themselves had taken in their own BART analyses. The commenter argued that this approach is correct because it ensures that the emissions reductions associated with existing controls installed after the baseline period are evaluated in the BART analysis. It also factors the cost of such controls into

the source's compliance costs, rather than assuming that such costs are zero simply because they already have been incurred. Finally, the commenter asserted that even if EPA were to adjust the baseline emissions for the EGUs in question, SCR would still be BART for all of the EGUs.

Response: One of the statutory factors EPA is to consider is "any existing pollution control technology in use at the source." 42 U.S.C. 7491(g)(2). The CAA does not specify how states or EPA must "take into consideration" this factor. The BART Guidelines provide little additional guidance, stating only that "[f]or emission units subject to a BART review, there will often be control measures or devices already in place. For such emission units, it is important to include control options that involve improvements to existing controls and not to limit the control options only to those measures that involve a complete replacement of control devices." 40 CFR pt. 51, app. Y, at IV.D.1.6. Consequently, we believe that states and EPA have considerable discretion in how they consider existing controls in use at a source, so long as that consideration is explained and reasonable. Ultimately, states or EPA should consider the totality of the circumstances (e.g., the purpose of any existing controls, when and why they were installed, compatibility with other control options, enforceability, and other pertinent factors) in determining how they will evaluate existing controls in a BART analysis.

For example, one way in which a state or EPA can consider existing controls, as contemplated by the BART Guidelines, is by evaluating whether additional control options are technologically compatible with a source's existing controls, or whether the presence of the existing controls would render the installation of some additional control options infeasible. In the case of NO_X, the presence of existing combustion controls at a source, such as low NO_X burners or over-fire air, does not impact the feasibility of installing post-combustion controls, such as SNCR or SCR. Consequently, EPA reasonably determined in this instance that the

presence of existing combustion controls at several of the BART-eligible EGUs would not preclude the installation of either SNCR or SCR.

Pointing to our regional haze actions in Arizona and Montana, several of the commenters asserted that EPA was required to consider existing controls by adjusting the baseline emissions of several sources to account for reductions achieved after the baseline period. We disagree. The BART Guidelines recommend that baseline emissions should be "based upon actual emissions from a baseline period." 40 CFR pt. 51, app. Y, at IV.D.4.d.1. While the BART Guidelines allow states or EPA to adjust baseline emissions to take into account projections of "future operating parameters" by making such assumptions into enforceable limits, *id.* at IV.D.4.d.2, the BART Guidelines are silent as to how reductions resulting from the post-baseline installation of controls should be treated. One way to take account of such reductions is to update the baseline, as we did in our regional haze actions for Arizona and Montana. In those rulemakings, we determined that updating the baseline was appropriate because several sources had recently installed combustion controls to comply with consent-decree obligations and acid-rain requirements, while another source had changed its coal supply. The fact that these controls were installed to comply with other CAA requirements heavily informed EPA's decision to update the sources' baseline emissions. As we explained in our Arizona action, however, "an 'updated baseline' might not be appropriate in all instances. For instance, if it appeared that controls had been installed early in order to avoid a more stringent BART determination, it would presumably not be appropriate to use a baseline representing these new controls." 72 FR 72526.

We believe that this is one such instance. First, unlike in Arizona and Montana, the sources did not install the combustion controls in question to comply with other CAA

requirements. Rather, as stated above in the comment, the sources installed the controls to comply with Wyoming's selection of BART in its regional haze SIP. This distinction is important because, by their very nature, baseline emissions should be "a realistic depiction of anticipated annual emissions" *before* the installation of BART. 40 CFR pt. 51, app. Y, at IV.D.4.d. Thus, while baseline emissions can take into account newly installed controls and in some cases future operating parameters, baseline emissions still must represent a pre-BART scenario so that the cost-effectiveness and visibility benefits of all potential BART control options can be evaluated from a consistent benchmark. Indeed, it would be passing strange for EPA to update the commenters' baseline emissions to incorporate emission reductions that they admittedly achieved to comply with BART. Doing so would bias EPA's analysis of additional control options by giving the commenters credit for emissions reductions attributable to BART, but treating the costs they incurred to achieve those reductions as if they had never occurred.

Second, we note that the Wyoming regional haze SIP did not require compliance with BART until five years *after* EPA's approval of the SIP. At the time the sources installed the combustion controls, EPA had not yet acted upon Wyoming's regional haze SIP, and the sources had no way of knowing whether EPA would ultimately approve or disapprove Wyoming's BART determinations. Thus, it appears that the sources' decision to install the combustion controls early may have been motivated by an intent to avoid the possibility of a more stringent BART determination by EPA under the theory now advanced in the comment. To be consistent with our statements in the Arizona regional haze action, we believe that it would have been inappropriate for EPA to have "taken into consideration" the newly installed combustion controls at the commenters' facilities by updating the baseline in this case.

Nonetheless, EPA recognizes that we must "take into consideration" *all* existing controls to comply with the CAA, and have therefore taken the sources' existing combustion controls into consideration in other ways. For example, in addition to considering whether the source's existing combustion controls were compatible with the installation of post-combustion controls, we also used the source's current NO_X emission rates when we evaluated the size, design, and reagent/catalyst cost of SNCR and SCR. For example, in the case of Laramie River, we did not use the baseline emission rate of 0.27 lbs/MMBtu, but rather the current emission rate of 0.19 lb/MMBtu that appropriately reflects the installation of over-fire air and low NO_X burners. Due to the lower NO_X emission rate, the size of the SNCR and SCR systems and the amount of reagent/catalyst necessary to operate them are lower than if we had simply assumed the baseline emission rate.

Moreover, we do not believe that our action is inconsistent with the Eighth Circuit's decision in *North Dakota*. In our regional haze action for North Dakota, we refused to consider the DryFining™ control technology in use at Coal Creek Station when we promulgated a FIP. We argued to the court that the CAA did not require states or EPA to consider controls that were voluntarily installed after the baseline period. The court rejected this position, holding that "EPA's refusal to consider the existing pollution control technology in use at the Coal Creek Station because it had been voluntarily installed was arbitrary and capricious." *North Dakota*, 2013 U.S. App. LEXIS 19442, at*30. The court explained that "any existing pollution control technology" included even voluntarily installed controls. However, the court did not opine as to *how* existing controls must be considered. Here, EPA reasonably considered the existing controls at the BART-eligible sources in the several ways described above. *North Dakota* does

not require us to “take into consideration” existing controls by adjusting baseline emissions, which would have been inappropriate in this instance.

Finally, while we acknowledge the supportive comments from the final commenter on this issue and agree with many of the points that were made, we decline to require SCR at all of the BART-eligible EGUs, for reasons explained elsewhere in this document.

12. Consent Decree

Comment: As it had on other SIPs, EPA neglected to act on Wyoming’s SIP, and as a result exposed itself to liability for violating Section 110(k) of the CAA. *See* 42 U.S.C. 7410(k)(2), (3) (setting deadlines for EPA action on SIPs). Wyoming could have sued EPA for failing to take action on Wyoming’s SIP, but in the spirit of cooperation, elected not to. Instead, special interest groups sued EPA for its failure to comply with the Act. *See* Compl., *WildEarth Guardians v. Jackson,* No. 1:11-cv-00001-CMA-MEH (D. Colo. Jan. 2, 2011). Wyoming did not participate in this litigation for two reasons: First, Wyoming was not aware of the litigation until EPA published the proposed consent decree, 76 FR 34983 (June 15, 2011); and, second, EPA has repeatedly opposed state attempts to participate in litigation that impacts the processing of SIPs, *see, e.g.*, Def. Opp. to North Dakota's Motion to Intervene, *WildEarth Guardians v. Jackson,* No.4:09-CV-02453-CW (N.D. Cal. Oct. 20, 2011).

The special interest groups’ litigation, in turn, has driven EPA’s approach to Wyoming’s SIP. The litigation has established arbitrary deadlines for EPA to act on Wyoming’s SIP, which EPA and the special interest groups have repeatedly extended for their convenience. Not once has EPA consulted the State on these deadlines. More troubling, through settlement of that litigation, EPA has committed to particular courses of action on Wyoming’s SIP. EPA has cut

Wyoming out of the cooperative federalism Congress intended to guide the regional haze program.

This dubious approach to implementing the CAA harms states. The unprecedented influence the special interest groups have exerted over EPA's treatment of Wyoming's SIP, coupled with EPA's effort to conceal its communications with those groups, lead a reasonable observer to seriously question the objectivity of EPA's proposed action on Wyoming's SIP.

The commenter also asserted that the EPA let sue-and-settle tactics pervert what is typically a cooperative process. Nongovernmental groups should not be allowed to coerce an agency into setting policy as a result of litigation. Wyoming considers this an attack on states' rights, which does nothing to further the partnership between EPA and Wyoming, especially when Wyoming can't participate in those discussions.

Response: We disagree with commenter's assertions. The Act provides citizens with the right to sue EPA when EPA fails to meet a statutory deadline, 42 U.S.C. 7604(a)(2), and courts have the authority to establish a remedy that sets new deadlines and compels EPA to do what Congress required. *Id.* Section 7604(a). When EPA is confronted with such suits, it is reasonable and proper for EPA, working with the Department of Justice, to decide that it is in the public interest, and a more efficient use of executive and judicial branch resources, to settle such cases rather than litigate them. Congress recognized that EPA has authority to settle cases, and directed EPA to provide public notice and an opportunity to comment on proposed consent decrees before finalizing them. *Id.* Section 7413(g).

As explained in the Introduction section of this document, the consent decree of which the commenter complains was the result of a citizen suit that sought to compel EPA to approve

SIPs or promulgate FIPs to meet long overdue regional haze requirements.[72] The State of Wyoming did not submit its regional haze implementation plan in a timely fashion as required by the CAA and EPA's regulations. Facing substantial legal risk, EPA reasonably negotiated a settlement resulting in a consent decree that set new deadlines for EPA to take actions required by the Act.[73] The Consent Decree was published in the Federal Register as is required under the CAA section 113(g) and provided 30 days for public comment. *See* 76 FR 34983 (June 6, 2011). For Wyoming, EPA's obligations to fully approve SIPs or promulgate a FIP were now due six years after the original 2007 deadline for the submission of regional haze SIPs. The consent decree was also subject to district court review before its entry. Neither the commenters nor any other party objected to the deadlines established for EPA's action on the Wyoming regional haze SIP. The United States District Court for Colorado found the terms of the consent decree reasonable.

The commenter's argument that EPA used these consent decree deadlines and "has committed to particular courses of action on Wyoming's SIP" with regard to the Final Rule is without merit. The consent decree did not limit or change EPA's substantive rulemaking authority or discretion in any way. Rather, the consent decree specifically permitted EPA to satisfy its obligations either by approving the States' regional haze SIPs or by promulgating a FIP. EPA also provided more than 70 days from the date of publication in the Federal Register for interested parties to submit comments on the proposed rule, longer than the 30-day public

[72] January 2, 2011 a Complaint was filed against EPA in the federal district court for the District of Colorado seeking declaratory and injunctive relief under the Clean Air Act due to EPA's failure to meet regulatory and statutory deadlines for the regional haze implementation plan. *See WildEarth Guardians v. Jackson*, Case No. 11-cv-0001-CMA-MEH (D. Colo.).

[73] The EPA resolved this complaint by means of a settlement agreement that was memorialized in a Consent Decree that was entered by the Court on June 6, 2011 (the "Consent Decree").

comment period required by the Act. 42 U.S.C. 7607(h). EPA obtained several extensions of the consent decree deadline for Wyoming to provide the Agency with adequate time to conduct the rulemaking.[74] For all these reasons, neither the consent decree nor the deadlines it imposed rendered EPA's Final Rule arbitrary, capricious, or contrary to law.

Finally, EPA did not rely on information that was not in the docket for this rule. Therefore, contrary to commenter's assertions, all information relied upon has been disclosed. *Comment:* EPA quickly entered into a settlement agreement to resolve the special interest groups' litigation, rather than defend its actions and honor Wyoming's patience with EPA's inaction. In settling the litigation, EPA agreed to take final action on Wyoming's SIP by April 15, 2012. Consent Decree, *WildEarth Guardians v. Jackson,* No. 1: 11-cv-00001-CMA-MEH, at 4, '1]6 (D. Colo. Sept. 27, 2011) *(WildEarth Guardians).* Recognizing that it still could not meet its statutory obligation to act on Wyoming's SIP, EPA persuaded the special interest groups to extend that deadline thirty days to May 15, 2012. Stip. to Extend Four Deadlines in Consent Decree at 3, ~ 6, *WildEarth Guardians,* (D. Colo. Jan. 10, 2012).

On June 2, 2012, eighteen months after Wyoming submitted its SIP, EPA proposed to partially approve and partially disapprove the SIP. 77 FR 33022. But, as a result of EPA's unlawfully delayed action, Wyoming's SIP became complete by operation of law. *See* 42 U.S.C. 7410(k)(l)(B). Accordingly, EPA cannot now propose to disapprove Wyoming's SIP on the grounds that it lacks information. To do otherwise is to render Section 110(k)(l)(B) meaningless.

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[74] EPA routinely notifies the states of these extensions. For example, on December 11, 2012, Region 8 Air Program Director Carl Daly called Wyoming DEQ's Steve Dietrich and his staff, to let them know the Agency had submitted a motion to the Court to re-propose the 309(g) rule. Mr. Daly also contacted Mr. Dietrich on March 26, 2013 to let the State know EPA was working on further extensions, as the Agency needed additional time to consult with our headquarters offices.

Response: EPA disagrees with this comment. First, the commenter offers no grounds on which EPA could have defended the cited litigation, which involved mandatory statutory deadlines under the Act.

Second, EPA disagrees with the commenter's interpretation of CAA section 110(k)(l)(B). Under the CAA, EPA's SIP review is a two-step process. *See* CAA Section 110(k). First, within six months of a SIP submission, EPA must make a threshold "completeness determination" to determine whether the SIP contains certain "minimum criteria" designated by EPA as "the information necessary to . . . determine whether the plan submission complies with the provisions of [the CAA]." *See id.* Section 110(k)(1)(A), (B). These minimum criteria are listed in Appendix V to 40 CFR. Part 51 and include a relatively short list of eight "Administrative Materials" and nine "Technical Support" requirements, such as evidence that the state properly adopted the SIP and technical demonstrations that allow EPA to evaluate compliance with the substantive requirements of the CAA. *See* 40 CFR. pt. 51, App. V. If EPA fails to make the completeness determination within six months, the SIP is deemed complete by operation of law. *See* CAA Section 110(k)(1)(C).

Importantly, however, a determination of completeness, either by EPA or by operation of law, does not mean that the SIP has been approved as compliant with the *substantive* requirements of the CAA. Indeed, Appendix V does not include any substantive requirements, such as the requirement that regional haze SIPs include a five-factor BART analysis. These requirements are included elsewhere in the CAA, the Haze Rule, and the BART Guidelines.

Instead, EPA evaluates SIPs for compliance with the substantive requirements in the second step of EPA's review, which EPA must complete within one year after the SIP is determined to be complete by EPA or deemed complete by operation of law. *See* CAA Section

110(k)(2), (3), & (*l*) (providing a one-year deadline by which EPA must determine whether the SIP "meets all of the applicable requirements" or "interferes with any applicable requirement" of the Act); *see also NRDC v. Browner*, 57 F.3d 1122, 1126 (D.C. Cir. 1995) ("Under the two-stage procedure established in [section] 110(k), EPA first makes an essentially *ministerial finding* of completeness, a process taking at most six months. By contrast, the plan approval process may take up to twelve months due to the more extensive technical analyses necessary to ensure that the SIP meets the Act's *substantive requirements*." (emphasis added)). Accordingly, a completeness determination in Step 1 does not deprive EPA of authority to disapprove a SIP in Step 2 for failure to comply with substantive requirements of the CAA, the Haze Rule, and the BART Guidelines. Instead, a completeness determination merely triggers EPA's duty to evaluate the substance of a SIP in the first instance and either approve or disapprove the SIP as necessary within one year. As explained above, EPA has authority to substantively review states' five-factor BART analyses in Step 2, and must disapprove a SIP if its analysis fails to comply with the requirements of the CAA, the Haze Rule, or the or the BART Guidelines. *See Oklahoma*, 723 F.3d at 1207-10. Thus, the comment is incorrect in stating that EPA's action here renders section 110(k)(1)(B) meaningless.

Moreover, courts have repeatedly stated that EPA does not lose its statutory authority to act under the CAA for a failure to meet its statutory deadline and that the proper remedy in the case of delay is for a party to seek an order to compel action. *Oklahoma v. EPA.*, 723 F.3d 1201, 1224 (10th Cir. 2013) (explaining that although the CAA "undoubtedly requires that the EPA promulgate a FIP within two years, it does not stand to reason that it loses its ability to do so after this two-year period expires"); *Montana Sulphur & Chem. Co. v. EPA.*, 666 F.3d 1174, 1190 (9th Cir. 2012) *cert. denied*, 133 S. Ct. 409, (2012) (explaining that although CAA has an

"explicit deadline ... it does not follow that the agency loses authority to act if it fails to meet that deadline"); *Gen. Motors Corp. v. United States*, 496 U.S. 530, 541 (1990) (holding EPA does not lose authority under CAA because "other statutory remedies are available when EPA delays action on a SIP revision"); *see also Brock v. Pierce Cnty.*, 476 U.S. 253, 260 (1986) (holding that when "there are less drastic remedies available for failure to meet a statutory deadline ... courts should not assume that Congress intended the agency to lose its power to act").

Comment: Two months after the period for commenting on EPA's 2012 proposal closed, EPA and the special interest groups again modified the consent decree to allow EPA additional time to take action on Wyoming's SIP. *See* Stip. to Extend Deadline in Consent Decree., *WildEarth Guardians* (D. Colo. Oct. 3, 2012). Then, two months after extending the deadline for action on Wyoming's SIP, EPA asked the court to again extend EPA's deadline, this time until September 27, 2013. Def. Unopposed Mot. To Modify Two Deadlines in Consent Decree, at 1, *WildEarth Guardians* (Dec. 10, 2012).

As grounds for the request, EPA cited the special interest groups' comments, which EPA asserted "necessitate[d) re-proposal of the rule." I*d.* at 3-4. The court, in turn, granted EPA's request. Order to Modify Consent Decree, *WildEarth Guardians* (Dec. 13, 2012). Even after extending its deadline to take action on Wyoming's SIP three times, EPA still needed more time. So, on March 25, 2013, EPA and the special interest groups again agreed to extend EPA's deadline for action on Wyoming's SIP. Stip. to Extend Deadlines in Consent Decree, *WildEarth Guardians* (March 25, 2013) (extending deadline until Nov. 21, 2013). Seemingly as a condition for obtaining the special interests groups' consent to the extension, EPA ostensibly agreed to a timetable for Wyoming sources to install emission controls faster than what Wyoming proposed. *Compare id.* at 2, ~ 6 ("EPA will propose to determine, for each source subject to BART, the

period of time for BART compliance that is as expeditious as practicable"), with 78 FR 34778 ("We propose that PacifiCorp meet our proposed emission limit ... as expeditiously as practicable, but no later than five years after EPA finalizes action"). Had Wyoming known when EPA proposed the consent decree in 2011 that EPA would commit to a particular course action on Wyoming's SIP, rather than just a date for taking some unspecified action, Wyoming would have sought to intervene in the litigation.

Response: EPA disagrees that it committed to any particular course of action in the Consent Decree. The Consent Decree only specified a timetable for EPA to promulgate rules consistent with its statutory obligations under the CAA, but did not commit the EPA to any particular course of action not already required by law. In fact, the Consent Decree specifically states: "Nothing in this Consent Decree shall be construed to limit or modify any discretion accorded EPA by the CAA or by general principles of administrative law in taking the actions which are the subject of this Consent Decree, including the discretion to alter, amend, or revise any final actions contemplated by this Consent Decree."

We disagree with the commenter's allegations that EPA agreed in the Consent Decree to a timetable for Wyoming sources to install BART controls faster than what Wyoming proposed in its SIP. Paragraph 6 of the Stipulation to Extend Deadlines in Consent Decree, *WildEarth Guardians* (March 25, 2013) specifies that:

> By May 23, 2013, EPA shall sign a notice of re-proposed rulemaking in which it proposes approval of a SIP, promulgation of a FIP, partial approval of a SIP and promulgation of a partial FIP, or approval of a SIP or promulgation of a FIP in the alternative, for the State of Wyoming, to meet the regional haze implementation plan requirements that were due by December 17, 2007, under 40 CFR 51.309(g). In its re-

proposal, EPA will propose to determine, for each source subject to BART, the period of time for BART compliance that is as expeditious as practicable, *as required by 42 U.S.C. Section 7491*. (emphasis added).

Commenter neglects to include the last phrase in this provision in its comment – "as required by 42 U.S.C. Section 7491." The Consent Decree required EPA to meet that CAA requirement.[75] Therefore, the Consent Decree mirrors and is consistent with the CAA BART requirements.

Finally, we are acting consistently with the Act and the RHR, as we discuss in detail elsewhere throughout this final action.

13. Monitoring, Recordkeeping and Reporting

Comment: EPA proposed a FIP for all monitoring, recordkeeping, and reporting requirements related to BART and reasonable progress sources for which there is a SIP or FIP emissions limit. EPA notes that the State's monitoring, recordkeeping, and reporting language in their SIP includes references to WAQSR chapters that EPA has not approved as part of the SIP and erroneously concludes that this means Wyoming's requirements are not federally enforceable.

Wyoming does not concur with EPA's findings. The monitoring, recordkeeping and reporting language in the State's regional haze SIP is taken directly from air quality permits issued under the SIP-approved permitting provisions in Chapter 6, Section 2 of the WAQSR, and are therefore federally enforceable. See 40 CFR 52.2620(c)(1). When drafting the monitoring, recordkeeping, and reporting requirements, the State incorporated the requirements of 40 CFR

[75] Additionally, the CAA defines the term "as expeditiously as practicable" to mean "as expeditiously as practicable but in no event later than five years after the date of approval of a plan revision under this section (or the date of promulgation of such a plan revision in the case of action by the Administrator under section 110(c) [42 USCS Section 7410(c)] for purposes of this section)." 42 U.S.C. 7491(g)(4).

part 60 for trona facilities and for EGUs. Specifically, 40 CFR part 60 subparts D and Da were incorporated into the monitoring conditions for each BART permit. In the case of EGUs, by relying upon subpart D and Da, the State is also incorporating the requirements of 40 CFR part 75, since the monitoring provisions of subpart Da refer back to the continuous emissions monitor requirements under the Acid Rain Program codified in 40 CFR part 75.

While Wyoming allows for data substitution using the methodology prescribed in 40 CFR part 75, this is only applicable to annual emissions to account for periods when the continuous emissions monitor is down and the emissions unit continues to operate. Substituting data for these operating periods is more conservative than removing them altogether. EPA asserts that there are numerous clarifications and rewording needed; however, these monitoring, recordkeeping, and reporting requirements are currently in effect for PacifiCorp and Basin Electric units, and the companies are able to demonstrate compliance using them. Furthermore, the recordkeeping and reporting requirements contained in Chapter 5, Section 2 of the WAQSR are modeled after 40 CFR part 60, as these provisions are delegated to the State by EPA. See 40 CFR 60.4(c). While WAQSR Chapter 5, Section 2 is not part of Wyoming's SIP, the requirements therein are analogous to the federal New Source Performance Standards requirements and are made federally enforceable through incorporation by a Chapter 6, Section 2 BART permit and EPA's delegation to Wyoming.

Since these monitoring, recordkeeping, and reporting requirements are contained in federally enforceable permits and the affected companies are already able to demonstrate compliance with the BART emissions limits using them, Wyoming concludes that it did include appropriate and adequate monitoring, recordkeeping, and reporting requirements in the SIP.

Response: EPA disagrees with this comment. As discussed above in this section, EPA's approach in this action is entirely consistent with section 169A(b)(2) which, as we wrote when we promulgated the BART Guidelines, "provides that EPA must require SIPs to contain emission limits, schedules of compliance, and other measures as may be necessary to make reasonable progress towards meeting the goal" (emphasis added). 70 FR 39120. The regulations require that the states "must submit an implementation plan containing emission limitations representing BART." 40 CPR 51.308(e). The Guidelines require that states "must establish an enforceable emission limit for each subject emission unit at the source and for each pollutant subject to review that is emitted from the source." 70 FR 39172. CAA section 110(a)(2)(A) also requires that SIPs shall "include enforceable emission limitations … as may be necessary or appropriate to meet the applicable requirements of [the Act]."

Therefore, EPA disagrees that the use of BART permits to implement the monitoring, recordkeeping, and reporting necessary to ensure compliance with BART emission limitations is adequate under the CAA. In addition, in response to another comment, we are removing the requirements for annual emission limits for BART and reasonable progress sources. (See section IV.C.3 of this rulemaking). Thus, the point raised by the commenter pertaining to data substitution no longer applies to our final action.

B. Modeling

1. General Comments

Comment: One commenter stated that EPA must re-evaluate its method for assessing visibility impacts from wildfires or states will never be able to achieve natural background goals. The commenter went on to say that EPA should 1) eliminate the impacts from fire from the annual contribution to the deciview analysis or 2) properly incorporate it into the natural background

equation to establish a glide path states can achieve. The commenter provided graphical data from the Interagency Monitoring of Protected Visual Environments (IMPROVE) network to show the contributions to light extinction from organic carbon, elemental carbon, and nitrate.

Response: EPA disagrees that we must re-evaluate our methods in this action. However, EPA agrees that wildfires can be an important source of visibility impairment, especially in the western states during the summer wildfire season. EPA recognized that variability in natural sources of visibility impairment causes variability in natural haze levels as described in its "Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule."[76] The preamble to the BART guidelines (70 FR 39124) describes an approach used to measure progress toward natural visibility in Mandatory Class I areas that includes a URP toward natural conditions for the 20 percent worst days and no degradation of visibility on the 20 percent best days. The use of the 20 percent worst natural conditions days in the calculation of the URP takes into consideration visibility impairment from wild fires, windblown dust and other natural sources of haze. The "Guidance for Estimating Natural Visibility" also discusses the use of the 20 percent best days and the 20 percent worst days estimates of natural visibility, provides for revisions to these estimates as better data becomes available, and discusses possible approaches

[76]Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule, Document No. EPA-R09-OAR-2012-0345-0003-B9, U.S. Environmental Protection Agency, September 2003. http://www.epa.gov/ttncaaa1/t1/memoranda/rh—envcurhr—gd.pdf, page 1-1: "Natural visibility conditions represent the long-term degree of visibility that is estimated to exist in a given mandatory Federal Class I area in the absence of human-caused impairment. It is recognized that natural visibility conditions are not constant, but rather they vary with changing natural processes (e.g., windblown dust, fire, volcanic activity, biogenic emissions). Specific natural events can lead to high short-term concentrations of particulate matter and its precursors. However, for the purpose of this guidance and implementation of the regional haze program, natural visibility conditions represents a long-term average condition analogous to the 5-year average best- and worst-day conditions that are tracked under the regional haze program."

for refining natural conditions estimates.[77] The commenter does not identify any way in which EPA's action was inconsistent with this guidance or the RHR.

Comment: At the hearing, Governor Mead and representatives of Wyoming, as well as industry representatives, argued that worsening haze has been caused by wildfires.

Response: We acknowledge the commenter's points on wildfires,[78] and that they can be an important source of visibility impairment, especially in the western states during the summer wildfire season. As discussed in more detail above and in our proposed notice, EPA recognizes that variability in natural sources of visibility impairment cause variability in natural haze levels and provided approaches to address this in the preamble to the BART guidelines (70 FR 39124). However, while we acknowledge that wildfires contribute to regional haze, the BART CALPUFF modeling has demonstrated that Wyoming's BART sources are also significant contributors to regional haze.

Comment: Although the various BART application analyses conducted by Wyoming for PacifiCorp's BART units note that Wyoming conducted a "comprehensive visibility analysis covering all three visibility impairing pollutants," the analyses also state: "While visibility impacts were addressed in a cumulative analysis of all three pollutants, Post-Control Scenario B is directly comparable to Post-Control Scenario A as the only difference is directly attributable to

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[77] *Ibid*., pages 3-1 to 3-4.

[78] 78 FR at 34767 ("Table 28 also shows that Wyoming is not meeting the URP to meet natural visibility conditions by 2064. In this case, 40 CFR 51.308(d)(1)(ii) requires the State to demonstrate, based on the four factors in 51.308(d)(1)(i)(A), that the RPGs established in this SIP are reasonable for this planning period and that achieving the URP in this planning period is not reasonable. In its demonstration, the State cited many reasons why meeting the URP was not reasonable, including the following. First, emissions from natural sources greatly affect the State's ability to meet the 2018 URP. As discussed earlier, WEP data shows that emissions of OC, EC, PM2.5, and PM10 come mainly from natural or non-anthropogenic sources, such as natural wildfire and windblown dust.")

the installation of SCR. Subtracting the modeled values from each other yield the incremental visibility improvement from SCR." In other words, Wyoming clearly considered – and made available to EPA – the very specific NO_x information that EPA claims it "was not possible for EPA, or any other party, to ascertain." Simply claiming it "was not possible for EPA" to ascertain results from available information does not justify EPA in rejecting Wyoming's NO_x BART determinations. Wyoming had considered SCR-specific visibility information. EPA cannot use the alleged lack of this information to justify requiring SCR as BART.

Response: We disagree with all aspects of this comment. Although a state is not required by EPA's regulations to model the visibility impacts from all possible control alternatives if the state selects the most stringent controls available as BART that is not what happened here. Wyoming rejected SNCR and SCR as BART without adequately assessing the visibility benefits of these control strategies. Given the cost effectiveness of these controls, the State's failure to consider visibility impacts was not reasonable and was inconsistent with the CAA and regulations. EPA was compelled to perform additional CALPUFF modeling for NO_x BART determinations to allow for consideration of visibility impacts. For example, while Wyoming took into consideration the degree of visibility improvement for other BART NO_x control options for the PacifiCorp EGUs, such as SCR, the State did not do so for SNCR. The visibility improvement for SNCR was neither provided in the State's SIP nor made available to the EPA. Wyoming did not assess the visibility improvement of SNCR despite having found it to be a technically feasible control option, and having considered a number of the other statutory factors for SNCR, such as costs of compliance and energy impacts. Given that nothing in the State's analysis suggested that SNCR was inappropriate, Wyoming's failure to consider the visibility improvement of SNCR is clearly in conflict with the statutory requirements set forth in section

169A(g)(2) of the CAA, which require that states take into consideration "the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology." Since Wyoming did not do so, EPA conducted additional CALPUFF modeling to fill this gap in the State's visibility analysis.

In addition, as stated in our 2012 proposed rule and in our 2013 re-proposal, it was not possible for EPA, or any other party, to ascertain the visibility improvement from the NO_x control options as emission reductions for multiple pollutants were modeled together. That is, since the visibility improvement for each of the State's control scenarios was due to the combined emission reductions associated with SO_2, NO_x, and PM controls, it was not possible to isolate what portion of the improvement was attributable to the NO_x controls alone. For this reason, in the modeling conducted by EPA, we held SO_2 and PM emission rates constant (reflecting the "committed controls" for those pollutants identified by Wyoming), and varied only the NO_x emission rate. This allowed us to isolate the degree of visibility improvement attributable to the NO_x control option.

We do agree that Wyoming's analysis allows for the incremental comparison between two post-control options (Post-Control Scenario A and Post-Control Scenario B). However, the BART Guidelines require more than this, stating that you should "[a]ssess the visibility improvement based on the modeled change in visibility impacts for the pre-control and post-control emission scenarios."[79] That is, it is not sufficient to assess only the incremental visibility between control options, you must also assess the visibility improvement of each control option relative to the pre-control scenario. Therefore, Wyoming clearly did not assess visibility improvement in a manner consistent with that explicitly prescribed by the BART Guidelines.

[79] 40 CFR 39170.

In summary, while States may have some discretion in how to determine visibility impacts, Wyoming did not fulfill the basic statutory requirement to consider the visibility improvement of each of the NO_x control options they identified as technically feasible. They also did not assess visibility improvement in a manner consistent with the approach prescribed by the BART Guidelines. As a result, EPA concluded it would be appropriate to conduct additional CALPUFF modeling.

Comment: The egregiousness of EPA's actions becomes even more apparent when comparing EPA's conclusions regarding cost and visibility impacts for certain of PacifiCorp's BART units against the cost and visibility impact conclusions reached by Wyoming for the same units. Table 2 in our comments provides a comparison between Wyoming's modeled delta deciview improvements and EPA's delta deciview improvements based on the "new information" EPA claims it has developed. Recognizing EPA's conclusion that one deciview is barely perceptible to the human eye and considering the inaccuracies and limitations of the model inputs and versions of the visibility models being used, there is no significant difference between Wyoming's results and EPA's results. Additionally, without any "bright line" test regarding the amount of visibility improvement that justifies a given control device, EPA cannot show that these insignificant differences would have any impact on the BART determinations for PacifiCorp's BART units.

Response: With respect to the "bright line" test, EPA's task in conducting modeling for developing our FIP is to conduct modeling in accordance with the CAA and RHR using our best scientific and technical judgment. We then consider the modeling results, along with the other BART factors, in making the BART determinations. While it is permissible to establish a "bright line," we have not done so. Furthermore, as we discuss in detail in section IV of this final notice

and elsewhere in response to comments, we disagree with commenter's assertions that there are no significant differences between Wyoming's results and EPA's results. We have addressed the issue of perceptibility elsewhere in our response to comments.

Comment: We received comments that by the year 2022, EPA's plan and Wyoming's plan achieve essentially identical results for visibility, and therefore, the proposed FIP would have no net visibility benefit over the SIP.

Response: We disagree. Our proposed FIP, by merit of requiring more stringent controls than those proposed in the SIP for some sources shown to cause or contribute to visibility impairment, results in greater visibility benefit. Although, based on our revised analyses for visibility impacts and costs of compliance and considering the five BART factors, we have revised some of our proposed control determinations, this assessment remains true for today's final rule. In particular, our final rule results in greater visibility improvement than the SIP for PacifiCorp Dave Johnston Unit 3 and Wyodak and Basin Electric Laramie River Units 1-3. The improvement in visibility stemming from the FIP, as compared to the SIP, can easily be discerned by reviewing relevant control options as found in Tables 2 through 17 of section III.A of this action.

Comment: On average, the 2000 baseline level for Class I areas in Wyoming is 11 deciviews. The 2064 natural background goal is 6 deciviews. IMPROVE data suggests that there is not this amount of nitrate improvement to be obtained. It appears EPA is trying to achieve a greater reduction for nitrates than is required at this time to reach the 2064 natural background goal. For Bridger, the total amount of deciview reduction for controls (6.08) exceeds the entire deciview reduction (all pollutants) from baseline to 2064. The value (6.08 deciviews) is also 10 fold higher than Wyoming's contribution to nitrate levels (0.62 deciviews- see Table 23 of EPA's

proposed rulemaking) at the Class I area for the 2000-2004 baseline year. This value was calculated by multiplying 6.2% times the Class I area's 2000 baseline deciview value of 11.1. The same discussion is valid for Yellowstone as well, where the modeled nitrate reductions equal 2.27 deciviews and Wyoming's total reduction potential is only 0.82 deciviews.

Response: EPA disagrees with this comment. The commenter appears to be referring to annual mean estimates of visibility impairment at Class I areas, and comparing these estimates with the original CALPUFF modeled visibility improvements in our 2012 proposal. The values referred to in Table 23 of EPA's proposed rulemaking are mean estimates for the 20% worst visibility days. The BART Guidelines recommend that visibility impairment be evaluated for the 98th percentile contribution for each BART source. It is likely that 98th percentile visibility impacts will differ significantly from annual mean impacts, so it is not possible to directly compare our modeled impacts on the 98th percentile day to seasonal mean or the mean of the worst 20% days. However, we also note that in the revised final modeling included in this action, the CALPUFF modeled visibility improvements are less than the values cited above by the commenter from the original proposal, and the commenter's comparisons are no longer relevant.

Comment: The measured visibility impairment at IMPROVE stations offers a more certain and reliable quantification of the actual cause of visibility impairment than the CALPUFF model approved by the EPA for BART visibility assessments. CALPUFF is an EPA-approved model for long-range transport, as described in the EPA's "Guideline on Air Quality Models" 40 CFR Part 51 Appendix W, but only for the modeling of PSD increments. The treatment of chemical transformation, which is a crucial aspect for any model that is used for visibility assessments, is considered to be inadequate within CALPUFF. In fact, the lead modelers at the EPA's Office of Air Quality Planning and Standards have initiated a formal regulatory process to more fully

evaluate (and very possibly replace) CALPUFF as an EPA-preferred model for long-range transport.

Response: EPA disagrees that the use of monitoring data from the IMPROVE network would provide a more accurate assessment of the predicted degree of visibility from the use of controls at a source than does CALPUFF. The commenter has not explained how monitoring data could be used to assess the actual current contributions to visibility impairment, and in any case, models are needed to estimate the potential future visibility impacts from the use of a range of controls at a specific source. In recommending the use of CALPUFF for assessing source specific visibility impacts, EPA recognized that the model had certain limitations but concluded that "[f]or purposes of the regional haze rule's BART provisions… CALPUFF is sufficiently reliable to inform the decision-making process."[80] EPA accordingly appropriately used CALPUFF in this action. We further note that the requirements of 40 CFR 51.112 and 40 CFR part 51, Appendix W, Guideline on Air Quality Models (GAQM) and the BART Guidelines which refers to GAQM as the authority for using CALPUFF, provide the framework for determining the appropriate model platforms and versions and inputs to be used. The use of CALPUFF is subject to GAQM requirements in section 3.0(b), 4, and 6.2.1(e) which includes an approved modeling protocol to use the current 5.8 version.[81]

In promulgating the BART guidelines, EPA addressed concerns with CALPUFF's treatment of chemical transformations by recommending that states use the 98th percentile of

[80] 70 FR at 39123.

[81] Assessment of the "VISTAS" Version of the CALPUFF Modeling System, EPA-454/R-08-007, August 2008; Also see CALPUFF Model Change Bulletins B (MCB-B), MCB-C and MCB-D

modeled visibility impacts,[82] an approach that EPA followed here, to address the possibility that the model could overestimate impacts. EPA's discussion of CALPUFF in this 2005 rulemaking addresses these issues at length.[83]

EPA's modeling in this action was consistent with the BART Guidelines and Appendix W. As explained in more detail above, in recommending the use of CALPUFF for assessing source specific visibility impacts, EPA recognized that the model had certain limitations but concluded that "[f]or purposes of the regional haze rule's BART provisions… CALPUFF is sufficiently reliable to inform the decision-making process."[84] To the extent that the comment takes issue with the provisions in the BART Guidelines for use of CALPUFF as described above, the legal deadline for challenging the use of CALPUFF has passed. In addition we encourage the commenter to provide input in the event that EPA develops any new future visibility guidelines and predictive models.

With respect to the comment on the IMPROVE data, we have addressed this in the response to another comment.

Comment: Regional haze is affected by global geologic, atmospheric and anthropogenic sources. None of the sources are controllable to the extent of achieving "natural visibility conditions" at the targeted time frame. The quantification of "natural visibility" at any geographic point is irrational. Natural visibility is a temporal quantity and therefore any quantified value is subjective and not scientific. Regional haze is subject to global atmospheric conditions which provide dilutive action to the identified sources of haze (anthropogenic or otherwise). Atmospheric conditions are directly related to the baseline eleven year solar cycle. To have any

[82] 70 FR at 39121
[83] 70 FR at 39121-29124.
[84] 70 FR at 39123.

form of validity, the collection period would necessarily encompass at least one full solar cycle, arguably two full cycles. Furthermore, the dilutive effects of atmospheric conditions (and therefore, the quantification of visibility) are directly related to the known periodic oceanic events commonly referred to as "el Niño" and "la Niña". These events have been monitored and quantified since 1950 and occurrences are sub-categorized as weak, moderate and strong. The periodicity of strong events for both "el Niño" and "la Niña" is every 9-11 years. The last strong "el Niño" occurred in 1997. The last two strong "la Niña" events occurred in 2010 and 1999. The baseline data collection for regional haze is ignorant of these significant atmospheric events, which makes the data collection period irrelevant and therefore the "baseline visibility" invalid.

Response: EPA disagrees with the characterizations in this comment. EPA recognizes that a variety of global scale, natural emissions sources affect natural visibility levels at Class I areas, and we described methods used to assess natural haze levels.[85] We disagree that it is necessary to model visibility impairment for one or two full solar cycles. The formation of fine particulate matter, and subsequent impacts on regional haze, depend on variations in local meteorological conditions. Variability in meteorological conditions is primarily determined by seasonal weather conditions, and the modeling period of calendar years 2001-2003 used in our analysis includes substantial variability in weather conditions. While phenomena such as el Niño and la Niña can affect the frequency of extreme events, our modeling analysis is based on the 98th percentile visibility impacts and is therefore designed to exclude extreme events. El Niño and la Niña events may also affect annual total precipitation, temperature and other meteorological parameters, however, the commenter has not provided any evidence that the 98th percentile

[85] Guidance for Estimating Natural Visibility Conditions under the Regional Haze Rule" Document No. EPA-R09-OAR-2012-0345-0003-B9, U.S. Environmental Protection Agency, September, 2003.

visibility impacts would differ significantly during an el Niño and la Niña year. We believe that it is sufficient to model visibility impairment for a 3 year period. In the preamble to the BART Guidelines, we discussed meteorological variability and explained how use of the 98th percentile would minimize the likelihood that the highest modeled visibility impacts would be caused by unusual meteorological conditions. 70 FR 39121. As explained above, our use of the 98th percentile is consistent with the BART Guidelines and in recommending the use of CALPUFF for assessing source specific visibility impacts, EPA recognized that the model had certain limitations but concluded that "[f]or purposes of the regional haze rule's BART provisions… CALPUFF is sufficiently reliable to inform the decision-making process."[86] Thus to the extent that the comment suggests that the BART Guidelines should have used a different percentile to account for solar variability in solar cycles, the legal deadline for challenging the use of CALPUFF has passed. In addition we encourage the commenter to provide input in the event that EPA develops any new future visibility guidelines and predictive models.

2. EPA Modeling

a. Comments on EPA Modeling

Comment: Several commenters have argued that EPA should have used updated models and procedures for its revised modeling. In addition, several commenters have argued that the State's Protocol was overly conservative in its treatment of background ammonia concentrations, and that monitoring data show that background ammonia levels are significantly lower than the 2 ppb concentration specified in the Protocol. Commenters in particular directed EPA's attention to ambient monitoring data for ammonia and particulate ammonium at a monitoring site in Boulder in western Wyoming and at several Class I areas. Ambient monitoring at the Boulder

[86] 70 FR at 39123.

site was performed from 2006 to 2011 and these data were recently published by Li et al.[87], while the monitoring data at the Class I areas for an 8 month period from April 2011 to January 2012 and were presented at a conference in 2012.[88]

Response: We agree with the comments that we should perform new modeling using updated model versions and different background ammonia concentrations. In this response we explain why we originally used the same modeling approach used by Wyoming and why we have updated the modeling for this action. In 2006, the State adopted its "BART Air Modeling Protocol" (Protocol)[89] that specified the approach for using the CALPUFF modeling system to evaluate BART visibility impacts, and the State and several BART sources performed modeling studies that were consistent with that protocol. For our original proposal in 2012, EPA performed additional modeling using the State's Protocol to evaluate a limited number of emissions scenarios that the State had not evaluated in its modeling. EPA recognized that there had been updates to CALPUFF modeling guidance and model versions after 2006 when the State adopted the Protocol, however, in our original proposal in 2012, which included a limited, gap-filling analysis, we proposed that it was preferable to maintain consistency with the modeling approach that the State had adopted in its Protocol. In our re-proposal on June 10, 2013, EPA recognized that some of the options used from the State's Protocol were inconsistent with BART Guidelines, such as the approach for determining baseline emissions. As a result, for the re-

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[87] Li, Y., Schwandner, F.M., Sewell, H.J., Zivkovich, A., Tigges, M., Raja, S., Holcomb, S., Molenar, J.V., Sherman, L., Archuleta, C., Lee, T., Collett Jr., , J.L., Observations of ammonia, nitric acid, and fine particles in a rural gas production region, Atmospheric Environment (2013), doi: 10.1016/j.atmosenv.2013.10.007.

[88] Chen et al., A Pilot Monitoring Study of Atmospheric NHx at Selected IMPROVE sites AWMA Aerosol and Atmospheric Optics, Visibility & Air Pollution Conference, September 24-28, 2012, Whitefish, MT

[89] Wyoming's "BART Air Modeling Protocol" (Protocol) is included in the docket in the State's Technical Support Document.

proposal EPA performed new modeling using updated emissions data for the baseline period and for all emissions control technologies, however, EPA continued to use the State's Protocol for EPA's re-proposed modeling analysis.

After evaluating comments on the re-proposal, EPA determined that it was necessary to remodel all of the baseline and control technology scenarios using different background ammonia concentrations for the BART sources that we reconsidered for this action, including Naughton, Jim Bridger, Laramie River, Dave Johnston and Wyodak. Because this approach represents a significant change from State's original Protocol, we believed that it was appropriate to develop a new modeling protocol that also adopts the current model version approved for regulatory use, CALPUFF version 5.8, and current regulatory default options. In making this decision, we considered the merits of continuing to use the State's original protocol versus the benefits of using the updated CALPUFF model that became available after the State's Protocol was adopted, and different background ammonia concentrations based in part on data that have also become available since then, and we concluded that it was necessary to adopt an updated Protocol[90] to respond fully to a number of issues raised by various commenters. The new EPA Protocol for modeling of Wyoming BART uses the same CALPUFF model version 5.8 as did the protocol that we previously adopted for modeling BART sources visibility impacts in Montana.[91]

EPA evaluated the comments and the ambient ammonia monitoring data submitted by commenters. EPA understands that there is no single accepted method for estimating the background concentration of ammonia, and that any method will have advantages and

[90] Air Quality Modeling Protocol: Wyoming Regional Haze Federal Implementation Plan, U.S. EPA, January, 2014.

[91] Modeling Protocol: Montana Regional Haze Federal Implementation Plan (FIP) Support, prepared for EPA Region 8 by Alpine Geophysics, LLC, November 21, 2011.

disadvantages. The lack of consensus on a method was a factor in EPA's decision to set aside the 2 ppb concentration value specified in the State's Protocol and instead to rely in part on the default values in Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 report[92] and in part on monitoring data. Specifically, for BART sources in western Wyoming we performed two modeling runs, one relying on an IWAQM default value and the other relying only on monitoring data. As presented below, EPA's two sets of modeling results for this BART source support our final BART determinations, as they both show similar visibility benefits. As explained below, we relied only on an IWAQM default value for BART sources in eastern Wyoming.

The 1998 IWAQM report is the only guidance available for choosing ammonia background concentrations. The IWAQM Phase 2 report relied on a 1992 review of ambient monitoring data for ammonia by Langford et al.[93] and explains that: "…the formation of particulate nitrate is dependent on the ambient concentration of ammonia, which preferentially reacts with sulfate. The ambient ammonia concentration is an input to the model. Accurate specification of this parameter is critical to the accurate estimation of particulate nitrate concentrations. Based on a review of available data, Langford et al. suggest that typical (within a factor of 2) background values of ammonia are: 10 ppb for grasslands, 0.5 ppb for forest, and 1 ppb for arid lands at 20 degrees Celsius. Langford et al. (1992) provide strong evidence that background levels of ammonia show strong dependence with ambient temperature (variations of

[92] Interagency Workgroup On Air Quality Modeling (IWAQM) Phase 2 Summary Report And Recommendations For Modeling Long Range Transport Impacts (EPA-454/R-98-019), EPA OAQPS, December 1998, http://www.epa.gov/scram001/7thconf/calpuff/phase2.pdf.
[93] Langford, A. O., F. C. Fehsenfeld, J. Zachariassen, and D. S. Schimel (1992), Gaseous ammonia fluxes and background concentrations in terrestrial ecosystems of the United States, Global Biogeochemical Cycles, 6, 459-483.

a factor of 3 or 4) and a strong dependence on the soil pH. However, given all the uncertainties in ammonia data, IWAQM recommends use of the background levels provided above, unless specific data are available for the modeling domain that would discredit the values cited. It should be noted, however, that in areas where there are high ambient levels of sulfate, values such as 10 ppb might overestimate the formation of particulate nitrate from a given source, for these polluted conditions. Furthermore, areas in the vicinity of strong point sources of ammonia, such as feed lots or other agricultural areas may experience locally high levels of background ammonia."[94]

The IWAQM Phase 2 report also states that "[i]n a refined analysis, "the background concentrations of ozone and ammonia are allowed to vary in time and space." [95] In summary, given numerous uncertainties in ammonia data, the IWAQM Phase 2 report recommends use of the background values it provides for different land use categories, unless specific data is available in the modeling domain as a more accurate substitute for its recommended default values, and allows for the consideration of background ammonia concentrations that vary seasonally or spatially.

EPA has reviewed monitoring data for ammonia and ammonium that have been collected at one site in western Wyoming since 2006.[96] We have determined that the monitoring data from this site are the most representative monitoring data available for characterizing ammonia and

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[94] Interagency Workgroup On Air Quality Modeling (IWAQM) Phase 2 Summary Report And Recommendations For Modeling Long Range Transport Impacts, EPA-454/R-98-019, (December 1998) pages 14-15.

[95] *IWAQM, Ibid*., page 6. .

[96] Li, Y., Schwandner, F.M., Sewell, H.J., Zivkovich, A., Tigges, M., Raja, S., Holcomb, S., Molenar, J.V., Sherman, L., Archuleta, C., Lee, T., Collett Jr., , J.L., Observations of ammonia, nitric acid, and fine particles in a rural gas production region, Atmospheric Environment (2013), doi: 10.1016/j.atmosenv.2013.10.007.

ammonium background levels in the modeling domains used for western Wyoming as explained in detail below. Based on this analysis, EPA has concluded that the constant 2 ppb background concentration used by the State is substantially higher than the observed combined ammonia and particulate ammonium concentrations at this monitoring site in western Wyoming, especially during the winter season when the observed sum of ammonia and particulate ammonium concentration were typically much lower than 2 ppb.[97] Therefore, for two BART sources in western Wyoming (PacifiCorp's Naughton and Jim Bridger) in one of our modeling runs we modeled using monthly varying ammonia background concentrations based on the combined observed concentration of ammonia and particulate ammonium at this monitoring site in western Wyoming, as described in the EPA Protocol.[98] In a second modeling run for these two BART sources, we modeled using the default IWAQM ammonia concentration of 0.5 ppb for forested areas. Although western Wyoming includes a mixture of arid grasslands and forested areas, we used the IWAQM default value of 0.5 ppb for forested areas because the Class I areas in the modeling domain are primarily forested, and because the monitoring data more nearly matched the IWAQM recommendation for forests than the default for the other land types.

When Wyoming adopted its Protocol in 2006, the State explained that: "A constant background ammonia concentration of 2.0 ppb is specified. This value is based upon monitoring data from nearby states and IWAQM guidance. Experience suggests that 2.0 ppb is conservative in that it is unlikely to significantly limit nitrate formation in the model computations."[99] The Wyoming Protocol specified a constant 2 ppb background ammonia concentration, but the Protocol (addressing source owners performing their own BART analyses) states that: "[i]f you

[97] Li et al. U.S. EPA, December, 2013.
[98] Air Quality Modeling Protocol: Wyoming Regional Haze Federal Implementation Plan,
[99] Wyoming Protocol, p. 12.

believe that ammonia limiting is appropriate for a specific BART analysis, justification should be discussed with the Division prior to its use."[100] The Wyoming Protocol in the text quoted here refers to a method for correcting CALPUFF for ammonia limiting conditions, which indicates that the State recognized the possibility that its protocol could be overly conservative in its treatment of ammonia. Therefore, we believe it is appropriate and consistent with the IWAQM Phase 2 report and the intention of the State's Protocol to model a BART source in western Wyoming using both the newly available monitoring data, and the default concentration recommended in the IWAQM Phase 2 report, to represent background ammonia concentrations more accurately than would be the case if we retained the 2 ppb value specified in the State Protocol.

We describe here in more detail the ambient monitoring data from the site in western Wyoming and our use of those data. Li et al (2013)[101] report on an analysis of ambient monitoring data conducted from 2006 to 2011 at the Pinedale site in western Wyoming in an area with significant oil and gas production. The monitoring site included measurements of gaseous ammonia (NH_3) and particulate ammonium (NH_4) and a complete set of acidic species including gaseous nitric acid and particulate nitrate and sulfate. The complete set of measurements makes it possible to determine the total ammonia and ammonium concentration (NH_x=NH_3+NH_4) and to determine if ammonium nitrate formation is limited by the availability of excess NH_3. Li et al found significant seasonal variability in NH_3 and NH_4 concentrations at the site and concluded that excess nitric acid was present in winter, while NH_3 concentrations were close to zero in

[100] Wyoming Protocol, p. 15.
[101] Li, Y., Schwandner, F.M., Sewell, H.J., Zivkovich, A., Tigges, M., Raja, S., Holcomb, S., Molenar, J.V., Sherman, L., Archuleta, C., Lee, T., Collett Jr., , J.L., Observations of ammonia, nitric acid, and fine particles in a rural gas production region, Atmospheric Environment (2013), doi: 10.1016/j.atmosenv.2013.10.007

winter, indicating that formation of ammonium nitrate was limited by the availability of ammonia at this site in winter.[102] Because ammonia at this monitoring site may have been affected by nearby sources of sulfuric acid and nitric acid, which would deplete the gaseous ammonia concentration locally, we used the combined gaseous and particulate measurement of NH_x to estimate monthly average background ammonia concentrations, with a low concentration in January of 0.36 ppb and a peak concentration in 1.12 ppb in August.[103] The monitor is located in an area that includes nearby sources of ammonia emissions from livestock and other anthropogenic sources, including a nearby area of oil and gas production activity, which could result in locally elevated ammonia compared to the area more immediate to the BART source and to the nearest Class I areas. Moreover, some of the particulate ammonium observed at the site was irreversibly bound with sulfate and may have had a non-local origin due to long range transport of ammonium sulfate. These factors mean that this estimate of local background may tend to overestimate the regional background ammonia concentration and thus also overestimate the visibility benefit due to NO_x reductions at sources. There may be other unknown factors also working in the same direction or in the other direction. For example, monitoring methods for ammonia and quality systems for characterizing monitoring accuracy have not been standardized to the extent that methods for other ambient compounds have been, resulting in uncertainty as to whether there is bias in the measurements.

As discussed above, we also modeled the PacifiCorp Naughton and Jim Bridger BART sources in western Wyoming using a constant background ammonia concentration of 0.5 ppb, which is the IWAQM Phase 2 report default recommendation for forested areas. Model results

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[102] Li et al., *Ibid*.
[103] Air Quality Modeling Protocol: Wyoming Regional Haze Federal Implementation Plan,U.S. EPA, December, 2013, page 18, Table 7.

using either approach to determine an ammonia background concentration support our final BART determinations, as they both show similar visibility benefits.

We also remodeled the BART sources in eastern Wyoming including Wyodak, Dave Johnston and Laramie River. The Class I areas most impacted by these BART sources are Badlands and Wind Cave National Parks in western South Dakota. The closest long-term ammonia monitoring site to these Class I areas is at site at Beulah, North Dakota operated by the State of North Dakota. This site is about 280 miles from Badlands National Park and about 300 miles away from Wind Cave NP. The area around Beaulah site includes a mix of agricultural lands and grassland. Measured monthly average gaseous ammonia concentrations at the Beulah site in central North Dakota vary from about 1 to 2 ppb throughout the year, with the lowest values in fall and winter.[104] Additionally, combined ammonia and particulate ammonium measurements have been reported at Wind Cave National Park for an 8 month period by Chen et al.[105] This study measured NH_x daily average concentrations in the range of about 0.05 to 4 ppb, with an annual average concentration of 0.75 ppb. We considered these monitoring data sufficient to put into serious doubt the 2 ppb concentration specified in the State's Protocol, but insufficient to support either a single or an alternative modeling run based on monitoring data. Therefore, we chose to rely on the IWAQM Phase 2 report for a single set of modeling runs for the BART sources in eastern Wyoming. The area around Wind Cave National Park includes forested areas, including Black Hills National Forest, while the area around Badlands National

[104] Protocol for BART-Related Visibility Impairment Modeling Analyses in North Dakota, November, 2005, North Dakota Department of Health, Division of Air Quality, 1200 Missouri Avenue, Bismarck, ND 58506. Page 33.
[105] Chen et al., A Pilot Monitoring Study of Atmospheric NH_x at Selected IMPROVE sites AWMA Aerosol and Atmospheric Optics, Visibility & Air Pollution Conference, September 24-28, 2012, Whitefish, MT.

Park includes a mix of arid and grass lands. While there is uncertainty in the appropriate background ammonia level in this region, we used the IWAQM Phase 2 report recommended value of 1 ppb for arid lands because it falls within the range of the limited monitoring data available in nearby regions and because it is represents an intermediate level for the different land use types within the region.

For both the eastern and western Wyoming modeling domains and runs, we corrected for ammonia limiting conditions. The correction for ammonia limiting conditions is a post-processing step in POSTUTIL, one component of the CALPUFF modeling system. Because CALPUFF simulates each BART unit individually, the background ammonia concentration is assumed by the model to be fully available to react with emissions from each unit. In reality, the total emissions from the combined units compete for the available ammonia. Also, because CALPUFF simulates multiple parcels of air originating at each unit, there is the possibility that different parcels can overlap at a Class I area. The ammonia limiting correction in POSTUTIL is designed to repartition the available ammonia to react with emissions from all of the units and overlapping air parcels, thereby avoiding double counting of the background ammonia. We used the same ammonia limiting correction in our modeling for Montana BART[106] sources, and this is a standard configuration in the CALPUFF modeling system.

In summary, we concluded that it was more reasonable to model visibility impacts in western Wyoming using both the default IWAQM Phase 2 report recommendation for forested areas and using a seasonally varying NH_3 concentration in western Wyoming that was based on long term monitoring of NH_3 and NH_4 from one site, than to use the 2 ppb concentration

[106] Modeling Protocol: Montana Regional Haze Federal Implementation Plan (FIP) Support, prepared for EPA Region 8 by Alpine Geophysics, LLC, November 21, 2011.

specified in the State's Protocol. We found that the visibility impacts predicted for the various control levels at the PacifiCorp Naughton and Jim Bridger BART sources were very similar with these two approaches and that either set of results supports the same BART determination for these sources. Therefore, we did not have to make a determination that one approach was superior to the other, and we have not done so. We also determined that it was appropriate to use the default IWAQM Phase 2 report recommendation of 1 ppb for eastern Wyoming.

Comment: A commenter believes that the improvements from the addition of SCR technology are based on highly conservative models which overestimate the deciview reduction as compared to actual monitored data collected at the IMPROVE stations. Subsequently, the improvement in visibility provided by SCR is not supported by the escalated costs of $600 million above the cost to install Wyoming's proposed control technologies.

Response: EPA disagrees with this comment to the extent that it takes issue with EPA's modeling. As discussed in response to other commenters, EPA recognized that the State's original modeling protocol specified a fixed value of 2 ppb for background ammonia. EPA has performed new modeling using lower background concentrations and using a correction for ammonia limiting conditions when modeling multiple units from a single BART source.

EPA also used the most current regulatory approved versions of the models in the updated modeling. EPA has recognized that the CALPUFF model can be conservative in estimating visibility impairment, and therefore, EPA has used the 98th percentile model results instead of the maximum modeled visibility impairment to address the possibility of model overpredictions. In recommending the use of CALPUFF for assessing source specific visibility impacts, EPA recognized that the model had certain limitations but concluded that "[f]or purposes of the RHR's BART provisions, CALPUFF is sufficiently reliable to inform the

decision making process, e.g., see 77 FR 39123.[107] As discussed above, to the extent that the comment takes issue with the use of the 98th percentile, the legal deadline for challenging the use of CALPUFF has passed, but we encourage the commenter to provide input in the event that EPA develops any new future visibility guidelines and predictive models.

Comment: The commenter states that EPA made five errors in its visibility modeling, including 1) given the general inaccuracy in CALPUFF unit-specific modeling, not allowing Wyoming the deference accorded it under the CAA; 2) relying upon an outdated CALPUFF method of visibility modeling, contrary to EPA precedent; 3) violating the applicable modeling guidance, Appendix W, by not using the "best" science; 4) violating the Data Quality Act by not using the "best" science; and 5) failing to recognize the gross overestimations and internal inconsistencies in EPA's modeling approach.

Response: EPA disagrees with this comment. In response to item (1): In promulgating the BART guidelines we made the decision in the final BART Guideline to recommend that the model be used to estimate the 98th percentile visibility impairment rather than the highest daily impact value as proposed. We made the decision because "there are other features of our recommended modeling approach that are likely to overstate the actual visibility effects of an

[107] 77 FR 39123: "Because of the scale of the predicted impacts from these sources, CALPUFF is an appropriate or a reasonable application to determine whether such a facility can reasonably be anticipated to cause or contribute to any impairment of visibility. In other words, to find that a source with a predicted maximum impact greater than 2 or 3 deciviews meets the contribution threshold adopted by the States does not require the degree of certainty in the results of the model that might be required for other regulatory purposes. In the unlikely case that a State were to find that a 750 MW power plant's predicted contribution to visibility impairment is within a very narrow range between exemption from or being subject to BART, the State can work with EPA and the FLM to evaluate the CALPUFF results in combination with information derived from other appropriate techniques for estimating visibility impacts to inform the BART applicability determination. Similarly for other types of BART eligible sources, States can work with the EPA and FLM to determine appropriate methods for assessing a single source's impacts on visibility."

individual source. Most important, the simplified chemistry in the model tends to magnify the actual visibility effects of that source. Because of these features and the uncertainties associated with the model, we believe it is appropriate to use the 98th percentile, a more robust approach that does not give undue weight to the extreme tail of the distribution." 77 FR 39121. In regard to deference to the state, as discussed in more detail elsewhere in this document, Congress crafted the CAA to provide for states to take the lead for implementing plans, but balanced that decision by requiring EPA to approve the plans or prescribe a federal plan should the state plan be inadequate to meet CAA and regulatory requirements. Our action today is consistent with the statute and regulations. In response to item (2): We initially relied on the State's modeling Protocol, adopted in 2006, that specified model versions available at that time, but that have since been updated. In our original proposal we performed limited gap filling modeling that was consistent with the State's Protocol and that used the same model versions as the State. In this final action, as presented in more detail in the Protocol in the docket, due to a number of other changes in the protocol, we also updated the protocol to use the current regulatory version of the CALPUFF modeling system. In response to items (3) and (4): In recommending the use of CALPUFF for assessing source specific visibility impacts, EPA recognized that the model had certain limitations but concluded that "[f]or purposes of the regional haze rule's BART provisions… CALPUFF is sufficiently reliable to inform the decision-making process."[108] EPA accordingly appropriately used CALPUFF in this action. EPA recognized that there were uncertainties in the science of the CALPUFF modeling system, and therefore used the less conservative 98th percentile value to model results to address the possibility that the model was overly conservative. We address concerns about the Data Quality Act (also referred to as the

[108] 70 FR at 39123.

Information Quality Act), elsewhere in this document. In response to item (5): EPA recognized that the State's original Protocol was inconsistent with the IWAQM report and monitoring data because of the use of a constant 2 ppb ammonia concentration, and our modeling in this action relied on ambient monitoring data and the default values consistent with IWAQM Phase 2 report, to specify two alternatives for more realistic background ammonia concentrations in western Wyoming. We also reduced the background ammonia concentration from 2 to 1 ppb in eastern Wyoming, as discussed previously. A seasonal ammonia concentration was not adopted due to the lack of high quality monitoring data in eastern Wyoming; however, as discussed previously, the 1 ppb background estimate is consistent with IWAQM Phase 2 report. As discussed elsewhere, we also used the ammonia limiting correction for modeling multiple units from a single BART source to address concerns with the model being overly conservative.

Comment: Contrary to its own guidance, EPA failed to use the most realistic model. 40 CFR part 51, Appendix W, EPA's modeling guidance, demands that the "best" model should always be used. EPA failed to use the "best" model in Wyoming, which is CALPUFF 6.4. Therefore, EPA failed to follow Appendix W's requirements.

Response: We disagree with this comment. As explained above, EPA followed the RHR. Specifically, in recommending the use of CALPUFF for assessing source specific visibility impacts, EPA recognized that the model had certain limitations but concluded that "[f]or purposes of the regional haze rule's BART provisions… CALPUFF is sufficiently reliable to inform the decision-making process."[109] EPA accordingly appropriately used CALPUFF in this action. The use of CALPUFF is subject to GAQM requirements in section 3.0(b), 4, and 6.2.1(e) which includes an approved protocol to use the current 5.8 version, which is the version we used

[109] 70 FR at 39123.

for EPA's final modeling analysis. We did not use CALPUFF Version 6.4 because this version of the model has not been approved by EPA for regulatory use.

We made the decision in the final BART Guidelines to use less than the highest daily impact value for assessment of visibility impacts. We made this decision in response to comments we received expressing concern that the chemistry modules in the CALPUFF model are less advanced and that use of the 1st High was conservative and the knowledge that CALPUFF's simplified chemistry could lead to model overpredictions and thus be conservative. We decided in the BART Guideline to use the 98 percentile for CALPUFF based modeling results. We also received comments opposed to using the day with the worst meteorology, but the primary reason we changed to using a less stringent metric than the day with the highest visibility impact was because of concerns about overestimations in CALPUFF's simplified chemistry. As a result, we determined that it was appropriate to use the 98th percentile or 8th High value when modeling all days of the year instead of the 1st High value, also described as the Highest Daily impact level for each year modeled: "Most important, the simplified chemistry in the model tends to magnify the actual visibility effects of that source. Because of these features and the uncertainty associated with the model, we believe it is appropriate to use the 98th percentile—a more robust approach that does not give undue weight to the extreme tail of the distribution."[110]

Comment: EPA's modeling for its regional haze FIP action was inadequate and incomplete. (EPA failed to re-run WRAP regional modeling due to "time and resource constraints"). Therefore, EPA's regional haze FIP action violates the "Guideline on Air Quality Models," 40 CFR part 51 Appendix W, the Information Quality Act and the implementing guidelines issued,

respectively, by the U.S. Office of Management and Budget (OMB) and the EPA which require information disseminated by EPA to be accurate, complete, reliable and unbiased. The Information Quality Act and EPA's "Information Quality Guidelines" place a heightened standard on "influential" information, including scientific information regarding health, safety, or environmental risk assessments. EPA's inaccurate and incomplete visibility modeling is by definition "influential," because EPA could reasonably determine that dissemination of the information will have or does have a clear and substantial impact on important public policies or important private sector decisions, such as the BART NO_x determinations in EPA's regional haze FIP.

Therefore, this "influential" information must be based on best available science and data and supporting studies must be conducted in accordance with sound objective scientific practices and methods. EPA's Guidelines implementing the Information Quality Act expressly contemplate the correction of information disseminated by EPA that falls short of the "basic standard of quality, including objectivity, utility, and integrity," established by either EPA's own Guidelines or those issued by OMB.

The commenter seeks correction to a number of errors and omissions in EPA's regional haze FIP with regard to CALPUFF modeling and EPA's failure to re-run the WRAP model. The commenter requests that EPA withdraw its regional haze FIP until these issues are resolved.

Response: As EPA explained in our Information Quality Guidelines, we believe "that the thorough consideration provided by the public comment process serves the purposes of the Guidelines, provides an opportunity for correction of any information that does not comply with

the Guidelines, and does not duplicate or interfere with the orderly conduct of the action."[111] Therefore, we are responding to the modeling comments and related comments regarding EPA's Guidelines and the Information Quality Act in this document.

WRAP performed regional photochemical modeling using both the Community Multi-Scale Air Quality modeling system (CMAQ) and Comprehensive Air Quality Model (CAMx) air quality models to evaluate progress toward attaining visibility goals using all projected emission changes from all source categories throughout the United States. WRAP did not perform regional photochemical modeling to evaluate the visibility impacts of individual BART sources. While WRAP did make assumptions regarding the level of emissions control that would be adopted by BART sources as part of its analyses, no state or EPA region has re-run the WRAP's regional photochemical models to assess individual BART source contributions to visibility impairment. Instead, the BART sources, the states, and EPA have used the CALPUFF model to evaluate contributions to visibility impairment from individual BART sources. This approach is consistent with the BART Guidelines that recommend that the CALPUFF model should be used to evaluate visibility impairment from individual BART sources. Additionally, while EPA supported development of WRAP CMAQ modeling in order to assist states in developing their RPGs and determining the cumulative benefit of an overall control strategy vis-à-vis the URP on the 20% worst days, our use of CALPUFF for evaluating visibility improvement from a single BART source is consistent with the BART Guidelines and also consistent with modeling performed by other states and EPA regional offices for individual BART sources.

[111] Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Environmental Protection Agency, EPA/260R-02-008 October 2002, U.S. Environmental Protection Agency Office of Environmental Information (2810) 1200 Pennsylvania Avenue, NW Washington, DC 20460.

We have responded to comments related to errors and omissions in the CALPUFF modeling in separate response to comments.

Comment: The commenter states that the revised EPA modeling, which used new information on emissions rates, did not significantly change the results identified in Wyoming's BART analyses. The commenter also states that there are small differences between EPA's and Wyoming's analyses which do not justify EPA rejecting Wyoming's BART determinations.

Response: We disagree that in all cases there are only small differences in EPA revised modeling and the State's modeling. Importantly, as described elsewhere in this document and in the docket for this action, EPA revised and corrected various inputs to the BART factors so that the analyses are consistent with the RHR and statutory requirements. While the difference at the most impacted Class I area from individual sources or units is some cases can be characterized as small, the cumulative differences from many small improvements can be significant. Whether such differences are significant will depend on the overall consideration of the BART factors. Because of the flaws in Wyoming's visibility and cost analyses for many of its BART sources, EPA could not be confident that Wyoming's BART determinations were reasonable without undertaking an appropriate analysis of the statutory factors.

Comment: The commenter states that Wyoming provided the required modeled visibility improvement information for SCR, and quotes from the State's analysis: "Post-Control Scenario B is directly comparable to Post-Control Scenario A as the only difference is directly attributable to the installation of SCR." The commenter then concludes EPA did not lack the required information to evaluate visibility improvements.

Response: We have addressed this comment in a previous response, citing the requirement in the BART Guidelines that visibility must be assessed relative to the pre-control scenario (and not

just incremental to other control scenarios). Moreover, there remain deficiencies, as presented elsewhere in this document and docket, with the State's BART modeling analyses that justify our rejection of the State's BART determinations for PacifiCorp. Most notably, as discussed in separate responses, the State did not assess the visibility improvement of SNCR as required by the CAA and BART Guidelines.

Comment: An older version of the CALPUFF modeling suite was used by EPA (CALPUFF model of March 2006 vintage and the CALPOST model of April 2006 vintage.) These older versions pre-date the latest Model Change Bulletin (MCB-D) of June 23, 2007. Since the analysis for the five Wyoming power plants was performed in February thru April 2012, we question why the older version was used and not the current CALPUFF 5.8 version, which was approved as the guideline version in June of 2007. We do not recommend use of the older versions of CALPUFF and CALPOST.

Response: As described in this action, our previous modeling continued to use the State's Protocol, including the older model versions, to maintain consistency with the State's modeling results. However, in this final action, we adopted a new modeling protocol that uses the current regulatory versions of the models, including the Model Change Bulletin suggested by the commenter. We determined that it was appropriate to adopt an updated modeling protocol because we made other significant changes in the State's modeling approach, and because we remodeled all emissions scenarios, there was no longer a need to use older model versions for consistency of comparison of our limited gap filling model results to the State's original modeling.

Comment: EPA should have used the most recent version of CALPUFF, or at a minimum, should have used the version that EPA requires for other regional haze SIPs. EPA has taken the

position that CALPUFF Version 5.8 must be used for regional haze modeling. 77 FR 42834, 42854. However, EPA's unit-specific CALPUFF modeling in Wyoming, completed in April 2012, used CALPUFF Version 5.711a (originally released in 2004). Version 5.711a is eight years old, and several CALPUFF versions behind Version 5.8. While PacifiCorp believes the more modern and realistic CALPUFF Version 6.42 should be used, at a minimum EPA must abide by its own position and use Version 5.8 in evaluating the Wyoming regional haze SIP, which it failed to do. According to EPA's own statements, EPA's own modeling results should be discarded because EPA used an improper "alternative model" in Wyoming.

EPA should have used the most recent version of CALPUFF (Version 6.42) in Wyoming because it produces more realistic and accurate results. Version 6.42 contains needed refinements, such as a better "chemistry" module known as ISORROPIA (Version 2.1). CALPUFF Version 6.42 is more accurate because, as the FLMs have noted, Version 5.8 does not have the required settings to perform the new Method 8 visibility analysis. Additionally, CALPUFF Version 6.42 has been maintained by TRC, Inc., a private contractor, and has had many bug fixes and enhancements not included in CALPUFF Version 5.8. Most importantly, the previous chemistry modules used in Version 5.8 (and in the 5.711a Version EPA used here) also have been shown to overestimate nitrate concentrations in Wyoming by a factor of 3-4 and substantial improvements have been made to eliminate this over-prediction using the ISORROPIA module.

Despite all these advancements in modeling and modeling science, EPA conducted its modeling for its regional haze FIP in 2012 using the same (now outdated) CALPUFF version that PacifiCorp and Wyoming used five years ago, which has been shown to overestimate results

by 300% to 400%. Rejecting Wyoming's modeling, and then using the same, outdated modeling approach, is arbitrary and capricious.

Response: As described in previous responses, we previously used the same modeling protocol adopted by the State for the purpose of our limited, gap filling modeling, so that we would have a consistent basis for comparison with the State's modeling. In this action we have updated the protocol to use the current regulatory versions of the models including CALPUFF version 5.8.

We did not use CALPUFF Version 6.42 because this version of the model has not been approved by EPA for regulatory use. EPA relied on version 5.8 of CALPUFF because it is EPA-approved version in accordance with the Guideline on Air Quality Models ("GAQM", 40 CFR 51, Appendix W, section 6.2.1.e). EPA updated the specific version to be used for regulatory purposes on June 29, 2007, including minor revisions as of that date. The approved CALPUFF modeling system includes CALPUFF version 5.8, level 070623, and CALMET version 5.8 level 070623. CALPUFF version 5.8 has been thoroughly tested and evaluated, and has been shown to perform consistently with the initial 2003 version in the analytical situations for which CALPUFF has been approved. Any other version, and especially one with such fundamental differences in its handling of chemistry, would be considered an "alternative model", subject to the provisions of GAQM section 3.2.2(b), requiring full model documentation, peer-review, and performance evaluation. No such information for the later CALPUFF versions that meet the requirements of section 3.2.2(b) has been submitted to or approved by EPA. Experience has shown that when the full evaluation procedure is not followed, errors that are not immediately apparent can be introduced along with new model features. For example, changes introduced to CALMET to improve simulation of over-water convective mixing heights caused their periodic collapse to zero, even over land, so that

CALPUFF concentration estimates were no longer reliable.[112]

The change from CALPUFF version 5.8 to CALPUFF 6.4 is not a simple model update to address minor issues, but a significant change in the model science that requires its own rulemaking with public notice and comment before it can be relied on for regulatory purposes.

Furthermore, it should be noted that the US Forest Service and EPA review of CALPUFF version 6.4 results for a limited set of BART applications showed that differences in its results from those of version 5.8 are driven by two input assumptions not associated with the chemistry changes in 6.4. Use of the so-called "full" ammonia limiting method and finer horizontal grid resolution are the primary drivers in the predicted differences in modeled visibility impacts between the model versions. These input assumptions have been previously reviewed by EPA and the FLMs and have been rejected based on lack of documentation, inadequate peer review, and lack of technical justification and validation.

Comment: The commenter states that EPA treats the results from the CALPUFF as being capable of accurately predicting visibility improvements down to the tenths or hundredths of a deciview, but that the model does not accurately predict visibility impacts at this level.

Response: As described in response to other comments, EPA recognized that there is uncertainty in the CALPUFF results, and EPA addressed this uncertainty by using the modeled 98th percentile visibility impairment rather than the maximum visibility impairment. EPA considers model changes on the order of tenths of a deciview to be useful for informing the BART decision process, consistent with BART modeling performed by other EPA regions and states.

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[112] "CALPUFF Regulatory Update", Roger W. Brode, Presentation at Regional/State/Local Modelers Workshop, June 10-12, 2008; http://www.cleanairinfo.com/regionalstatelocalmodelingworkshop/archive/2008/agenda.htm.

Comment: PacifiCorp presented substantial information supporting the need to use improved and updated versions of the models and provided substantial information on the effects that the nitrogen oxides to nitrogen dioxide conversion rate and background ammonia concentrations have on modeled visibility impacts.

Response: We agree with the comment that the background ammonia concentration has a significant effect on model predicted visibility impacts. As described elsewhere in this action, we reviewed recent ambient monitoring data for ammonia and particulate ammonium, and concluded that the original background ammonia concentration of 2 ppb was inconsistent with the IWAQM Phase 2 report and monitoring data for estimating visibility impacts in Wyoming, especially in the western portion of the State. In the modeling results included in this action, we considered the default value of 0.5 ppb and also applied a seasonally varying background ammonia concentration in western Wyoming that was based on measurements from 2006 to 2011 of total ammonia and particulate ammonium at Pinedale, Wyoming.[113] We also reduced the background ammonia concentration to 1 ppb in the eastern portion of the State, and for both parts of the State we used an ammonia limiting correction for modeling multiple units from a single BART source to avoid double counting of the available ammonia. The use of more realistic ammonia background concentrations, the ammonia limiting correction, and the use of the 98th percentile modeled impact address the concern that the CALPUFF model could overestimate visibility impacts.

Comment: One commenter stated that we underestimated the background ammonia concentration in the CALPUFF modeling, and cited the IWAQM Phase 2 recommendations for default ammonia concentrations for grasslands, forest lands and arid lands, respectively, of 10,

[113] Li et al. 2013

0.5 and 1 ppb, at 20 degrees Celsius. The commenter stated that, because land use type can vary across the large domains used in the CALPUFF modeling, it would be appropriate to calculate a weighted average of the background ammonia based on the fractional land use type in the model domain.

Response: We disagree with this comment. The IWAQM Phase 2 report does not recommend calculating a weighted average of default ammonia concentration based on regional variation in land use types. The commenter provides no regulatory basis for use of a weighted average.

Comment: One commenter stated that the IWAQM recommended default background ammonia recommendations do not specifically account for strong point/area sources of ammonia, such as cattle feedlots, which are also scattered throughout the modeling domain and which generally add to the background ammonia levels. This commenter stated that some areas of the modeling domain, namely northeastern Colorado, are described as "ammonia rich". For BART source analyses in Colorado, the recommended background ammonia value from the Colorado Department of Public Health and Environment (CDPHE) is 44 ppb, based on measurements conducted during the Northern Front Range Air Quality Study (NFRAQS), and therefore the Wyoming DEQ/EPA background ammonia concentration of 2 ppb might not carry sufficient ammonia for an accurate modeling assessment of visibility impacts within certain Colorado Class I areas.

Response: We disagree with the comment that large point/area sources are not included in estimates of background ammonia concentrations. While concentrations of ammonia of several hundred ppb can be observed near a cattle feedlot, these concentrations are not typical of regional background concentrations. Additionally, dispersion and vertical mixing occur in plumes of air transported downwind of large emissions sources, and the resulting dilution of

ammonia results in lower concentrations as the plume is transported downwind of the source area. Therefore, ambient ammonia concentrations are generally greatly reduced downwind from the source. Moreover, ammonia has a short atmospheric lifetime of a few hours to a few days,[114] and removal of ammonia by deposition further reduces the concentration downwind of the source area. Therefore, it would be inappropriate to estimate background ammonia levels by measuring ammonia concentrations close to a large ammonia emissions source. Background concentrations of air pollutants are generally estimated using ambient monitoring data at background sites that are specifically selected such that there is no direct influence by large nearby point or areas sources.[115] Therefore, background monitoring data do explicitly include the contributions of emissions from large point and area sources by providing a direct measurement of the ambient concentration after transport, dilution and removal processes operate on the emissions from the source.

The commenter also cites modeling performed by the CDPHE and ammonia measurements made during the NFRAQS studies. As discussed in another response, CDPHE performed a CALPUFF model sensitivity study to evaluate the effect of background ammonia on model predicted nitrate concentrations, and found that the CALPUFF model was insensitive to variations in background concentrations greater than 10 ppb and became progressively more sensitive to background NH3 as it was reduced from 10 to 0 ppb.[116] The NFRAQS study

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[114] Langford et al.

[115] For example, see EPA guidance documents that discuss methods for estimating background NO2 concentrations: "Additional Clarification Regarding Applicability of Appendix W Modeling Guidance for the 1-hour NO2 NAAQS"

[116] Supplemental BART Analysis CALPUFF Protocol for Class I Federal Area Visibility Improvement Modeling Analysis, DRAFT, revised Aug 19, 2010, Colorado Department of Public Health and Environment. (CDPHE) Air Pollution Control Division Technical Services Program, 4300 Cherry Creek Drive South, Denver, Colorado 80246, pages 26-33.

reported measured ammonia concentrations in the Denver metropolitan area, and these measurements are not representative of background ammonia concentrations in rural and remote areas of central Colorado or western Wyoming.

Comment: The commenter states that Wyoming has conducted its regional haze SIP based on the modeling protocols and versions available at the time its regional haze SIP was completed. Because of this, there are limitations associated with the results obtained. However, in proposing its regional haze SIP, Wyoming has evaluated the model output with an understanding of the model's limitations. Wyoming then applied its judgment, as encouraged and required by EPA's guidelines and the CAA, which helped to mitigate the issues associated with models that over-predict the visibility improvement associated with BART controls being added. In contrast, EPA gives no consideration to the limitations of the models it uses. In the absence of using good judgment to deal with over-predictive results, it is critical that EPA use the most up-to-date and scientifically accurate models available.

We also received related comments that states have significant modeling discretion to which EPA failed to grant the proper deference. One commenter pointed out that the BART Guidelines recognize that states can make judgments regarding the use of modeling results due to the very real problems with CALPUFF, including its overestimation of visibility improvement. As EPA itself has stated, Wyoming should be free to make its own judgment about which modeling approaches are valid and appropriate. 70 FR 39123. Another commenter pointed to the statement that "we must permit States to take into account the degree of improvement in visibility that would result from imposition of BART on each individual source when deciding on particular controls." 70 FR 39107, 39129. Another commenter stated that EPA failed to allow Wyoming to account for CALPUFF's overestimation of NO_x impacts, and therefore, EPA is not

affording Wyoming's BART decisions the proper deference when it comes to the modeling and applying the modeling results.

Response: As discussed elsewhere in this document in greater detail, Congress crafted the CAA to provide for states to take the lead for implementing plans, but balanced that decision by requiring EPA to approve the plans or prescribe a federal plan should the state plan be inadequate. Our action today is consistent with the statute. As also discussed elsewhere in this document, we agree that there are limitations in the original modeling performed by the state, and therefore, it was necessary to perform new modeling using more realistic background ammonia concentrations, default values, and updated model versions to provide a sound basis for evaluating BART source visibility impacts. Our revised modeling is consistent with the BART Guidelines and with visibility modeling guidance in the IWAQM Phase 2 report, and we believe that the revised modeling constitutes a sound basis for evaluating visibility impacts of BART sources and in fact is supportive of Wyoming’s SIP with respect to sources where ammonia background makes a significant differences.

Comment: The commenter states that EPA should have used the most recent version of CALPUFF (Version 6.42) in Wyoming because it produces more realistic and accurate results and because Version 5.8 does not have the required settings to perform the new Method 8 visibility analysis.

Response: As described in response to another comment, we used CALPUFF version 5.8 because this is the approved regulatory version of the model, while CALPUFF version 6.42 has not been approved. CALPUFF version 5.8 does allow the option of using the Method 8 visibility analysis, and as described in our modeling protocol, we used Method 8 for our analysis. The availability of Method 8 in CALPUFF version 5.8 was one of the reasons that we determined it

was important to perform new modeling using the current regulatory version of the model, rather than continuing to rely on the original protocol adopted by the State in 2006, as we had done in our previous proposal.

Comment: EPA used a different background ammonia number for modeling than it requires of the states, and ignored current science on background ammonia. Regional haze modeling, and the resulting predicted visibility improvement, is greatly influenced by the background ammonia number used in the model. EPA improperly used a constant 2 ppb background ammonia number for the Wyoming BART modeling. EPA has not provided any scientific proof showing the constant 2 ppb ammonia number is appropriate for Wyoming. The 2 ppb ammonia value overestimates visibility improvement, contrary to the approach used by Wyoming Land Use, IWAQM Guidance, WRAP protocols, and elsewhere.

Commenter suggests that the WRAP recommended the use of 1 ppb of ammonia year round for states in the region to account for seasonal variability. EPA has required states to use 1 ppb of background ammonia when conducting regional haze modeling. 76 FR 52434 (New Mexico criticized for not using 1 ppb background ammonia). At a minimum EPA should follow its own guidelines and use 1 ppb of background ammonia when conducting CALPUFF unit-specific modeling.

However, the "best" science requires the use of "variable ammonia" background numbers. IWAQM recommends ammonia background numbers of 0.5 ppb for forest, 1 ppb for dry/arid lands, and 10 ppb for agriculture/grassland. Given its geographic location and elevation levels, Wyoming undergoes seasonal swings of dry-hot summers and snow covered ground in the winter. Therefore, the use of a single ammonia concentration for the entire year in a state where the land use and land cover changes significantly between seasons results in

overestimation of visibility improvements. This is particularly true in winter when agricultural activity is minimal and meteorological conditions make visibility calculations particularly sensitive to ambient ammonia concentrations. EPA has approved the use of variable gaseous ammonia concentrations before, including the "Addendum to Modeling Protocol for the Proposed Desert Rock Generating Station" and should have used them when conducting the CALPUFF modeling for Wyoming.

Sensitivity tests on ambient ammonia concentrations were performed by the CDPHE for an area in northwest Colorado. The analysis demonstrated that visibility calculations performed at Mount Zirkel Wilderness Area in northwest Colorado had limited impact when ambient ammonia concentrations were reduced from 100 to 1 ppb, but there was a significant reduction in visibility impacts when concentrations were further reduced to 0.1 ppb.

Given the evidence presented above, the use of the monthly varying ammonia would provide accurate estimates of visibility impacts from the PacifiCorp regional haze units. EPA's failure to use variable background ammonia in its modeling is arbitrary and capricious.

Response: We agree that the 2 ppb constant background ammonia concentration is inconsistent with the IWAQM Phase 2 report default values and monitored data. This value was adopted by the State in 2006 before more reliable ammonia and particulate ammonium measurements were available in Wyoming. As described in this action, we modeled using seasonally varying background ammonia concentrations in western Wyoming based on 5 years of monitoring data[117], and we also modeled using the IWAQM default value of 0.5 ppb for forests. In eastern Wyoming we adopted a constant 1 ppb ammonia concentration based on the IWAQM guidance. We used an ammonia limiting correction for BART sources with multiple units throughout the

[117] Li et al., 2013.

State. While robust, long term monitoring data of ammonia and particulate ammonium are not available in eastern Wyoming, the BART sources in eastern Wyoming, and the South Dakota Class I areas where they contribute the greatest visibility impairment, are located closer to areas of Nebraska and the Dakotas which have large agricultural sources of ammonia emissions. Moreover, the IMPROVE monitoring at the South Dakota Class I areas show much higher winter concentrations of ammonium nitrate than do Class I areas in western Wyoming. Therefore, we believe it is appropriate to adopt higher background ammonia concentrations in eastern Wyoming than in western Wyoming, and we used a constant 1 ppb ammonia concentration in eastern Wyoming, consistent with the IWAQM guidance[118] for arid lands and also consistent with the WRAP Protocol.[119]

Comment: EPA made a modeling error in Wyoming when it used CALPOST version 5 with Method 6. FLMs recommended in 2000 the use of Method 6 to determine visibility impacts from BART eligible sources. However, for any recent PSD application and BART modeling since 2010, EPA has requested that Method 8 be used for determining impacts on visibility at nearby Class I areas.

The previously preferred Method 6 simply computes background light extinction using monthly average relative humidity adjustment factors particular to each Class I area applied to background and modeled sulfate and nitrate. Six years after the development of Method 6 in 1999, EPA released enhancements to the background light extinction equations, which use the

[118] Interagency Workgroup On Air Quality Modeling (IWAQM) Phase 2 Summary Report And Recommendations For Modeling Long Range Transport Impacts (EPA-454/R-98-019), EPA OAQPS, December 1998.

[119] Tonnesen, G., Wang, Z., Morris, R., Hoats, A., Jia, Y., Draft Final Modeling Protocol, CALMET/CALPUFF Protocol for BART Exemption Screening Analysis for Class I Areas in the Western United States, Submitted to the Western Regional Air Partnership, August 15, 2006.

revised IMPROVE variable extinction efficiency formulation. These enhancements take into account the fact that sulfates, nitrates and organics and other types of particles have different light extinction coefficients. Also, the background concentrations at each Class I area have been updated by EPA to reflect natural background visibility condition estimates for each Class I area for each type of particle. Additionally, relative humidity adjustment factors have been tailored separately for small particles, large particles, and to account for sea salt background concentrations.

These new enhancements to the calculation method, called Method 8, greatly improve the accuracy of the estimated visibility impact. Method 8 was added to CALPOST in 2008 and was adopted as the preferred option for determining impacts on visibility by the FLMs in their "Federal Land Managers Air Quality Related Values Work Group Guidance Document" in 2010 (FLAG 2010). The applicable background concentrations and relative humidity adjustment factors using Method 8 for each Class I area are identified in the FLAG 2010 document.

Despite the update to Method 8 in 2008 and the stated preference by the FLMs in 2010 to use Method 8, EPA conducted the Wyoming BART modeling in 2012 using the long outdated and scientifically inferior Method 6. EPA's use of Method 6, and not Method 8, is arbitrary and capricious.

Response: We agree that it is preferable to use Method 8 rather than Method 6 for evaluating visibility impacts based on the recommendation of the FLMs in FLAG 2010.[120] The older CALPUFF version 5.711 that was adopted in the State's original modeling protocol in 2006 did not have the option of using Method 8. In our previous modeling we adopted the State's original

[120] Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase I Report—Revised (2010)
Natural Resource Report NPS/NRPC/NRR—2010/232

protocol to maintain a consistent basis of comparison with the State's modeling results. In this final action, we adopted an updated modeling protocol using the current regulatory version of the model, which allows the use of Method 8, and we used Method 8 for the analysis of visibility impacts.

Comment: We received numerous comments that EPA incorrectly used the maximum annual visibility impacts occurring during any given year of the 2001-2003 baseline period over which the Wyoming visibility models are run. Commenters asserted that standard practice has been, and continues to be, to average the results over the three year period as the three year average is a more robust value than the single year value used by EPA, and thus EPA should use longer term data. One commenter pointed out that consistent with the principle of using longer-term averages, baseline visibility conditions under the RHR are determined by taking the average degree of visibility impairment for the most and least impaired days for each of calendar years 2000 through 2004, and averaging the five annual values.

Response: We disagree with this comment. In our review of the CALPUFF modeling results presented by Wyoming, we cited the change in the maximum 98th percentile impact over the modeled three year meteorological period (2001–2003). As the 98th percentile value is intended to reflect the 8th high value in any year, it already eliminates seven days per year from consideration in order to account for short-term events, unusual meteorological conditions, and any over-prediction bias in the model. We also note that our approach is consistent with the method used by Wyoming in identifying subject-to-BART sources, where a source is exempt from BART only if the modeled 98th percentile change is less than 0.5 deciview at all Class I areas for *each* year modeled.[121] That is, whether a source is subject to BART is dependent on the

[121] Chapter 6, Section 9(d)(i)(C) of the Wyoming Air Quality Standards and Regulations.

maximum 98th percentile over the three year modeled meteorological period, not the average across the three year period. We find that it is reasonable to use the same approach when considering the visibility improvements associated with control options. Finally, we note that this approach is consistent with our consideration of visibility improvement in other actions, such as our FIP for Montana.

Comment: EPA's use of the maximum values in its BART NO_x determinations for its regional haze FIP causes inflated visibility impacts and over-estimated improvements being used. For example, if EPA were to run its approved models, used its approved ammonia values for the western states, and used the average visibility impact over the three years rather than a maximum impact for a single year, the incremental visibility impact between installing LNB technology and SNCR at Wyodak and Dave Johnston Unit 3 drops to just 0.09 deciview. Instead, EPA has used an improper evaluation to create an inflated visibility improvement of 0.15 and 0.17 delta deciview to justify the installation of the SNCR. As a result, EPAs' BART NO_x evaluations are invalid. The modeling results reported by Mr. Paine using the actual BART limits include values for each of the meteorological years 2001, 2002 and 2003, as well as the average values for the three years. All of the values signify a negligible visibility improvement from SNCR.

Response: We have addressed each aspect of this comment in separate responses to comments. In our previous proposal we performed CALPUFF model simulations consistent with the approach specified in the Wyoming protocol, but in this action we adopted updated model versions and used lower ammonia background concentrations that are consistent with monitoring data and IWAQM Phase 2 report. Regardless, as discussed in section IV, in consideration of our revised cost of compliance and visibility impact analyses, and of the remaining BART factors, we have changed our final NOx BART determinations for both of the units in question. We are no longer requiring SNCR for either Wyodak or Dave Johnston Unit 4.

Comment: EPA's use of the cumulative deciview improvement from several Class I areas overestimates the visibility improvement which may reasonably be anticipated because visibility impacts from a BART source may occur on different days at each Class I area. Adding the numbers in Tables 47, 54, and 56 of EPA's proposed regional haze FIP leads to the impression that a perceptible visibility improvement will occur, when in reality none of the modeled visibility improvements would be perceptible to the human eye.

Response: We disagree with this comment. In evaluating the visibility improvement associated with various control options, EPA interprets the CAA to require consideration of visibility improvement at all impacted Class I areas. Consideration of improvement at multiple Class I areas, as opposed to just benefits at the most impacted Class I area, has often been described as "cumulative visibility improvement." Despite this terminology, however, an analysis of cumulative visibility improvement does not necessarily require that the deciview improvement at each area be summed together. While states or EPA are free to take such a quantitative approach, they are also free to use a more qualitative approach. Here, we chose to rely primarily on the visibility improvement at the most impacted Class I area, while also considering the number of additional Class I areas that would see improvement, as well as the level of improvement at each area. We did not expressly rely on a summation of visibility benefits across Class I areas, as we have done in other regional haze actions, although, as the commenter points out, this metric was included in some tables. Contrary to the commenter's assertion, however, a summation of visibility benefits is not intended to suggest that individually imperceptible levels of improvement are somehow perceptible, but rather to provide a single metric that can simultaneously capture both the number of Class I areas affected and the magnitude of improvement at those areas for comparison purposes. Moreover, we note that visibility

improvement does not need to be perceptible to be deemed significant for BART purposes. We have responded in more detail to concerns regarding perceptibility elsewhere in this document.

Comment: The commenter states that EPA's cumulative visibility analyses ignore the discretion given to states in 70 FR 39107; *Id*. at 39123 (emphasis added); see also 77 FR 24768, 24774 (Apr. 25, 2012)

Response: As stated above, EPA primarily relied on the benefits at the area with the greatest visibility improvement from controls, but we also considered impacts and benefits at nearby areas included in the modeling analysis. The consideration of visibility benefits over multiple Class I areas is a useful metric that can further inform a BART determination.

Comment: The BART rule provides no support for EPA's "summation of cumulative impacts" approach. Rather, the BART rule makes clear that the initial focus is expected to be on the "nearest Class I area" to the facility in question. 70 FR 39104, 39162 (Sept. 6, 2005). The BART rules indicate that it is appropriate to take account impacts at not only the nearest Class I area but also impacts at other nearby Class I areas, not for the purposing of summing impacts at all of those areas, but rather for the purpose of "determin(ing) whether effects at those (other) areas may be greater than at the nearest Class I area." *Id*. The BART rule states: "If the highest modeled effects are observed at the nearest Class I area, you may choose not to analyze the other Class I areas any further as additional analyses might be unwarranted." *Id*.

Response: See our response to comments above. In addition, the BART Guidelines provide that states, or EPA in lieu of the state, have discretion on how to assess visibility impacts.

Comment: The commenter states that the BART rule does not preclude a state from taking into account, as part of a BART assessment for a given facility, visibility impacts projected to occur in two or more Class I areas that are attributable to that facility's emissions. However, nothing

in the rules requires such an analysis, and such analyses are deceptive when used in a cumulative fashion. EPA did not have the authority to disapprove Wyoming's visibility improvement analyses on the grounds that EPA prefers a different approach than the lawful and permissible approach taken by Wyoming. See *Train v. Natural Res. Def. Council, Inc.*, 421 U.S. 60, 79 (1975).

Response: See our response to comments above and elsewhere in this document (e.g., Legal Issue section) regarding EPA's oversight authority.

Comment: EPA has improperly failed to account for the very few number of days of visibility impacts or the seasonal timing of when those few impacts occur.

Response: EPA recognizes that the BART Guidelines allow states to consider the timing of impacts in addition to other factors related to visibility impairment. However, states are not required to do so, and EPA is not required to substitute a source's desired exercise of discretion for that of the states. Furthermore, when promulgating a FIP, EPA stands in the shoes of the state. In that capacity, EPA is not required to consider the seasonality of impacts and has chosen not to do so here. Taking into account visitation contradicts the goal of the regional haze rule of improving visibility on the 20 percent best and worst days. Indeed, EPA believes that the experiences of visitors who come to Class I areas during periods other than the peak visitation season are important and should not be discounted.

Comment: A review of the unit-specific CALPUFF EPA modeling results developed for the Mount Zirkel Wilderness Area provides a vivid example of the over-estimation of visibility improvement that EPA is relying on to justify the installation of hundreds of millions of dollars in additional controls. The unit specific CALPUFF modeling would indicate that adding SCR to these units would improve visibility in Mount Zirkel by over seven deciviews.

However, the monitored data from 2001-2003 at Mount Zirkel tells a completely different story. This is the same time period used in the CALPUFF models to develop the deciview impacts for each Wyoming BART-eligible unit and to project the visibility improvements associated with the addition of control devices.

Looking at the three-year average monitored results, and assuming that the nitrates associated with the emissions from all sources (not just the BART-eligible EGUs) are completely eliminated, only a 0.94 deciview improvement would be expected. EPA attempts to justify over a billion dollars in controls at eight PacifiCorp units by assuming more than seven deciviews of improvement could be obtained from these eight units when the actual monitored data indicates that only a 0.94 deciview improvement would be possible if all nitrate was removed from all sources. In essence, EPA's regional haze FIP fails to recognize that, given the monitored nitrate impacts, the modeled visibility impacts are obviously grossly exaggerated.

Response: We agree with some of these concerns - that the original modeling performed by the State and EPA used a high background ammonia concentration and did not correct for ammonia limiting conditions. This particularly affected the model results in the western part of Wyoming and Class I areas such as Bridger Wilderness Area.

We have addressed this concern by adopting a new modeling protocol that makes several improvements in the model results, including the use of the current regulatory version of the model, the use of Method 8 to assess visibility impacts, the use of lower background ammonia concentrations, and ammonia limiting correction for BART sources with multiple units. We note that the model overprediction in our re-proposed modeling analyses occurred at Class I areas affected by BART sources in western Wyoming, in the region in which monitoring data showed strong seasonal variability in ammonia concentrations. In contrast, modeled nitrate impacts from

BART sources in eastern Wyoming were significantly lower than observed nitrate concentrations at IMPROVE sites at Wind Cave and Badlands in western South Dakota.

There are several factors that make it challenging to directly compare CALPUFF results to measured concentrations at IMPROVE monitoring sites at Class I areas. Most significantly, the monitor operates every third day, while the model predicts concentration each day. Moreover, modeled visibility impacts from multiple BART sources cannot be summed and directly compared to measured data as all BART sources are unlikely to have their largest impacts on the same Class I area on the same day. Additionally, the model 98th percentile impact should be compared to the maximum observed monitoring data because the highest 2% of model impacts are discarded to address concerns that the model can overpredict visibility impacts.

Comment: The commenter cites a study by Terhorst and Berkman which compared CALPUFF model predicted impacts of the Mojave Power Station at the Grand Canyon to observed impacts after the facility was closed in 2005. The study concluded that there was virtually no evidence that the (Mojave) closure improved visibility in the Grand Canyon, and the commenter cites this conclusion as evidence of the unreliability of the CALPUFF model.

Response: We disagree that the Mohave Power Plant study raises questions about CALPUFF's reliability. The Nevada Division of Environmental Protection performed CALPUFF modeling to estimate the contribution of the Mohave Power Plant to visibility impairment at Grand Canyon National Park. Consistent with the BART Guidelines, the State used the CALPUFF model to evaluate the Mohave Power Plant contribution to visibility impairment relative to natural visibility conditions. Subsequently, after the Mohave Power Plant ceased operating, Terhorst and Berkman analyzed changes in monitored sulfate concentrations at the Grand Canyon and calculated the visibility impacts of those changes relative to current degraded visibility

conditions. Terhorst and Berkman incorrectly concluded that the State's previous CALPUFF modeling overpredicted the Mohave Power Plant visibility impacts because Terhorst and Berkman failed to compare their results to natural visibility conditions. EPA considered and rejected comments on the proposed BART Guidelines that visibility impacts should be evaluated to relative to current degraded visibility conditions and concluded that "[u]sing existing conditions as the baseline for single source visibility impact determinations would create the following paradox: the dirtier the existing air, the less likely it would be that any control is required." (70 FR 39124). Because Terhorst and Berkman failed to compare observed changes in sulfate concentration to natural visibility conditions, their analysis does not support the commenter's statement that CALPUFF is unreliable. This flaw in their analysis has also been recognized in a paper that responded to their analysis.[122] Finally, as presented above, the use of the CALPUFF model for regional haze is a settled manner for which the time for judicial review has passed.

Comment: The commenter states that EPA's own studies document that CALPUFF overstates results and cites a May 2012 EPA sponsored study of CALPUFF that found "the current and past CALPUFF model performance evaluations were consistent with CALPUFF tending to overestimate the plume maximum concentrations and underestimate plume horizontal dispersion."

[122] W.H. White, R.J. Farber, W.C. Malm, M. Nuttall, M.L. Pitchford, B.A. Schichtel, Comment on "Effect of coal-fired power generation on visibility in a nearby National Park (Terhorst and Berkman, 2010)", Atmospheric Environment 55 (2012) 173-178. doi:10.1016/j.atmosenv.2012.02.076.

Response: In the BART Guidance, EPA recognized concerns that CALPUFF can overpredict visibility impacts in some cases, and therefore, as explained above, adopted the use of the 98th percentile modeled impact, rather than the maximum modeled impact, to address this concern.

Comment: EPA appears to take contrary positions in Oklahoma, where it modeled all visibility impairing pollutants together, and Wyoming, where EPA said that, based on the State's modeling, EPA "could not ascertain what the visibility improvement would be from an individual NO_x or PM control option."

Response: It appears that the commenter has confused (1) whether all pollutants were modeled together; and (2) whether all emission reductions were modeled together. All pollutants were modeled together both in modeling performed by Wyoming and by EPA for BART sources in Wyoming and Oklahoma, consistent with IWAQM Phase 2 report recommendations and with the State of Wyoming modeling protocol. The additional modeling performed by EPA was designed to evaluate visibility improvements from certain emissions reduction technologies; specifically, to compare the incremental benefits of SCR and SNCR. Each of these model simulations by EPA also included all other visibility impairing pollutants, so the approach used by EPA in Wyoming and Oklahoma is consistent.

Comment: EPA found that SCR provided only a 0.36 delta deciview incremental visibility improvement for Dave Johnston Unit 3, using EPA modeling, with an incremental cost of $7,163.00 per ton. 78 FR 34777-34778. EPA failed to justify in its proposed rule how a 0.36 delta deciview improvement, or approximately one-third that humanly detectible, justifies the tremendous cost of SCR. Likewise, EPA found that installing SNCR at Dave Johnston Unit 4 results in an incremental 0.11 delta deciview improvement over Wyoming's BART determination at an incremental cost of $4,655. 78 FR 34781-34782. The alleged incremental

visibility benefit of installing SNCR at Wyodak is 0.12 delta deciview at an incremental cost of $3,725 per ton. 78 FR 34784-34785. EPA provides no justification for requiring such tremendous costs for such an inconsequential visibility improvement that likely falls within CALPUFF's margin of error. EPA's modeling approaches are inconsistent because EPA has determined in other states that visibility improvements greater than those used to justify SNCR at Wyodak are too small or inconsequential to justify additional pollution controls. See 77 FR 24794 (0.27 deciview improvement termed "small" and did not justify additional pollution controls in New York); 77 FR 11879, 11891 (0.043 to 0.16 delta deciview improvements considered "very small additional visibility improvements" that did not justify NO_x controls in Mississippi); 77 FR 18052, 18066 (agreeing with Colorado's determination that "low visibility improvement (under 0.2 delta deciview)" did not justify SCR for Comanche units)). Tellingly, the "low visibility improvements" that Colorado found at the Comanche units not to justify post-combustion NO_x controls, as agreed to by EPA, were 0.17 and 0.14 delta deciview. 77 FR 18066. In Montana, where EPA issued a regional haze FIP directly, it found that a 0.18 delta deciview improvement to be a "low visibility improvement" that "did not justify proposing additional controls" for SO_2 on the source. 77 FR 23988, 24012. Here, EPA's actions requiring additional NO_x controls based on little to no additional visibility improvement are arbitrary and capricious, especially when EPA did not require additional NO_x controls in other states based on similar visibility improvements. This is particularly true in Montana where EPA had direct responsibility for the regional haze program.

Response: We disagree that visibility improvements at Dave Johnston Unit 3 and Wyodak are "too small or inconsequential to justify additional pollution controls." While the visibility benefits at these units are less than what is generally considered perceptible (1.0 deciview), they

are not so low as to preclude selection of the associated controls without any consideration of the remaining BART factors. The BART Guidelines are clear that states should consider visibility impacts that are less than perceptible: "Even though the visibility improvement from an individual source may not be perceptible, it should still be considered in setting BART because the contribution to haze may be significant relative to other source contributions in the Class I area. Thus, we disagree that the degree of improvement should be contingent upon perceptibility. Failing to consider less-than-perceptible contributions to visibility impairment would ignore the CAA's intent to have BART requirements apply to sources that contribute to, as well as cause, such impairment." 70 FR 39129. When the visibility improvements are considered, we continue to find that this level of improvement, when considered along with the other statutory factors, justifies the selected BART controls.

Finally, regarding commenter's assertions that we are being inconsistent, because the commenter is only specific about visibility improvement, it is not possible for EPA to address in this response any specific concerns. As articulated in our proposed rulemakings and further explained in our responses to other comments, EPA's partial approval and partial disapproval of the Wyoming Regional Haze SIP is consistent with the CAA, the RHR, BART Rule, and EPA guidance. Our determinations considered all five factors, not just visibility improvement.

Comment: Although it is true that Wyoming did not model the visibility impact of SNCR, that fact is no justification for disapproving Wyoming's BART. Nothing in the BART Guidelines or Wyoming's BART Modeling Protocol demands modeling of SNCR, and EPA points to nothing in either document that requires modeling of SNCR.

Response: We disagree with this comment. The BART selection process requires a comparison between all technically feasible control options, not the evaluation of individual control

technologies in isolation. While the BART Guidelines do not specify the order in which control options must be evaluated (e.g., beginning with the most stringent or beginning with least stringent control), they do specify that the CAA factors must be considered for all options: "In the final guidelines, we have decided that States should retain the discretion to evaluate control options in whatever order they choose, so long as the State explains its analysis of the CAA factors." 70 FR 39130. The only exceptions are "... if you find that a BART source has controls already in place which are the most stringent controls available …", or "….if a source commits to a BART determination that consists of the most stringent controls available …" 70 FR 39165. In these situations, it is not necessary to complete an analysis of all five BART factors. Therefore, because neither of these criteria was met, the State was required to perform an analysis of all five BART factors for all technically feasible control options. As such, the State's failure to consider the visibility impacts of SNCR did in fact serve as appropriate grounds for EPA's disapproval of Wyoming's BART determination.

Comment: EPA modeling shows no significant visibility improvement from SNCR and without a significant improvement there can be no justification for disapproving the State's BART for Laramie River Station, and, to the contrary, EPA's modeling supports Wyoming's rejection of SNCR and choice of LNB/OFA because SNCR provides negligible visibility improvement.

Response: We have required new LNBs with OFA and SCR for the Laramie River Station, not new LNBs with OFA and SNCR, which is the control option addressed by the commenter. Accordingly, we do not find that the comment is relevant to our action. Our revised modeling shows that the visibility benefit of new LNBs with OFA and SCR for Laramie River Units 1-3 is 0.57 deciviews, 0.53 deciviews, and 0.52 deciviews, respectively. We continue to find that the

visibility benefit, when taking into consideration the remaining BART factors, justifies installation of new LNBs with OFA and SCR.

Comment: Basin Electric submitted results based on more accurate modeling than EPA, which show that actual visibility improvement from SNCR would be substantially lower than assumed by EPA. There is no justification for disapproving Wyoming's BART based on a modeled visibility improvement that is such a small fraction of what is humanly perceptible.

Response: As described in response to other comments, we agree that the original modeling protocol adopted by the State was inconsistent with the BART Guidelines, IWAQM Phase 2 report and newly available ambient monitoring data, and in our revised modeling we adopted several of the changes recommended by this commenter, including the use of lower background ammonia concentration, a correction for ammonia limiting conditions for multiple units located at a single BART source, and the use of Method 8 for the evaluation of visibility impairment. However, even using these model options, we still found significant visibility impacts for SCR control at Laramie River. Our results are generally consistent with the modeling results submitted by the commenter which also show significant impacts. As described in another response, while the visibility benefits at each of these units individually are less than what is generally considered perceptible (1 deciview), they are not so low as to preclude selection of the associated controls without any consideration of the remaining BART factors. The BART Guidelines are clear that States should consider visibility impacts that are less than perceptible because these sources may still contribute to cumulative visibility impairment.

Comment: EPA did not assert a failure to model NO_x impacts separately was a flaw in the Laramie River Station modeling, although EPA did identify this as a flaw in PacifiCorp modeling.

Response: We agree that the State evaluated NOx impacts separately for the control technologies that the State included in its modeling, however, the State did not evaluate SNCR. The other deficiencies in the State's visibility analysis, including the failure to consider the visibility impacts of SNCR, were appropriate grounds to disapprove the State's BART determination.

Comment: The Wyoming modeling did in fact isolate the impact on visibility for NO_x control alternatives. Wyoming held SO_2 and PM emissions constant at baseline levels while modeling varying NO_x emission rates for each of the NO_x control options.

Response: We agree with this comment. Nonetheless, as stated above, the other deficiencies in the State's visibility analysis, which were inconsistent with the BART Guidelines, including the failure to consider the visibility impacts of SNCR, were appropriate grounds to disapprove the State's BART determination.

Comment: EPA claims that Wyoming modeled the wrong emission rates. EPA notes that in its cost analysis it calculated a new removal efficiency for NO_x control options that was different than the removal efficiency calculated by Wyoming, and claims that visibility modeling should have used the EPA efficiencies. However, EPA does not explain how modeling with the different removal efficiencies conflicts with the BART Guidelines or the CAA. As to SNCR, EPA argues that the State assumed a higher removal efficiency and thus, paradoxically, modeling with the State's removal assumption would yield greater visibility improvement than modeling with EPA's values. No such modeling was done, however. The State did no modeling for SNCR, so the State's removal efficiency was never modeled. It is an enigma how EPA can disagree with modeling with the different SNCR removal values when such modeling was never performed.

Response: We disagree with this comment. The BART Guidelines are clear on how removal efficiencies should be considered in the visibility evaluation: "Post-control emission rates are calculated as a percentage of pre-control emission rates. For example, if the 24-hr pre-control emission rate is 100 lb/hr of SO_2, then the post control rate is 5 lb/hr if the control efficiency being evaluated is 95 percent." 70 FR 39170. Therefore, because the control efficiencies assumed by the State differed from those found by the EPA, they affected the calculation of post-control emission rates for modeling purposes (and thereby the consideration of visibility impacts).

In regard to SNCR, as conceded by the commenter, the State did not provide the visibility impacts associated with the control option. As discussed elsewhere, failure to assess the visibility impacts of a technically feasible control option is in clear conflict with the requirements of the CAA and BART Guidelines. This failure alone, regardless of the control efficiency assumed for SNCR, was sufficient grounds for us to reject the State's BART determination. Moreover, the incorrect removal efficiency for SNCR assumed by the State adversely affected their analysis of cost of compliance, another statutorily required BART factor.

To put it simply, the State failed in the first instance by not considering the visibility improvement of SNCR as required by the CAA and BART Guidelines. When EPA corrected this deficiency by performing the modeling ourselves, it was necessary for us to correct the removal efficiency of SNCR (as discussed in response to other comments).

Comment: The State assumed that SCR would reduce NO_x emissions from 0.21 lb/MMBtu to 0.07 lb/MMBtu - a reduction of 0.14 lb/MMBtu. EPA assumes SCR would reduce NO_x emissions from 0.19 lb/MMBtu to 0.05 lb/MMBtu, a reduction of the same 0.14 lb/MMBtu. All

other things being held constant, the 0.14 lb/MMBtu reduction will in both cases yield an identical reduction in the visibility impairing concentration of nitrate particulate in a Class I area.

Response: We disagree with this comment. The CALPUFF model simulations estimate the visibility impairment attributed to the emissions in each control scenario, not the relative reduction in different control scenarios. Therefore, an emissions rate of 0.07 lb/MMBtu will have 40% greater total emissions and a larger visibility impact than an emissions rate of 0.05 lb/MMBtu.

Comment: EPA argues that Wyoming should have used a baseline of the maximum 24-hour average NO_x emission rate during the baseline years of 2001-2003, and instead used an annual average baseline rate. The BART Guidelines do not mandate the use of the 24-hour maximum but, rather, "recommend that the State use the highest 24-hour average actual emission rate" and that the states should have flexibility when evaluating the fifth statutory factor. The BART Guidelines by their express terms authorize states to use baseline emissions other than the 24-hour maximum rate. Use of the 24-hour maximum baseline is not mandatory, and not using that baseline is not a failure to comply with any requirement in the Guidelines. EPA itself used annual average pre-control and post-control emission rates to model visibility impacts in its Nevada FIP rulemaking.

Response: We disagree with this comment. As stated in the preamble to the BART Guidelines, "the emissions estimates used in the [visibility] models are intended to reflect steady-state operating conditions during periods of high capacity utilization." 70 FR 39120. As such, the BART Guidelines recommend excluding emissions during periods of start-up, shutdown, or malfunction or estimating visibility impacts based on a source's allowable emissions as this could inflate the visibility impacts of a source. Rather, for sources such as power plants where

States have information on a source's daily emissions, the BART Guidelines explains that an emission rate based on a source's maximum actual emissions over a 24-hour period is an appropriate gauge of a source's potential impact as it ensures that peak emission conditions are reflected but would be unlikely to lead to an overestimation of a source's potential impacts. *Id*. The BART Guidelines state that in developing a modeling protocol, States should "[u]se the 24-hour average actual emission rate from the highest emitting day of the meteorological period modeled (for the pre-control scenario)." *Id. and* 70 FR 39170.

Wyoming did not do this. Instead, in assessing the improvement in visibility associated with the use of controls in its BART determinations, Wyoming used the visibility modeling performed by PacifiCorp and Basin Electric for their facilities. Although these companies used very different approaches to estimating the baseline emission rate—neither of which used the 24-hour average actual emission rate—the State accepted the visibility modeling done by both and submitted the results in the Wyoming SIP. Even if the commenter were correct that the approach in the BART Guidelines is only recommended, the commenter has not provided any explanation as to why the disparate approaches used in the Wyoming SIP were appropriate for estimating the degree of visibility improvement associated with controls. Wyoming similarly provided no explanation as to why the varying approaches adopted by Basin Electric and PacifiCorp were appropriate for assessing visibility improvement. Moreover, the commenter has not established that the baseline emission rates used by Wyoming would accurately reflect visibility impacts associated with steady-state operating conditions during periods of high capacity utilization. Obviously, baseline emission rates reflecting periods of relatively lower capacity utilization would tend to underestimate peak visibility impacts. Consider for example the baseline emission rate used for Laramie River Unit 1. There, the State used a daily emission

rate equating to 6,320 tons per year,[123] while, based on actual emissions data, the EPA used a daily rate equating to 8,786 tons per year.[124] Thus, the rate used by the State reflects a period of considerably lower capacity utilization that would therefore tend to underestimate peak impacts.

Regarding the emissions rates used in the Nevada regional haze SIP, the State did not use the 24-hour average of actual emissions from the highest emitting day in its BART determination for Reid Gardner Generating Station. 77 FR 50936, 50944 (Aug. 23, 2012). As part of its review of the Nevada SIP, EPA performed new visibility modeling. In that modeling exercise, EPA used Nevada's emission rates based on annual averages.─Please refer to a related comment and response in the final action for that rule for a full discussion. See 77 FR 50944). Following our review of comments in that rulemaking—including comments that we should have used the Guidelines maximum 24-hour average of emissions in our visibility modeling—we scaled our estimates of the visibility impacts of controls based on the source's emissions using the Guidelines maximum 24-hour average. We took these scaled visibility impacts into account in our final action. Id. at 50945.

Comment: EPA did not use the 24-hour maximum rate for the modeling it performed in 2012. As noted in Section VIII.C, it used the same baseline emission rates used by the State. EPA-R08-OAR-2012-0026-0037. EPA did not find the State's approach was a violation of the BART Guidelines or was a reason to disapprove the State's modeling or BART determination. Having sanctioned the use of a different baseline then, EPA may not now claim it violates the BART Guidelines or a ground for disapproving the State's modeling or BART determination.

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[123] Wyoming Department of Environmental Quality Air Quality Division BART Application Analysis AP-6047, Table 16, May 28, 2009.

[124] Air Quality Modeling Protocol: Wyoming Regional Haze Federal Implementation Plan, U.S. EPA, Table B.9, January, 2014.

Response: We agree that we did not use the 24-hour maximum [actual] emission rates for modeling purposes in our original proposed rule published in 2012. However, we did not finalize that rule, at least in part, for the very reason that the baseline emission rates calculated by Wyoming, and subsequently used by EPA in the 2012 proposed rule, were inconsistent with the BART Guidelines. As we never finalized the original rule, we disagree with the commenter's suggestion that we somehow sanctioned Wyoming's approach. A proposed rule does not represent final agency action.

Comment: The maximum improvement modeled by EPA that would be achieved at any Class I area by adding SCR to the existing new LNB plus OFA is 0.5 delta deciview. This is below the 1.0 delta deciview level often cited as the lowest level of change that is humanly perceptible. For EPA to propose disapproval of the State's BART based on an imperceptible improvement is to propose disapproval based on a nonmaterial factor.

Response: We disagree that the visibility improvements for Laramie River or Jim Bridger are *de minimis* or too small to just justify the expense of requiring controls. As discussed in response to another comment, the BART Guidelines are clear that it is not necessary for the visibility improvement of a particular control option to be above the perceptible threshold. The regional haze program is premised on the fact that numerous sources are contributing to visibility impairment and numerous sources will need to reduce emissions in order to improve visibility. We continue to find that this level of improvement, when considered along with the other statutory factors, justifies the selected BART controls.

Comment: The commenter states that EPA's modeled visibility improvement overstates the improvement that would actually be achieved. The commenter submitted new modeling showing that the visibility improvement from further reductions of NO_x emissions would be

much smaller than that predicted by EPA. AECOM corrected four of the flaws in EPA's modeling and re-ran CALPUFF. The commenter submitted refined modeling with four adjustments: 1. The use of seasonal background ammonia concentrations; 2. Modeling of all units together with correction for ammonia limited conditions; 3. Use of a post-control emission rate of 0.07 lb/MMBtu, consistent with EPA's proposed emission limit; and 4. The use of CALPOST Method 8. AECOM's revised modeling was identical to EPA's in all other respects. The refined modeling predicted that the incremental visibility benefit of SCR at each of Laramie River Units 1, 2 and 3 would range between 0.20 – 0.24 delta deciview at either Badlands or Wind Cave National Park. The actual visibility improvement of SCR would be even less than predicted by the refined modeling because CALPUFF is known to substantially overstate nitrate haze.

Response: We agree that our proposed modeling was inconsistent with the BART Guidelines, IWAQM Phase 2 report and monitored data, and in our revised final modeling we adopted several of the changes recommended by this commenter, including the use of lower background ammonia concentration, a correction for ammonia limiting conditions for multiple units located at a single BART source, and the use of Method 8 for the evaluation of visibility impairment. However, even using these less conservative model options, we still found significant visibility impacts for SCR control at the Basin Electric Laramie River EGUs. We did not use the seasonal background ammonia concentration proposed by the commenter because we did not have sufficient ambient monitoring data to determine the seasonal background concentrations in eastern Wyoming.

Comment: The commenter states that nitrate haze occurs primarily in the winter when few visitors are present in Class I areas. During the peak summer visitation period, the impact of

wildfires would overwhelm any marginal visibility improvement that might be achieved by SCR. The commenter cites an EPA report that stated "[A] all else being equal, impairment from anthropogenic sources is considerably more objectionable during times of the year with greatest visitor attendance (e.g., summer). Visibility objectives might, therefore, be stated in terms of acceptable frequency distributions of visibility (e.g., contrast) over the course of a year." Source: Report to Congress under CAA Section 169A(a)(3). The commenter states that these factors further support Wyoming's decision to reject SCR and SNCR as BART. These technologies would not improve visibility on the worst haze days because Laramie River doesn't contribute to haze on those days, and any slight visibility improvement would occur in the winter season when few visitors enter the Class I areas. Wyoming's decision to reject SCR as BART is therefore reasonable and complies with the CAA.

Response: As discussed in response to another comment, EPA agrees that nitrate impacts are more dominant in the winter. Nonetheless, daily nitrate impacts from April through October are not trivial. EPA also agrees that the BART Guidelines allow states to consider the timing of impacts in addition to other factors related to visibility impairment. However, states are not required to do so, and EPA is not required to substitute a source's desired exercise of discretion for that of the states. Furthermore, when promulgating a FIP, EPA stands in the shoes of the state. In that capacity, EPA is not required to consider the seasonality of impacts and has chosen not to do so here. Taking into account visitation contradicts the goal of the regional haze rule of improving visibility on the 20 percent best and worst days. Indeed, EPA believes that the experiences of visitors who come to Class I areas during periods other than the peak visitation season are important and should not be discounted.

Comment: We received comments that our FIP was not warranted because the cause of visibility impairment during the times of peak visitation was wildfires and thus does not justify the control of NO_x from stationary sources.

Response: See response above.

Comment: Ammonia levels at the altitude of the plume would be lower than the reported surface level ammonia concentrations, so less ammonia would be available to form visibility-impairing nitrate.

Response: We disagree that there is compelling evidence that background ammonia levels are significantly different at the altitude of the plume compared to the surface. While there are limited studies showing vertical gradients of ammonia in the troposphere[125], these studies do not show a strong gradient within the planetary boundary layer where the plume is typically located. Moreover, as discussed in the response to another comment, it is necessary to evaluate the combined concentrations of gas ammonia and particulate ammonium to estimate the background ammonia level, so vertical gradients in measured ammonia alone are not sufficient to specify the vertical gradient in background ammonia. It is possible that decreasing temperature with altitude could affect the thermodynamic equilibrium between gas ammonia and particulate ammonium and that this could contribute to observed vertical gradients in ammonia. It is also possible that dry deposition of ammonia at the surface could create a negative vertical gradient in ammonia near the surface. We recognize that there are limited measurement studies available for total gas ammonia and particulate ammonium, and as a result there is uncertainty in the estimate of background ammonia. Given this uncertainty, we believe it is appropriate to rely on

[125] Levine et al., (1980) The Vertical Distribution of Tropospheric Ammonia, *Geophys. Res. Letters*, vol. 7, No. 5, 17-32.

measurement studies of total gas ammonia and particulate ammonium when available and reliable as explained elsewhere in this document (along with the IWAQM Phase 2 report default values), and to rely on the IWAQM Phase 2 report where monitoring data are not available.

Comment: The commenter states that inventories show very low ammonia concentrations in the corridors between Laramie River Station and the relevant Class I areas.

Response: We disagree with the commenter's assertions. We note that there is large uncertainty in estimates of ammonia emissions inventories that are based on source activity data and emissions factors. Moreover, even when more certain estimates of ammonia emissions are available, it is not possible to estimate ambient ammonia concentrations based on emissions inventory data alone. An estimate of ambient ammonia levels would require an evaluation of modeled emissions data and the effects of transport, dispersion and removal of ambient ammonia. Direct measurements of ambient concentrations of gas ammonia and particulate ammonium provide a more reliable estimate of background ammonia than do model simulations of the emissions, transport, dispersion and removal of ammonia.

Comment: The commenter states that reliable ammonia measurements from the IMPROVE monitor located in the Wind Cave National Park were published in September 2012. Chen et al, available at AECOM Report. This monitor provides actual ground level ammonia data that is representative of the Class I areas that are relevant to Laramie River Station. AECOM Report at 4. EPA has given no explanation for its assumption of a constant 2.0 ppb background concentration in this case.

Response: We evaluated the ammonia and ammonium monitoring data submitted by the commenter in Exhibit 6, which is an extended abstract presented at the 2010 conference in

Whitefish, MT.[126] The data are from a pilot study conducted from April 2011 to January 2012 designed to measure total NH_x as the sum of ammonia and particulate ammonium at 9 IMPROVE sites. The pilot study includes data for IMPROVE monitoring sites at Wind Cave and Rocky Mountain National Park, which are Class I areas for which we evaluated visibility impacts in this action. We note that the pilot study data are for less than one full year and are plotted in Figure 1 of the report as monthly average concentrations. The measured values of NH_x are not reported, but the plot does show seasonal variation in NH_x concentrations, as expected, with higher NH_x concentrations in summer and lower concentrations in winter. Annual average NH_x concentrations cannot be estimated from the plot itself, but they appear to be approximately consistent with the default IWAQM ammonia background concentration of 0.5 ppb for forested areas. Given that both the Rocky Mountain and Wind Cave Class I areas have significant forest cover, the measurements in the pilot study appear to be consistent with the IWAQM Phase 2 report.

Measurements of NH_x are not reported for Badlands National Park, which is a mix of bare rock and mixed-grass prairie ecosystems. Based on the IWAQM Phase 2 report, default background ammonia concentrations in the range of 1 to 10 ppb at 20 degrees Celsius would be appropriate for this region. We reviewed the ambient ammonia monitoring data on which the IWAQM Phase 2 report was based, and the data for grasslands were largely based on measurements at Pawnee National Grassland, where average ammonia levels in summer were 10 ppb. Because the Pawnee National Grassland is located close to large agricultural and livestock ammonia sources in eastern Colorado, it is uncertain if the same ammonia levels would be

[126] Chen et al., A Pilot Monitoring Study of Atmospheric NH_x at Selected IMPROVE sites AWMA Aerosol and Atmospheric Optics, Visibility & Air Pollution Conference, September 24-28, 2012, Whitefish, MT.

appropriate for the more Badlands area. Therefore, we selected a background ammonia concentration of 1 ppb for CALPUFF modeling of BART sources that impact the Wind Cave and Badlands Class I areas.

Comment: The commenter states that if EPA uses the maximum 24-hour NO_x emissions rate when modeling baseline visibility impacts, it should also use the maximum 24-hour SO_2 and PM_{10} emissions rates for the baseline. NO_x competes with SO_2 for ammonia to make either ammonium nitrate or ammonium sulfate. Setting the SO_2 baseline rate at a low concentration relative to NO_x skews the model to predict the formation of more ammonium nitrate and less ammonium sulfate. This magnifies the modeled benefits of reducing NO_x emissions.

Response: We agree that we did not use the maximum [actual] 24-hour emission rates for SO_2 and PM_{10} as we did for NO_x. However, we have not found based on our analysis, and the commenter has not established, that doing so had any material impact on the modeled benefits associated with NO_x controls. The BART sources in Wyoming that are covered in this action are subject-to-BART only for NO_x and PM. In addition, we considered comments on, but did not question the validity of the State's BART analyses for PM. In fact, as explained in detail elsewhere in this document, with respect to the State's PM BART determinations, the State's SIP and existing information was adequate to find that the PM BART determinations were reasonable. Accordingly, the purpose of our modeling effort was to identify the visibility improvement associated with NO_x controls, not SO_2 or PM controls. And so, in evaluating the visibility of NO_x controls, we held the SO_2 and PM emissions constant at the rate associated with the "committed controls" identified by the State. Therefore, even if there was a discernible impact on the modeled visibility benefit of NO_x controls related to our treatment of modeled

emission rates for SO_2 and PM, it would be common to all of the modeled NO_x control scenarios and would not have favored one control option over another.

Comment: The visibility improvement from SCR will be much less than EPA claims. The modeling preformed by AECOM and Wyoming produced similar results, and both predicted much less visibility improvement than EPA.

Response: The modeling performed by Wyoming used the 2 ppb background concentration that was established in the State's protocol, and this resulted in model visibility impacts that were significantly greater than those estimated by AECOM in its modeling using lower, seasonally varying background ammonia concentrations. The ammonia concentrations in ppb used in the AECOM modeling for the months of January December were as follows: 0.3, 0.9. 0.9, 1.0, 1.0, 2.0, 2.0, 1.0, 0.8, 0.8, 0.6, and 0.3. We note that our modeling results in our original proposal also used the State's protocol, and our model results were identical to the State's modeling results for the emissions scenarios that both the State and EPA evaluated. The EPA modeling results in our revised proposal showed larger visibility impacts because we corrected the baseline emissions rates to make the emissions consistent with the BART Guidance. In the new modeling results that we performed using our revised final EPA Protocol and included in this action, we used a model configuration that is generally consistent with modeling submitted by the commenter. The revisions to the protocol include reduced background ammonia, correction for ammonia limiting conditions, updated regulatory versions of the model, and the use of Method 8. The commenter did not submit model results for all emissions scenarios in a format that can be directly compared to our tabulated model results, but our revised model results in this action appear to be generally consistent with the commenter's model results, and these results do show

that SCR at Basin Electric Laramie River has appreciable visibility benefit at the Wind Cave and Badlands Class I areas.

Comment: The commenter states that the version of CALPUFF used by Wyoming and EPA (version 5.711a) relies on simplified chemistry algorithms that overstate nitrate formation and overpredict visibility impacts, and that EPA acknowledges that "the simplified chemistry in the [CALPUFF] model tends to magnify the actual visibility effects of [a] source." 70 FR 39121. Papers by Morris et al. and Karamchandani et al. show that CALPUFF chemistry overpredicts nitrates by a factor of 2-to-4 times in winter.

Response: As described in responses to other comments and in our modeling protocol, EPA used the currently approved CALPUFF version 5.8 for modeling used in this action. EPA has acknowledged in the BART Guidelines that there is uncertainty in the CALPUFF modeled visibility impacts. EPA recognized the uncertainty in the CALPUFF modeling results when EPA made the decision, in the final BART Guidelines, to recommend that the model be used to estimate the 98th percentile visibility impairment rather than the highest daily impact value. While recognizing the limitations of the CALPUFF model in the BART Guidelines Preamble, EPA concluded that, for the specific purposes of the Regional Haze Rule's BART provisions, CALPUFF is sufficiently reliable to inform the decision making process.

Comment: The commenter states that a study by the CDPHE showed model results for nitrates will be skewed high by assuming higher than actual background levels of ammonia.

Response: The CDPHE completed a CALPUFF model sensitivity study that evaluated the effect of the background ammonia concentration on model predictions for ammonium nitrate and sulfate. The CDPHE found that CALPUFF model predicted nitrate was insensitive to variations in background concentrations greater than 10 ppb and became progressively more sensitive to

background ammonia as it was reduced from 10 to 0 ppb.[127] We note that CDPHE performed a sensitivity study but did not evaluate model performance and did not identify any particular case in which model performance was skewed by the use of inappropriate background ammonia concentrations. The conclusions of the CDPHE study are fully consistent with the IWAQM Phase 2 report, which also recognized that accurate specification of background ammonia "is critical to the accurate estimation of particulate nitrate concentrations."[128]

Comment: The commenter cites several presentations and studies that document flaws in CALPUFF's sulfate and nitrate chemistry: 1) It is out of date, overly simplistic, and inaccurate; 2) CALPUFF greatly overstated sulfate and nitrate in winter, overestimating visibility impacts by 100-1000% in many cases; and 3) that the model understated sulfate in summer; and that nitrate predictions were particularly inaccurate, overstated, and unreliable.

Response: EPA recognized the uncertainty in the CALPUFF model when EPA made the decision, in the final BART Guidelines, to recommend that the model be used to estimate the 98th percentile visibility impairment rather than the highest daily impact value. While recognizing the limitations of the CALPUFF model in the BART Guidelines, EPA concluded that, for the specific purposes of the RHR's BART provisions, CALPUFF is sufficiently reliable to inform the decision making process.

Comment: NO_x emissions control has little visibility benefit during summer when visibility impairment is dominated by wildfires.

Response: EPA agrees that nitrate impacts are more dominant in the winter. The CALPUFF model results are consistent with these observations, with the largest modeled visibility

[127] CDPHE, *Ibid.*
[128] IWAQM, page 14 and page 21

improvements occurring from late fall to early spring. NO_x emissions are precursors to ammonium nitrate, and high concentrations of ammonium are typically observed from late fall to early spring when cold temperatures and high relative humidity results in thermodynamic conditions that favor the formation of ammonium nitrate. Observed ammonium nitrate concentrations are typically low during summer because warm temperatures result in thermodynamic conditions that are not favorable to the formation of ammonium nitrate. Nonetheless, there may be higher nitrate concentrations on colder days during this period.

Comment: EPA's visibility-benefits analysis still is constrained in the re-proposed Wyoming haze plan because EPA has not identified the visibility benefits from BART controls across all of the Class I areas affected by haze-causing pollutants from Wyoming sources. Wyoming EGUs impact visibility over at least 18 Class I areas. While EPA's own visibility modeling fully supports determinations that SCR is BART for all Wyoming EGUs, the visibility benefits of SCR across *all* affected Class I areas are cumulatively significant and, if the RHR's fundamental purpose is to be fulfilled, they must not be ignored.

Response: EPA disagrees with this comment. The commenter's number of "at least 18 Class I areas" is derived by including Class I areas that are more than 300 km from BART sources. EPA disagrees that these Class I areas should be included in the visibility analysis. The IWAQM Phase 2 report reviewed model performance evaluations of CALPUFF as a function of distance from the source and concluded that:"Based on the tracer comparison results presented in Section 4.6, it appears that CALPUFF provides reasonable correspondence with observations for transport distances of over 100 km. Most of these comparisons involved concentration values averaged over 5 to 12 hours. The CAPTEX comparisons, which involved comparisons at receptors that were 300 km to 1000 km from the release, suggest that CALPUFF can

overestimate surface concentrations by a factor of 3 to 4. Use of the puff splitting option in CALPUFF might have improved these comparisons, but there are serious conceptual concerns with the use of puff dispersion for very long-range transport (300 km and beyond). As the puffs enlarge due to dispersion, it becomes problematic to characterize the transport by a single wind vector, as significant wind direction shear may well exist over the puff dimensions. With the above thoughts in mind, IWAQM recommends use of CALPUFF for transport distances of order 200 km and less. Use of CALPUFF for characterizing transport beyond 200 to 300 km should be done cautiously with an awareness of the likely problems involved."[129] We present additional discussion of this issue in our response to the following comment.

Comment: EPA arbitrarily failed to model visibility impacts of the various control options at all affected Class I areas, including those that are beyond 300 km from the source. EPA recently responded to a similar comment in its final action promulgating the Montana Regional Haze FIP, 77 FR 57864, for the first time supporting its truncated modeling by referencing a now-discredited 1998 report regarding CALPUFF performance. Because EPA raised this issue only after the close of the public comment period on its Wyoming regional haze action, EPA should consider the Conservation Organizations' response. See 42 U.S.C.7607(d)(4)(B)(i).

In its response to public comments on the Montana FIP, EPA stated, "The Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 report (EPA, 1998) reviewed model performance evaluations of CALPUFF as a function of distance from the source and concluded that: …[u]se of CALPUFF for characterizing transport beyond 200 to 300 km should be done cautiously with an awareness of the likely problems involved." 77 FR 57867-68. EPA then concludes, "[t]herefore, given that the IWAQM guidance provides for the use of the CALPUFF

[129] IWAQM, p.18.

model at receptor distances of up to 200 to 300 km, and given that EPA has already addressed uncertainty in the CALPUFF model, we believe it is reasonable to use CALPUFF to evaluate visibility impacts up to 300 km." Id. at 57868.

We agree that CALPUFF is reliable at distances of 300 km. However, EPA's use of the IWAQM Phase 2 report to support its decision to exclude modeling at distances beyond 300 km is arbitrary. First, changes to CALPUFF since 1998 may correct problems identified in the IWAQM Phase 2 report with modeling accuracy in the 200-1,000 km range. Second, a more recent study prepared for EPA called into question the conclusions of the IWAQM Phase 2 report upon which EPA relies. See *Long Range Transport Models Using Tracer Field Experiment Data* (May 2012) (EPA Contract No: EP-D-07-102, Work Assignment No: 4-06). The May 2012 study concluded that "The inability of most (~90%) of the current study's CALPUFF sensitivity tests to reproduce the 1998 EPA study tracer test residence time on the 600 km receptor arc is a cause for concern." Not only were the authors of the May 2012 study unable to reproduce the 1998 study's findings that CALPUFF overestimated pollutant concentrations at distances of 600 km, the 2012 study concluded that CALPUFF actually underestimates average pollutant concentrations at 600 km. Accordingly, reliance on CALPUFF at long distances would result in conservative estimates of visibility impacts. It is not appropriate to assume, as EPA effectively did in its Wyoming proposal, that such impacts are non-existent. EPA's failure to model and consider visibility impacts at all affected Class I areas, including those beyond 300 km, is not supported.

Because the RHR, and SIPs and FIPs promulgated to implement it, are to fulfill CAA requirements to mitigate and ultimately eliminate anthropogenic sources of haze pollution at all Class I national parks and wilderness areas, it is imperative that states and EPA use models to

completely and accurately depict the visibility impact of a source to the region's Class I areas as well as projected benefits from BART. In this regard, the conclusion of the May 2012 study that CALPUFF reliably (if conservatively) identifies visibility impacts to Class I areas beyond those previously evaluated are critical, and directs EPA to supplement the incomplete analysis presented in its proposed action on the Wyoming Regional Haze plan with additional modeling, or consider the more complete modeling submitted by the conservation organizations with their August 2, 2012 comments.

Response: EPA disagrees with the commenter's assertion that changes to CALPUFF now support modeling at distances greater than 300 km. The commenter cited a May 2012 technical evaluation (Documentation of the Evaluation of CALPUFF and Other Long Range Transport Models Using Tracer Field Experiment Data[130]) that evaluates several long range transport models based on several tracer studies. The report cited by the commenter does not refute the IWAQM Phase 2 report which states that "IWAQM recommends use of CALPUFF for transport distances of order 200 km and less. Use of CALPUFF for characterizing transport beyond 200 to 300 km should be done cautiously with an awareness of the likely problems involved."[131] In fact, the May 2012 report further "emphasizes the need for a standardized set of options for regulatory CALPUFF modeling."[132] Given these findings, EPA does not agree, as the commenter asserts, that it must consider CALPUFF modeling results from Federal Class I areas beyond 300 km. EPA therefore believes that the results of CALPUFF modeling beyond 300 km of the source should be evaluated in light of the limitations discussed in the two guidance documents cited above.

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[130] http://www.epa.gov/scram001/reports/EPA-454—R-12-003.pdf.
[131] http://www.epa.gov/scram001/7thconf/calpuff/phase2.pdf, page 18.
[132] http://www.epa.gov/scram001/reports/EPA-454—R-12-003.pdf, page 10.

Finally, we disagree that there is any notice issue with respect to the commenter's allegations that EPA referenced the 1998 IWAQM study for the first time in our response to comments in our Montana FIP action. As quoted above, the BART guidelines specifically reference the 1998 IWAQM study with respect to CALPUFF settings.

Comment: EPA modeled visibility benefits at four Class I areas, and demonstrated visibility improvement due to SCR that approximately doubled the improvement afforded by SNCR at every Class I area modeled. 78 FR 34775-34776. EPA properly took account of the cumulative visibility improvement across all four modeled Class I areas for each unit, *id.* at 34776, but in fact, as the Conservation Organizations commented previously, *see* 8/2/2012 Conservation Organization Comments, SCR affords visibility benefits across at least six Class I areas. Thus, the cumulative visibility benefits are even greater than found by EPA, and further support a determination that SCR is BART for Laramie River Station Units 1-3.

Response: We disagree that we should have evaluated visibility impacts at all of the areas that the commenter considered in its analysis. The commenter provided CALPUFF model results at 18 areas, including areas that are not mandatory Class I areas, and at Class I areas at distances greater than 300 km from Laramie River Station. In our analysis of visibility impacts, we considered the visibility improvement at four Class I areas within 300 km of the Laramie River Station. Therefore, our modeling analyses did not ignore the visibility improvement that would be achieved at areas other than the most impacted Class I area, and we disagree with the assertion that we should have evaluated all of the areas that the commenter considered.

Comment: EPA's re-proposed Wyoming haze plan presents a unit-by-unit analysis of the visibility benefits of the installation of various BART control alternatives at Wyoming EGUs, and identifies benefits at only a subset of the affected Class I areas. However, EPA did not

present evidence of the cumulative visibility benefits that would be enjoyed by Class I areas from implementation of all of the BART determinations in its 2013 re-proposal. To assess this shortcoming, the Conservation Organizations contracted with Howard Gebhart to conduct a cumulative visibility improvement modeling analysis that compared installation of the NO_x BART determinations found in EPA's 2013 re-proposal versus the State BART determinations found in the Wyoming Regional Haze SIP. *See* Gebhart Report, at 17-24. Mr. Gebhart's visibility modeling results show that installation of the BART determinations in EPA's 2013 re-proposal will result in significant visibility improvement at numerous Class I areas when compared to the Wyoming SIP. For example, installation of the BART determinations in EPA's 2013 re-proposal would consistently result a total deciview improvement of 1.0 deciview or greater over the Wyoming SIP at Badlands National Park, Savage Run Wilderness, and Wind Cave National Park. In addition, significant visibility improvements exceeding 0.5 deciviews were predicted at Badlands National Park, Bridger Wilderness, Mount Zirkel Wilderness, Rawah Wilderness, Rocky Mountain National Park, Savage Run Wilderness, and Wind Cave National Park. In summary, the Conservation Organizations' cumulative visibility improvement modeling analysis provides further support that significant visibility benefits can be achieved from the finalization of the BART determinations contained in EPA's 2013 re-proposal. EPA's 2013 re-proposed rule advances (without entirely fulfilling) the goals of the regional haze program to reduce visibility impairment using BART during the first regional haze five-year planning period. In contrast, the Wyoming Regional Haze SIP would fall far short of these goals.

Response: First, we note that the modeling performed by the Conservation Organizations' contractor used the 2 ppb background ammonia concentration, and did not correct the model results for ammonia limiting conditions, and therefore predicts greater visibility impairment than

did EPA's revised modeling. EPA provided information about the visibility improvement modeled for different BART scenarios at multiple Class I areas within 300 km of each BART source. EPA primarily relied on the benefits at the area with the greatest visibility improvement from controls, but we also considered the cumulative impacts and benefits at multiple Class I areas. EPA agrees that considering cumulative visibility benefits by aggregating the expected improvement from over multiple Class I areas is a useful metric that can further inform a BART determination. Such an approach can be useful, for example, in simplifying a complex array of visibility impacts, especially where a source has significant impacts on multiple Class I areas.

Comment: EPA's proposed rule fails to present the cumulative visibility benefits of installation of SCR at Wyoming's EGUs. Instead, EPA only presents the visibility benefits for a single Class I area per source (Wind Cave National Park for all sources except the Jim Bridger plant (Mount Zirkel Wilderness Area)). The cumulative impact of a source's emissions on visibility as well as the cumulative benefit of emission reductions is a necessary consideration as part of the fifth-step in the BART analysis. The statutory direction and goal of the regional haze program is to remedy any existing impairment of visibility in mandatory Class I areas. 42 U.S.C. 7491(1). The implementing regulations plainly anticipate the need to reduce impacts in multiple Class I areas, including those outside a state's borders, and the obligation to assess what is necessary to do so. 40 CFR 51.308(d)(3). Further, states are required to establish reasonable progress goals for each Class I area, not just the one most impacted by a single source. *Id.* section 51.308(d)(1). EPA's own regional haze guidance document states that a cumulative visibility benefit analysis is generally consistent with the CAA. 70 FR 39105, 39107 (we believe that a State's decision to use a cumulative analysis at the eligibility stage is consistent with the CAA); 40 CFR Part 51, App Y. While the Guidelines also contemplate and even allow analysis of only the most

impacted Class I area, such an analysis contradicts the regional approach towards the restoration of visibility. Moreover, given the number of Class I areas impacted by Wyoming sources, it is illogical and baseless to fictitiously limit the spectrum of source impact and emission control benefit. Based upon the guidance and the requirements of the CAA, the cumulative impact of a source's emissions on visibility, as well as the cumulative benefit of emission reductions, should be considered as part of the fifth-step in the BART analysis. The FLMs, too, have urged EPA Region 8 to consider the cumulative visibility benefits of requiring stricter controls on BART-eligible units in Montana. For example, at a public meeting in Billings, regarding the Montana Regional Haze SIP, Valerie Naylor, Superintendent of Theodore Roosevelt National Park stated, "EPA placed too much emphasis on incremental costs and incremental benefits, while eliminating consideration of cumulative benefits that would be realized in the numerous Class I National Parks, National Wildlife Refuges, and Wilderness Areas impacted by Colstrip." The National Park Service (NPS) has consistently requested that cumulative visibility benefit analyses be conducted in other regional haze determinations. In addition, EPA must consider the cumulative visibility benefit of BART controls on multiple units of a single source. EPA's BART guidelines make clear that states must consider emissions from an entire source in determining whether a source is subject to BART, and further clarify that multiple units at a single utility constitute a single source. 40 CFR Part 51, App Y, sect. II.A.

The Conservation Organizations retained Air Resource Specialists, Inc. (ARS) to evaluate the cumulative visibility impact of NO_x BART controls, and found that the cumulative benefit of SCR at all Wyoming BART-subject EGUs is very significant. In conducting its supplementary modeling, ARS used an SCR-controlled NO_x emission rate to 0.05 lb/MMBtu to reflect the level of control achievable with SCR and recalculated baseline emissions to comply

with the BART guidelines, as described in sections I.A.2 and I.C. Otherwise, ARS employed the same assumptions used by EPA in its analysis.

ARS's visibility modeling addresses impacts to 18 Class I areas, including Savage Run Wilderness Area (which is not a mandatory Class I area but is managed as such by Wyoming). The ARS report addresses the cumulative benefit of installation of SCR at multiple units at a single power plant location (ex. the cumulative benefits of installation of SCR at all four Bridger units). The ARS Report also calculates the cumulative visibility benefit of installation of SCR on all BART units in Wyoming. *Id.* It should not be assumed that ARS's results document the highest impacts. Rather, they are presented to demonstrate widespread and far-reaching visibility impacts and improvements that can be achieved through the use of SCR.

The cumulative visibility benefit from installation of SCR on all BART units in Wyoming is significant. The application of SCR control on Wyoming's subject-to-BART emission units is predicted to improve worst-case visibility impairment by up to 8 deciviews at the Savage Run Class I area, with 4 deciviews of improvement or better at six Class I areas. ARS Report, Table 3-13. For the 98th percentile day, the improvement after SCR emissions control at all Wyoming BART-subject EGUs is as high as 3.5 deciviews at Wind Cave National Park. *Id.* At least six different Class I areas show improvement of 3 deciviews or more based on the 98th percentile day after SCR emissions control at all Wyoming BART-subject EGUs. *Id.*

SCR controls at Wyoming's subject-to-BART units are also predicted to significantly reduce the number of days with visibility impacts above 0.5 deciview and 1.0 deciview compared to baseline emissions scenario. Over all 18 Class I areas modeled, the cumulative improvement from application of SCR on all Wyoming BART-subject EGUs is 721 fewer days with visibility impairment exceeding 0.5 deciview and 595 fewer days with visibility impairment

exceeding 1.0 deciview. *Id.*, Table 3-14. These improvements are relatively uniformly distributed across the seven Class I areas most impacted by Wyoming's subject-to-BART EGUs: Badlands National Park, Bridger Wilderness Area, Mt. Zirkel Wilderness Area, Rawah Wilderness Area, Rocky Mountain National Park, Savage Run Wilderness Area, and Wind Cave National Park.

Response: As described in another response, EPA did not limit its analysis of visibility impairment to a single Class I area. We evaluated visibility impairment from each BART source at multiple Class I areas. We presented the results for each Class I area, and we considered the visibility impairment at multiple Class I areas in our BART determination. The estimates of visibility impairment presented by the commenter relied on an overly conservative estimates of background ammonia concentrations, and therefore are likely to overestimate cumulative visibility benefits.

In regard to the comment concerning the cumulative visibility benefit of BART controls on multiple units at a single source, see the response to a subsequent comment below.

Comment: It is appropriate to consider both the degree of visibility improvement in a given Class I area as well as the cumulative effects of improving visibility across all of the Class I areas affected. If reducing emissions from a BART source impacts multiple Class I areas, then a BART determination should incorporate those benefits. It is not justified to evaluate impacts at one Class I area, while ignoring others that are similarly significantly impaired by the BART source. If emissions from the BART source are reduced, the benefits will be spread well beyond only the most-impacted Class I area, and these benefits are an integral part of the BART determination. The BART Guidelines attempt to create a workable approach to estimating visibility impairment. The Guidelines do not attempt to address the geographic extent of the

impairment, but in effect assume that all Class I areas are created equal, i.e., widespread impacts in a large Class I area and isolated impacts in a small Class I area are given equal weight for BART determination purposes. To address the problem of geographic extent, we look at the cumulative impacts of a source on all Class I areas affected, as well as the cumulative benefits from reducing emissions. While there may be more sophisticated approaches to this problem, we believe that this is the most practical, given current modeling techniques and information available.

Response: Contrary to the commenter's assertion, we did assess cumulative visibility impacts for multiple Class I areas. In our analysis of visibility impacts, we considered the visibility improvement at multiple Class I areas within the 300 kilometers of the modeling domain. For example, in our analysis of BART control options for Naughton, we considered the visibility improvement at seven Class I areas (Bridger Wilderness Area, Fitzpatrick Wilderness Area, Grand Teton National Park, North Absaroka Wilderness Area, Teton Wilderness Area, Washakie Wilderness Area, and Yellowstone National Park).

Therefore, our proposed rule did not ignore the visibility improvement that would be achieved at areas other than the most impacted Class I area, and we disagree with the assertions that we did not consider the impacts at multiple Class I areas. In the proposed rule, we did however focus on the visibility benefits at the most impacted Class I area.

Comment: EPA has incorrectly estimated visibility improvement from all NO_x control options at the Laramie River Station. Wyoming DEQ evaluated visibility improvements at the two nearest Class I areas and reported the "The cumulative visibility improvement for SCR, as compared to LNB/OFA, across Wind Cave National Park and Badlands National Park (based on the 98th percentile modeled results) was 0.52-0.54 delta deciview for each of the three units." EPA R8

evaluated the five closest Class I areas but reported results for only the Wind Cave National Park.

Response: As described in a previous response, in our analysis of visibility impacts, we considered the visibility improvement at four Class I areas within 300 kilometers of Laramie River. Modeling results for all Class I areas considered for each BART source for the re-proposal were available to the public during the comment period upon request. (See "Summary of EPA's Additional Visibility Improvement Modeling"). Therefore, our proposed rule did not ignore the visibility improvement that would be achieved at areas other than the most impacted Class I area, and we disagree with the assertions that we did not consider the impacts at multiple Class I areas. In the proposed rule, we did however focus on the visibility benefits at the most impacted Class I area.

Comment: EPA rejected Oklahoma's visibility analyses which "relied upon pollutant specific modeling to evaluate the benefits from the use of available SO_2 emission controls." 76 FR 81728, 81740. Rather, EPA modeled in Oklahoma "all visibility impairing pollutants to fully assess the visibility improvement anticipated from the use of controls." EPA argued this modeling took into account "the complexity of atmospheric chemistry and chemical transformation among pollutants." In Wyoming, EPA noted that Wyoming provided "visibility improvement modeling results that combine[d] the visibility improvement from NO_x, PM and SO_2 control options" and that "EPA could not ascertain what the visibility improvement would be from an individual NO_x or PM control option." 77 FR 33031. EPA appears to take contrary positions in Oklahoma and Wyoming. EPA's inconsistent positions are arbitrary and capricious.

Response: As described in a response to a previous comment, it appears that the commenter has confused (1) whether all pollutants were modeled together; and (2) whether all control

technologies were modeled. All pollutants were modeled together both in modeling performed by Wyoming and by EPA for BART sources in Wyoming and Oklahoma, consistent with IWAQM Phase 2 report recommendations. The additional modeling performed by EPA was designed to evaluate visibility improvements from certain emissions reduction technologies. Each of these simulations also included all other visibility impairing pollutants, so the approach used by EPA in Wyoming and Oklahoma is consistent.

Comment: We are concerned about the emissions modeled by EPA as presented in the "Summary of EPA's Additional Visibility Improvement Modeling." For example, sulfuric acid mist (H_2SO_4) emissions from each PacifiCorp unit are assumed to double from the baseline and control scenarios that do not include SCR versus scenarios with SCR. The only explanation provided by EPA is that "the emission rate for…total sulfate rates were increased to account for the additional production that results from SCR controls." EPA's approach in Wyoming is not consistent with its approach elsewhere. For example, in its modeling analysis of addition of SCR at Colstrip Units 1 and 2 in Montana, EPA assumed no additional sulfate emissions from the addition of SCR.

Because H_2SO_4 must be reported as a hazardous air pollutant, the Electric Power Research Institute has developed a widely-accepted method for estimating those emissions. Our analyses indicate a two-orders-of-magnitude overestimation by EPA of these visibility-impairing emissions, which results in an underestimation of the visibility benefit of adding SCR.

Response: While the method established by the Electric Power Research Institute may yield more accurate H_2SO_4 emission rates, we have not found, and the commenter has not substantiated, that our treatment of H_2SO_4 led to meaningfully different modeled visibility improvement, or for that matter, influenced the BART determination in a material manner. In

the modeling conducted by EPA, we set the sulfuric acid emission rates equal to those in the State's modeling analyses which typically doubled the H_2SO_4 emission rate between the baseline and SCR modeling scenarios. In comparison to the emission rates for SO_2 and NO_x, the emission rates for H_2SO_4 were trivial. For example, consider Dave Johnston Unit 3, where the modeled emission rates for SO_2 and NO_x in the baseline scenario were 420.0 lbs/hr and 1671.0 lbs/hr, respectively, while the modeled emission rate for H_2SO_4 was 2.6 lbs/hr. Here, in comparison to SO_2 and NO_x emissions, the emissions rate of H_2SO_4 is clearly insignificant and would have a limited impact on modeled visibility. The same can be said for the SCR scenario where the modeled emission rates for SO_2 and NO_x were 420.0 lbs/hr and 163.3 lbs/hr, respectively, while the modeled emission rate for H_2SO_4 was 5.1 lbs/hr. In short, the H_2SO_4 emission rates used in the modeling were so low that it is apparent that they have no more than a negligible impact on the modeled visibility improvement.

Comment: EPA must consider the cumulative visibility benefit of BART controls on multiple units of a single source. EPA's BART guidelines make clear that states must consider emissions from an entire source in determining whether a source is subject-to-BART, and further clarify that multiple units at a single utility constitute a single source. 40 CFR part 51, App Y, sect. II.A. This is not by accident or oversight. As EPA stated in its preamble to the BART Guidelines, "[a]pplying de minimis levels on a unit by unit basis … could exempt hundreds of tons of emissions of a visibility-impairing pollutant from BART analysis. [I]t is possible that while emissions from each unit are relatively trivial, the costs of controlling emissions from multiple units might be cost-effective in light of the BART-eligible source's total emissions of the pollutant at issue." 70 FR 39104, 39117. With respect to the RHR requirement that states must project visibility impacts of BART controls, the BART Guidelines state: "Once you have

determined that your source or sources are subject to BART, you must conduct a visibility improvement determination for the source(s) as part of the BART determination." 40 CFR part 51, App Y, sect. IV.D.5. Thus, it is clear that both visibility impacts and visibility benefits are to be considered cumulatively for multiple units at a single source.

This is also consistent with EPA's practice in other states. For example, EPA found it appropriate to consider the combined visibility impact of pollution controls on multiple units at a single facility in determining that BART is SNCR for Units 1 and 2 of the Colstrip facility in Montana. Failure to consider cumulative visibility impacts discounts the very real effect of source-specific pollution on regional haze and likewise the cumulative benefits of potential retrofits. EPA cannot demonstrate that it has properly evaluated BART controls for affected sources without producing and presenting such a cumulative analysis.

Response: EPA notes that, in considering the visibility improvements reflected in our revised modeling, EPA interprets the BART Guidelines to require consideration of the visibility improvement from BART applied to the entire BART-eligible source The BART Guidelines explain that, "[i]f the emissions from the list of emissions units at a stationary source exceed a potential to emit of 250 tons per year for any visibility-impairing pollutant, then that collection of emissions units is a BART-eligible source." In other words, the BART-eligible source (the list of BART emissions units at a source) is the collection of units for which one must make a BART determination. The BART Guidelines state "you must conduct a visibility improvement determination for the source(s) as part of the BART determination." This requires consideration of the visibility improvement from BART applied to the BART-eligible source as a whole.

We note, however, that while our regulations require states and EPA to assess visibility improvement on a source-wide basis, they provide flexibility to also consider unit-specific

visibility improvement in order to more fully inform the reasonableness of a BART determination, but that does not replace the consideration of visibility benefit from the source (facility) as a whole.

In making the BART determinations in this final action we have considered visibility improvements at the source, and then also at the units that comprise the source. The approach that we used in our BART decisions for Wyoming is consistent with the approach that we used for Montana.

Comment: The commenter submitted results of back trajectory HYSPLIT modeling showing that pollutants reaching certain Class I areas on the high nitrate haze days did not originate from Laramie River Station. The commenter concludes that this analysis confirms that reducing NO_x emissions from Laramie River would not improve visibility at these Class I areas.

Response: We disagree with the comment that the HYSPLIT results submitted by the commenter can be used to evaluate the contribution of Laramie River to visibility impairment at Wind Cave National Park. The commenter performed HYSPLIT back-trajectory modeling for 10 days with high ammonium nitrate concentrations at Wind Cave National Park. The 10 days were selected from the period from 2001 to 2010, and only two of these days occurred during 2001 to 2003 baseline period used for the BART visibility modeling. These two days were February 24, 2001 and February 14, 2003, when the observed ammonium nitrate at the IMPROVE monitoring site at Wind Cave National Park was 41 and 33 inverse Megameters (Mm-1), respectively. We note that there were many days during the 2001 to 2003 period on

which observed ammonium nitrate levels at Wind Cave National Park were in the range from 10 to 30 Mm-1[133], but the commenter did not submit HYSPLIT results for these days.

HYSPLIT is a trajectory model similar to CALPUFF in that both models use modeled and observed wind field data to predict the trajectory of pollutants transported from a source area to a receptor location. There are differences in the formulation of the HYSPLIT and CALPUFF models and differences in the meteorological data used as input data for each model, so the predicted trajectory from each model may vary somewhat as a result of these differences. The most notable difference in the two models is that CALPUFF is designed to predict both the trajectory and the chemical conversion of precursor emissions to fine particulates and to estimate the concentrations of ammonium nitrate and other species at receptor sites, while HYSPLIT simply predicts the trajectory of the emissions but does not predict the chemical transformations nor the concentration of ammonium nitrate at receptor sites.

We evaluated the CALPUFF results for February 24, 2001 and February 14, 2003, and found that the HYSPLIT and CALPUFF results were consistent, i.e., the CALPUFF model did not attribute high levels of ammonium nitrate at Wind Cave National Park on these two days to Laramie River. The table of CALPUFF modeling results[134] shows that the model predicted a contribution of nitrate from Laramie River of 0.02 deciview on Feb 24, 2001, or 0.05% of the observed value, and on Feb 14, 2003, 1.697 deciview, or 5% of the observed. The small modeled contribution on these days is consistent with uncertainty in the HYSPLIT model. Because the HYSPLIT model does not estimate the formation of ammonium nitrate, and because HYSPLIT results were only submitted for two days during the 2001 to 2003 baseline modeling

[133]Document with Wind Cave IMPROVE data, in the docket.
[134] EPA CALPUFF modeling results for Laramie Rivers Station, in docket: CALPUFF_WY_BART_bextNO3_BE_LR_Baseline_WindCave_12112013.

period, these HYSPLIT results are neither useful nor reliable for identifying emissions sources that contribute to visibility impairment at Wind Cave National Park. The HYSPLIT and CALPUFF results do indicate that sources other than Laramie River contribute to visibility impairment on the two days with the very highest ammonium nitrate levels at Wind Cave during the 2001 to 2003 baseline period. However, the CALPUFF results indicate that Laramie River contributes to visibility impairment at Wind Cave National Park.

Comment: EPA improperly considered "cumulative visibility improvement" when it rejected Wyoming's BART NO_x analyses and required SCR at Naughton Unit 1 and Naughton Unit 2. (78 FR 34782). Other comments asserted that EPA improperly considered "cumulative visibility improvement" when it rejected Wyoming's BART NO_x analyses and required SCR at Dave Johnston Unit 3 (78 FR 34778). Finally, a third set of comments asserted that EPA R8 has incorrectly estimated visibility improvement from all NO_x control options at Wyodak: Wyoming DEQ evaluated cumulative visibility improvements at the two nearest Class I areas (Wind Cave and Badlands National Parks) while EPA R8 reported results for only one Class I area.

Response: We disagree with these comments. In evaluating the visibility improvement associated with various control options, EPA interprets the CAA to require consideration of visibility improvement at all impacted Class I areas. Consideration of improvement at multiple Class I areas, as opposed to just benefits at the most impacted Class I area, has often been described as "cumulative visibility improvement." Despite this terminology, however, an analysis of cumulative visibility improvement does not necessarily require that the deciview improvement at each area be summed together. While states or EPA are free to take such a quantitative approach, they are also free to use a more qualitative approach. Here, we chose to rely primarily on the visibility improvement at the most impacted Class I area, while also

considering the number of additional Class I areas that would see improvement, as well as the level of improvement at each area. We did not expressly rely on a summation of visibility benefits across Class I areas, as we have done in other regional haze actions, although this metric was included in some tables. Finally, in our analysis of visibility impacts, we considered the visibility improvement at both Class I areas within 300 kilometers of Wyodak. The modeling results for the second proposal for all Class I areas considered for each BART source were available to the public during the comment period upon request. (See "Summary of EPA's Additional Visibility Improvement Modeling").

C. Overarching Comments on BART

1. BART-Eligible Sources

Comment: OCI Wyoming commented that it was listed as a BART-eligible source, but that the facility has an enforceable cumulative annual NO_x emission limit of 175.2 tons/year. Therefore, the facility is not a "major stationary source" and is not BART-eligible.

Response: We agree with this comment and acknowledge that OCI Wyoming is not a BART-eligible source.

2. Costs of Controls

Comment: One commenter stated that it supported EPA's use of the CCM and the Integrated Planning Model (IPM) to calculate costs.

Response: It is noted that EPA has revised the cost estimates found in the proposed rule based upon input from various commenters. The differences in cost for individual units may result from: 1) Accounting for site elevation in the SCR capital cost; 2) Change in SCR reagent to anhydrous ammonia from urea; 3) Change in urea SNCR chemical utilization for Laramie River units due to high furnace temperature; 4) Incorporation of some of the costs provided in

comments; 4) Change in auxiliary electrical cost from market price to generating, or "busbar," cost; 5) Correction of dilution water cost equation for SNCR; and 6) Consideration of shorter plant lifetimes in some instances.

More detailed descriptions of these changes and how they were addressed are discussed in a report (Andover Report) and spreadsheets[135] developed for EPA's responses to comments, as well as in our responses to the specific comments that are associated with these changes below.

Comment: Sargent & Lundy's analysis provides realistic information regarding what it likely would cost to install and operate an SCR system at Laramie River Station. They include a cost analysis by Sargent & Lundy that, unlike EPA's consultant's work, follows the BART Guidelines and EPA's CCM, and takes into account key site-specific conditions at Laramie River Station. This analysis is far more accurate and reliable than what was done by EPA's consultant—it is a site-specific, from-the-ground-up analysis done by an engineering firm that has done more NO_x control projects for EGUs than any other firm in the U.S. Sargent & Lundy's analysis provides realistic information regarding what it likely would cost to install and operate an SCR system at Laramie River. This analysis strongly supports Wyoming's decision to select new LNBs and OFA as BART for Laramie River Station, not SNCR or SCR.

Response: We do not agree with this comment. The BART Guidelines provide that: "You should include documentation for any additional information used for the cost calculations, including any information supplied by vendors that affects your assumptions regarding purchased equipment costs, equipment life, replacement of major components, labor productivity

[135] Andover Technology Partners, "Cost of NOx Controls on Wyoming EGUs", October 28, 2013; Wyoming EGU BART and Reasonable Progress Costs – 10/28/2013; Wyoming EGU BART and Reasonable Progress Costs for Jim Bridger – 10/28/2013.

and rates and any other element of the calculation that differs from the Control Cost Manual." 40 CFR pt. 51, app. Y, at IV.4.a.

Thus, detailed cost documentation is necessary to the extent that cost assumptions differ from the CCM. In this case, several of Sargent & Lundy's cost assumptions for control costs at Basin Electric's Laramie River Station differed from the CCM, but the necessary supporting documentation was not provided as part of their report. Detailed descriptions of the deficiencies in the cost assumptions are described in comments specific to the units. As explained elsewhere in this document, EPA has accepted some of the revised costs developed for Basin Electric, but not others.

Comment: We found that EPA's consultant had added 1.2% to the total capital investment of SCR to account for "taxes and insurance." The CCM says: "In many cases property taxes do not apply to capital improvements such as air pollution control equipment, therefore, for this analysis, taxes are assumed to be zero. The cost of overhead for an SCR system is also considered to be zero. An SCR system is not viewed as risk-increasing hardware (e.g., a high energy device such as a boiler or a turbine). Consequently, insurance on an SCR system is on the order of a few pennies per thousand dollars annually." The BART submittal by PacifiCorp included a 1.1% sales tax and Basin Electric included a 4% sales tax, both of which were applied to the purchased equipment costs. It is unclear if application of a sales tax is appropriate in Wyoming and, if so, what the correct tax rate is.

Response: To the extent that sales or property taxes are actually incurred and increase the cost of the project, they should be accounted for in the cost. *See* CCM at 2.5.4.1 and 2.5.5.8. However, air pollution control improvements often do not result in increased property taxes. When these taxes are not in fact applied, they should not be included in the estimate. The use of 1.2% as an

estimate of property taxes and insurance is a conservative estimate that is consistent with EPA's assumptions in the IPM documentation. According to the IPM documentation (version 4.10, Chapter 8, page 8-11): "U.S. state property taxes are approximately 0.9% based on a national average basis. This is based on extensive primary and secondary research conducted by ICF using property tax rates obtained from various state agencies. . . . Insurance costs are approximately 0.3%. This is based on estimates of insurance costs on a national average basis."[136]

As noted by the commenter, these costs may not in fact apply for environmental upgrades or may be much less than estimated. EPA did not have information on the applicability of property taxes at the time we conducted our cost estimates and conservatively assumed a reasonable amount. We also note that the commenter did not provide sufficient information to support a different property tax or insurance rate.

With regard to sales tax, the IPM algorithm for SCR cost is based upon historical projects and incorporates typical levels of sales tax. That is, the capital costs provided by the algorithm(s) are inclusive of sales tax. Accordingly, for the purpose of the BART cost estimates, and without additional data to determine what sales taxes would actually apply, EPA has relied on the assumptions in the IPM algorithm.

Comment: EPA states in its FIP Action (78 FR 34749): "For all control technologies, EPA has identified instances in which Wyoming's source-based cost analyses did not follow the methods set forth in the EPA Control Cost Manual. For example, Wyoming included an allowance for funds used during construction and for owners costs and did not provide sufficient documentation such as vendor estimates or bids."

[136] http://www.epa.gov/airmarkets/progsregs/epa-ipm/BaseCasev410.html#documentation

With respect to AFUDC, another utility (Oklahoma Gas and Electric) argued in a similar regional haze setting that: "AFUDC provides a way of measuring the real cost of interest over the construction period. AFUDC accounts for the time value of money associated with the distribution of construction cash flows over the construction period, which may be approximately 18 months for an SCR project." Total capital investment, as defined in the CCM, includes all costs required to purchase equipment needed for the control system (purchased equipment costs), the costs of labor and materials for installing that equipment (direct installation costs), costs for site preparation and building, working capital, and off-site facilities.

A cost breakdown of total capital investment (as defined above) is presented in several examples in the CCM. For example, Table 1.4 (page 1-32 of Section 4 – NO_x Controls) and Table 2.5 (page 2-44 of Section 4 – NO_x Controls) therein explicitly identify AFUDC as component "E" of the TCI, where TCI = D + E + F + G + H + I, where: D = Total Plant Cost; E = AFUDC; F = Royalty Allowance; G = Preproduction Cost; H = Inventory Capital; I = Initial Catalyst and Chemicals.

References 9 and 10 on page 2-38 of the CCM explicitly include AFUDC as a cost component and reference two reports, by Shattuck and Kaplan, in support of its use. The EPA built upon this knowledge base and costing methodology in its publication of the CCM in 2002. Thus, the CCM allows the time value of money, measured by the real discount rate, to be incorporated into the cost estimate.

Section 2.3.1 of the CCM (Elements of Total Capital Investment) describes the need for total capital investment to include all expenditures incurred during the construction phase of the project, including direct costs, indirect costs, fuel and consumables expended during start-up and testing, and other capitalized expenses. The only items explicitly mentioned to be excluded are

common facilities that already exist at the site. AFUDC is part of the expense that will be incurred with the installation of a large air pollution control system, and the accepted practice in the utility industry and by financial institutions is to treat AFUDC as a capitalized expenditure. This approach is recognized in publications by the U.S. Department of Energy - Energy Information Administration, such as the *Annual Energy Outlook*, and in publications by the Electric Power Research Institute, such as the *Technical Assessment Guide* (EPRI TAG). As previously mentioned, the EPA clearly followed this approach in its studies of retrofit costs of SO_2 and NO_x in the years leading up to its publication of the CCM. Furthermore, AFUDC has been included in several other coal-fired boiler BART determinations, and AFUDC is included as a line item in EPA's Coal Quality Environmental Cost (CUECost) worksheets for flue gas desulfurization (FGD) control systems. In cases where the time value of money during the construction period would be significant (e.g., projects with longer construction periods such as the installation of SCR), the CCM clearly allows inclusion of AFUDC.

PacifiCorp supports and adopts by reference Oklahoma Gas and Electric's argument regarding including AFUDC in project cost estimates. Whether or not AFUDC is included in project cost estimates does not materially impact the results reached under the EPA CCM method, its inclusion should not constitute a basis for EPA to reject Wyoming's entire cost assessments. PacifiCorp has provided tables that provide comparisons of PacifiCorp's project specific EPA CCM method results where AFUDC is excluded in one set of costs and is included in the other to demonstrate this point.

Response: We disagree with commenters' assertions that AFUDC is a cost that should be incorporated into our cost analysis, as it is inconsistent with CCM methodology. The utility industry uses a method known as "levelized costing" to conduct its internal comparisons, which

is different from the methods specified by the CCM. Utilities use "levelized costing" to allow them to recover project costs over a period of several years and, as a result, realize a reasonable return on their investment. The CCM uses an approach sometimes referred to as overnight costing, which treats the costs of a project as if the project were completed "overnight", with no construction period and no interest accrual. Since assets under construction do not provide service to current customers, utilities cannot charge the interest and allowed return on equity associated with these assets to customers while under construction. Under the "levelized costing" methodology, AFUDC capitalizes the interest and return on equity that would accrue over the construction period and adds them to the rate base when construction is completed and the assets are used. Although it is included in capital costs, AFUDC primarily represents a tool for utilities to capture their cost of borrowing and return on equity during construction periods. AFUDC is not allowed as a capitalized cost associated with a pollution control device under CCM's overnight costing methodology, and is specifically disallowed for SCRs (i.e., set to zero) in the CCM.[137] Therefore, in reviewing other BART determinations, EPA has consistently excluded AFUDC.[138] EPA's position regarding exclusion has been upheld in the United States Tenth Circuit Court of Appeals.[139]

The fact that CUECost, the EPRI TAG, and the Department of Energy cost estimates, and even cost estimates used as the basis for IPM typically include AFUDC is immaterial in this case

[137]CCM (Tables 1.4 and 2.5 show AFUDC value as zero).
[138]See, e.g., 77 FR 20894, 20916-17 (Apr. 6, 2012) (explaining in support of the North Dakota Regional Haze FIP, "we maintain that following the overnight method ensures equitable BART determinations * * *."); 76 FR 52388, 52399-52400 (August 22, 2011) (explaining in the New Mexico Regional Haze FIP that the Manual does not allow AFUDC)
[139] Oklahoma v. U.S. EPA, 723 F.3d 1201 (10th Cir. 2013).

because, for this purpose, overnight cost methodology is used and AFUDC is not included in that methodology.

Finally, we reject the commenter's assertion that Wyoming's inclusion of AFUDC did not provide a material basis for EPA to disapprove portions of the State's SIP. Inclusion of AFUDC increases total project costs of SCR by several million dollars. For example, Attachment 4 to PacifiCorp's comment letter shows that AFUDC for Dave Johnston Unit 4 would add more than $9.5 million dollars to the capital costs of SCR. We find that amounts of this magnitude are not trivial when assessing the costs of compliance.

Comment: Sargent & Lundy's cost estimate does include AFUDC, which accounts for the interest charges that would be incurred by Basin Electric during SCR construction. AFUDC is a real and a significant cost on capital intensive, long-term projects such as SCR installation, which require financing over a construction period of up to four years. Indeed, to exclude AFUDC would inappropriately bias the cost estimate in favor of high capital intensity projects. Therefore, consistent with industry practice, Sargent & Lundy included AFUDC, calculated based on a typical SCR construction project cash flow assuming a real interest rate of 7%.

The inclusion of AFUDC is not, as EPA asserts, inconsistent with either the BART Guidelines or the CCM. See 78 FR 34749. The CCM simply references "Total Capital Investment," which includes "all costs required to purchase equipment needed for the control system," as well as "working capital." CCM 2.3.1, page 2-5 (emphasis added). This includes costs required to purchase equipment needed for the control system (purchased equipment costs), the costs of labor and materials for installing that equipment (direct installation costs), costs for site preparation and building, working capital, and off-site facilities. *Id*. Nowhere in the CCM does EPA state that AFUDC is not an appropriate cost, particularly with respect to long-term,

capital intensive pollution control projects. And even if the CCM made such an assertion, inclusion of AFUDC in a cost estimate cannot be grounds for SIP disapproval because: 1) the CCM is not binding for purposes of making BART determinations, and 2) requiring states to exclude AFUDC is not consistent with Congress' general directive that states include "costs of compliance" in their BART determinations.

The CAA requires states to consider in their BART determinations the "costs of compliance," but does not further define the term. *See* 42 U.S.C. 7491. EPA's regulations codify the BART factors, but neither the regulations nor the BART Guidelines in Appendix Y purport to restrict in any manner the categories of costs that states should consider when making a BART determination. *See* 70 FR 39166-39168. AFUDC is a "cost of compliance." Basin Electric cannot fund large capital-intensive projects like SCR without financing, and the costs related to such financing are real and substantial. Consideration of AFUDC is therefore entirely consistent with the CAA's broad reference to "costs of compliance," and excluding AFUDC would be inconsistent.

In this case, even if AFUDC is excluded from the total annual costs, the costs of installing SCR do not decrease substantially enough to justify SCR. Sargent & Lundy performed sensitivity analyses demonstrating that the cost-effectiveness of SCR at Laramie River remains at between $8,531 per ton of NO_x removed and $9,048 per ton of NO_x removed even if AFUDC is excluded. Furthermore, if the maintenance cost and labor rate of 1.5% also is factored into the analysis, consistent with the CCM, as opposed to the lower 0.25% used by Sargent & Lundy, the cost-effectiveness remains above $8,500 per ton of NO_x removed. Sargent & Lundy also performed a sensitivity analysis demonstrating that including property taxes and insurance as 1.2% of total capital investment, consistent with the approach taken by Andover but not with the

CCM approach, more than offsets the exclusion of AFUDC. S&L Evaluation section 7.1.4, Table 10.

Response: EPA agrees that AFUDC can be a substantial overall cost on large capital projects that extend over a period of several years. However, as noted in the previous response, the CCM clearly excludes AFUDC in the overnight cost method. Furthermore, as we explain in more detail in responses to comments that pertain to specific sources, we disagree with the commenter's estimates for cost effectiveness for the Laramie River units.

Comment: Commenters assert that EPA's regional haze FIP is flawed because it failed to provide sufficient documentation, such as vendor estimates or bids to validate its estimates. EPA attempts to justify its approach by stating: "In our revised cost analyses, we have followed the *structure* (emphasis added) of the EPA CCM, though we have largely used the Integrated Planning Model cost calculations to estimate direct capital costs and operating and maintenance costs." 78 FR 34749.

EPA did not explain what it meant by following the "structure" of the manual, versus simply following the manual. By contrast, PacifiCorp solicited and incorporated vendor estimates into these comments. This new information, which EPA must incorporate into new BART analyses to the extent EPA issues a final regional haze FIP, validates Wyoming's BART analyses cost of control estimates. In addition, it further quantifies the inaccuracies in EPA's development and use of purported new information that in no way qualifies as vendor estimates, bids, or any type of site-specific vendor information.

Response: We do not agree with this comment. By following the "structure" of the manual, EPA included all of the cost elements that the CCM indicates should be included, while excluding those that should not (such as AFUDC). In other words, EPA employed the overnight

cost method as is required for BART analyses. The BART Guidelines require that the CCM be followed unless deviations from it are clearly documented and explained.

PacifiCorp received bids from vendors and EPA has incorporated information from these bids into its revised cost estimates. However, for reasons described elsewhere in response to comments, EPA has not accepted all of the costs. The BART Guidelines state: "You should include documentation for any additional information you used for the cost calculations, including any information supplied by vendors that affects your assumptions regarding purchased equipment costs, equipment life, replacement of major components, and any other element of the calculation that differs from the CCM." 70 FR 39166.

With regard to Basin Electric, vendor quotes for the Laramie River Station were not supplied. As Basin Electric indicated in its comments, "[t]he LRS cost estimates are conceptual in nature; thus, S&L did not procure equipment quotes specifically for the LRS control systems. Rather, equipment costs for the LRS projects are based on conceptual designs developed for the control systems, preliminary equipment sizing developed for the major pieces of equipment, and recent pricing for similar equipment."

In effect, like the IPM cost algorithms, the method that underlies Sargent & Lundy's estimate for Basin Electric is empirically based on past data, and not vendor quotes developed specific to Laramie River. We have, however, accepted some of the costs submitted by Basin Electric and not accepted others.

Comment: Even if EPA had the authority to require the use of the CCM, which it does not, EPA's insistence on Wyoming's strict compliance with the costing methodology set forth in the CCM, without adjusting the methodology to account for important site-specific factors, leads to an erroneous and arbitrary and capricious result. This is not required by the CCM. Indeed, the

manual expressly discounts the usefulness of the costing methodology to power plants generally and to SCR control systems specifically, and it acknowledges that deviation from the methodology may be appropriate based on a user's engineering judgment.

The CCM provides general costing methodology for stationary source air pollution control technologies, applicable primarily to regulatory development where a rough order of magnitude estimate is appropriate. The introduction to the manual also caveats its usefulness when assessing control costs at power plants, which use different cost accounting. Cost Manual section 1.1, page 1-3. Specifically, it states that "[e]lectrical utilities generally employ the EPRI Technical Assistance Guidance (TAG) as the basis for their cost estimation processes." *Id.* In a footnote, it explains that while power plants might still use the manual, "comparisons between utilities and across the industry generally employ a process called 'levelized costing' that is different from the methodology used here." *Id*. section 1.1, page 1-3 n.1.

The CCM also generates rough estimates of costs that are less accurate than the site-specific cost factors that are more appropriate for BART determinations at a large power plant. The manual is used heavily in regulatory development, and the costing methodology is geared specifically to avoid the necessity of site-specific information and to enable estimates to be prepared at "relatively low cost with minimum data." *Id.* section 2.2, page 2-3 (internal quotations omitted). However, the level of accuracy is much lower than that for estimates using site-specific information. The cost estimating procedure can provide a "rough order of magnitude," estimate that is "nominally accurate to within +/- 30%." *Id.* section 1.2, page 1-4. Indeed, "EPA does not claim cost estimates for industry at a greater than study level accuracy for industrial users" because "the industrial user will necessarily have much more detailed information than the generic cost and sizing information." *Id*. section 2.2, page 2-3, 2-4.

Where the user has detailed site-specific information, the manual does not contemplate strict adherence to its costing methodology. Users may "exercise 'engineering judgment' on those occasions when the procedures may need to be modified or disregarded." *Id*. section 1.3, page 1- 7. With respect to estimating factors used in cost estimates, "the application of an appropriate factor requires the subjective application of the analyst's best judgment." *Id*. section 2.5.4.1, page 2- 28. The manual is designed to provide a tool box for estimating costs that can be helpful to the engineer, but"[t]he bottom line is that there is no clear-cut 'cookbook' process through which the analyst will be able to make the right informed decision each time, and the formalized costing methodology employed by the Manual is only part of that process." *Id*. section 2.6, page 2-37.

With respect to SCR cost estimations, the CCM is no more than a "tool to estimate study-level costs for high-dust SCR systems." *Id.* section 2.4, page 2-40. The "[a]ctual selection of the most cost-effective option should be based on a detailed engineering study and cost quotations from the system suppliers." *Id.* This requirement for a more detailed study relying on site-specific factors is necessary because, as EPA acknowledges, the CCM's assumptions regarding capital investment for SCR are inaccurate. *Id.* section 2.5.4.1, page 2-27. For systems like SCR, "the control in question is either so large or so site-specific in design that suppliers design, fabricate, and construct each control according to the specific needs of the facility." *Id.* section 2.5.4.1, page 2-27.

Thus, for these systems, "the Manual deviates from its standard approach of providing study level costs and, instead, provides a detailed description of the factors that influence the TCI [total capital investment] for the analyst to consider when dealing with a vendor quotation." *Id*. Under these circumstances, EPA acknowledges that getting vendor quotes may be difficult because they

cannot be done in an "off-the-shelf" fashion. *Id*. The engineering judgment of the manual's user is especially critical in estimating the costs of an SCR retrofit: "Probably the most subjective part of the cost estimate occurs when the control system is to be installed on an existing facility." Unless the original designers had the foresight to include additional floor space and room between components for new equipment, the installation of retrofitted pollution control devices can impose an additional expense to "shoe-horn" the equipment into the right locations. For example, an SCR reactor can occupy tens of thousands of square feet and must be installed directly behind a boiler's combustion chamber to offer the best environment for NOx removal. For these boilers, there is generally little room for the reactor to fit in the existing space and additional ductwork, fans, and flue gas heaters may be needed to make the system work properly.

To quantify the unanticipated additional costs of installation not directly related to the capital costs of the controls themselves, engineers and cost analysts typically multiply the cost of the system by a retrofit factor. The proper application of a retrofit factor is as much an art as it is a science, in that it requires a good deal of insight, experience, and intuition on the part of the analyst. The key behind a good cost estimate using a retrofit factor is to make the factor no larger than is necessary to cover the occurrence of unexpected (but reasonable) costs for demolition and installation. Such unexpected costs include, but are certainly not limited to, the unexpected magnitude of anticipated cost elements; the costs of unexpected delays; the cost of reengineering and re-fabrication; and the cost of correcting design errors. *Id*. section 2.5.4.2, page 2-28. The CCM cannot properly account for these uncertainties and thus provides that users can apply a "retrofit factor" of up to 50 percent to account for them. *Id*. EPA notes that "[s]ince each retrofit installation is unique, no general factors can be developed." *Id*. 2.5.4.2, page 2-29.

In sum, the BART Guidelines and CCM were drafted and are to be applied as guidelines to assist the states in their decision making, not as inflexible mandates. Knowing this, states like Wyoming follow the BART Guidelines generally but make the necessary localized and individualized adjustments required to generate realistic, rather than formalistic, cost estimates. Accordingly, EPA should expect the states to deviate on occasion, not to slavishly follow the BART Guidelines and CCM to the point of generating artificial (and unrealistic) cost estimates. Yet that is now exactly what EPA contends the states must do. EPA's current approach to using the BART Guidelines and manual as grounds for disapproval without deference to the states' authority and local control is unreasonable, erroneous, and arbitrary and capricious.

Response: There are only very limited situations in which a state or EPA can depart from the CCM cost methodology. "The basis for equipment cost estimates also should be documented, either with data supplied by an equipment vendor (i.e., budget estimates or bids) or by a referenced source (such as the OAQPS CCM, Fifth Edition, February 1996, EPA 453/B–96–001). In order to maintain and improve consistency, cost estimates should be based on the OAQPS CCM, where possible. The CCM addresses most control technologies in sufficient detail for a BART analysis. The cost analysis should also take into account any site-specific design or other conditions identified above that affect the cost." 70 FR 39166.

The guidelines for BART determinations make it clear that the CCM is the intended methodology for conducting a BART cost determination. It also states why: to maintain and improve consistency. However, the CCM does state that site-specific conditions should be incorporated. Site-specific conditions could include space constraints, or a design feature that could complicate installing a control. However, the BART Guidelines are clear that the analyst should document any deviations from the CCM: "You should include documentation for any

additional information you used for the cost calculations, including any information supplied by vendors that affects your assumptions regarding purchased equipment costs, equipment life, replacement of major components, and any other element of the calculation that differs from the CCM." 70 FR 39166.

In fact, the record does not point to any unusual circumstances that explain why SCR costs in Wyoming should be so much higher than costs of SCR at other similar facilities. As will be demonstrated in responses to comments that are specific to the individual units, the commenters did not identify any unique features of their plants that would make of the installation of an SCR so difficult that the cost would be outside the range of what has been experienced elsewhere, even accounting for such things as elevation, which is discussed later in these responses to comments. The BART Guidelines also provide the following explanation, which makes it clear that other cost methods are supplemental, not replacements for the CCM cost method: "We believe that the CCM provides a good reference tool for cost calculations, but if there are elements or sources that are not addressed by the CCM or there are additional cost methods that could be used, we believe that these could serve as useful supplemental information." 70 FR 39127.

Although the focus in the second quote is ensuring the remaining useful life is incorporated into the amortization schedule, this passage affirms that the CCM's annualized cost methodology should be followed. The following quote from the same page of the BART guidelines sheds light on the type of costing methodology employed by the CCM, "capital and other construction costs incurred before controls are put in place can be rolled into the first year, as suggested in EPA's OAQPS CCM." Although this passage is again focused on the remaining useful life, the text we reproduce is a reference to the basic CCM cost methodology - the

overnight method. That is what is meant with the reference of rolling future costs into the first year. The "all in" method that OG&E used does not do that—it projects costs to a future date. Although the CCM does not use the term, "overnight cost," it is widely used in industry.

The U. S. Energy Information Administration defines "overnight cost" as "an estimate of the cost at which a plant could be constructed assuming that the entire process from planning through completion could be accomplished in a single day. This concept is useful to avoid any impact of financing issues and assumptions on estimated costs."[140] In effect, the overnight cost is the present value cost that would have to be paid as a lump sum up front to completely pay for a construction project.

As will be described in EPA's other responses to comments regarding specific plants, commenters did not provide the documentation required under the RHR to demonstrate why their costs were so much higher than costs for other similar units. Such documentation would include any vendor quotes to include scope of supply, explanations of labor productivity issues with supporting documentation, and other concerns raised by commenters and addressed in more detail in other comments.

Comment: Sargent & Lundy is both a design and engineering firm and a system supplier, and it has provided exactly the type of detailed scoping-level engineering study for SCR contemplated by the CCM when selecting the most cost-effective NO_x control device. EPA acknowledges that with respect to SCR cost estimations, the CCM is no more than a "tool to estimate study-level costs for high-dust SCR systems." CCM section 2.4, page 2-40. For systems such as SCR, "the control in question is either so large or so site-specific in design that suppliers design, fabricate,

[140] EIA, "Updated Capital Cost Estimates for Electricity Generation Plants," November 2010, footnote. 2. Available at: http://www.eia.gov/oiaf/beck_plantcosts/?src=email

and construct each control according to the specific needs of the facility." *Id*. section 2.5.4.1, page 2-27. *See also id.* at section 2.3, page 2-30 ("the design is highly site-specific."). Importantly, the "[a]ctual selection of the most cost-effective option should be based on a detailed engineering study and cost quotations from the system suppliers." *Id*. at section 2.6, page 2-43.

The Sargent & Lundy Evaluation provides a cost estimate not based on the general, broad brush assumptions set forth as examples in the CCM, but on a conceptual design of SCR at Laramie River based on site-specific variables and Sargent & Lundy's extensive knowledge of, and experience with, SCR installations on coal-fired utility boilers. Based on this conceptual design, Sargent & Lundy estimated equipment costs using example vendor quotes for similar projects, and used appropriate commodity pricing references, rates for labor based on industry publications and locality-specific data, and, where necessary, allowances.

Response: As EPA has noted in previous responses to comments, the CCM is a good reference tool for estimating costs. With regard to Sargent & Lundy's estimates at Laramie River Station, EPA has found deficiencies in the cost estimates or underlying assumptions that will be discussed in more detail in comments that are specific to units.

Comment: One commenter asserted that the EPA's cost evaluations overestimated the annualized capital costs of BART options by assuming an unrealistically high interest rate, which is particularly extreme in the cost estimates for SCR because of its relatively higher capital costs than the other control technologies evaluated. The commenter calculated and submitted documentation of what the commenter considers to be the real cost of capital interest to PacifiCorp, which was 5.66 percent, and to Basin Electric, which was around 2 percent. According to the commenter, the EPA continues to assume a much higher 7 percent interest rate,

apparently based on the EPA's mistaken belief that this rate is supported by the CCM. The commenter stated that while the CCM states the social interest rate "is currently set at seven percent" by the Office of Management and Budget (OMB), it references the interest rate established by OMB in 1992, whereas the OMB updates interest rates yearly and the current social interest rate is 1.7 percent for a 20-year period (citing OMB Circular A-94, App. C (revised Dec. 2012)).[141] The commenter concluded that even if EPA were correct in applying the social interest rate, it should have used the current published OMB rate in accordance with the CCM's direction.

The commenter went on to contend that the CCM recommends a source-specific interest rate for BART and reasonable progress determinations, rather than the social interest rate applied in promulgation of regulations. According to the commenter, the 7-percent "social interest rate" is used to estimate the cost to society of taking an action. However, the CCM states that this social interest rate "is probably not appropriate for industry." The commenter noted that the RHR requires the EPA to make case-by-case determinations of "the costs of compliance" for identified BART and reasonable progress options, which the commenter interprets as being the actual cost to the source of implementing the studied alternatives. The commenter indicated that where the EPA, the state, or industry is evaluating "the economic impact that [air-pollution control] equipment would have upon the source," a source-specific interest rate is appropriate. The commenter concluded that the EPA erred in relying on a generic and outdated 7-percent social interest rate that resulted in a particularly inflated estimate of SCR costs, and asserted that in recalculating the annualized capital costs of control technologies, the EPA must either use the

[141] **http://www.whitehouse.gov/sites/default/files/omb/assets/a94/dischist-2013.pdf**

current social interest rate of 1.7 percent, or more appropriately, source-specific rates of 5.66 percent for PacifiCorp Units and 2 percent for Basin Electric Units.

Response: We have retained the use of a 7-percent interest rate in calculating the capital recovery factor. For cost analyses related to government regulations, an appropriate "social" interest (discount) rate should be used, not the source's actual rate of borrowing. OMB Circular A-4, providing Federal agencies guidance on developing regulatory analyses, and dated September 17, 2003, reiterates the guidance found in the earlier Circular A-94: "As a default position, OMB Circular A-94 states that a real discount rate of 7 percent should be used as a base-case for regulatory analysis. The 7 percent rate is an estimate of the average before-tax rate of return to private capital in the U.S. economy, based on historical data. It is a broad measure that reflects the returns to real estate and small business capital as well as corporate capital. It approximates the opportunity cost of capital, and it is the appropriate discount rate whenever the main effect of a regulation is to displace or alter the use of capital in the private sector."[142]

In addition, EPA calculated capital recovery factors using 3-percent and 7-percent interest rates in determining cost-effectiveness for the Regulatory Impact Analysis for the BART Guidelines.[143] The 3-percent rate is mainly used when private consumption displacement is the main impact of a regulatory action. This cost of retrofitting power plants for this action displaces private capital far more than private consumption, so 3-percent is not an interest rate that is applicable here. We consider our use of an interest rate of 7-percent to calculate capital recovery to be a conservative approach.

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[142] Office of Management and Budget, Circular A-4, Regulatory Analysis, **http://www.whitehouse.gov/omb/circulars-a004_a_4/.**

[143] "Regulatory Impact Analysis for the Final Clean Air Visibility Rule or the Guidelines for Best Available Retrofit Technology (BART) Determinations Under the Regional Haze Regulations", EPA-0452/R-05-004 (June 2005).

Finally, the interest rate cited by the commenter from Appendix C to OMB Circular A-94, 1.7 percent, is for an altogether different purpose than the type of regulatory analysis supporting today's rule. According to the discount rate policy described in Circular A-94, interest rates contained in Appendix C, which reflect Treasury borrowing rates, are for the purpose of internal planning decisions of the Federal Government. This is in contrast to regulatory actions, for which as noted above, the circular prescribes use of a "real discount rate of 7 percent."[144]

Comment: One commenter stated that the EPA used the IPM default cost for auxiliary power of $0.06/kWhr for all of the control scenarios evaluated, which is much higher than the auxiliary power cost commonly used in cost-effectiveness analyses. The commenter asserted that the appropriate cost of auxiliary power to use in a cost-effectiveness analysis is the busbar cost of power to run the plant, not the cost of power sold. According to the commenter, auxiliary power is the power required to run the plant, or power not sold, and cost-effectiveness analyses are based on the cost to the owner to generate electricity, or the busbar cost, not market retail rates. The commenter indicated that the site-specific data reported by PacifiCorp to the Federal Energy Regulatory Commission (FERC) in 2010 indicates that the busbar power cost for the Wyoming PacifiCorp plants is typically in the range of $0.02/kWhr to $0.03 lb/kWhr, and for Basin Electric's Laramie River Station, the company used a cost of $0.015/kWhr, which is consistent with the busbar power cost.

Response: In EPA's original analysis, we used the default values for electricity in the IPM model, although we agree that the cost of power used for auxiliary loads should be the cost of the owner to generate the electricity rather than the market price it could be sold at. EPA has

[144] http://www.whitehouse.gov/omb/circulars_a094#8.

reviewed FERC Form 1 for PacifiCorp[145] and has incorporated in our revised costs for each plant the stated cost of electricity per net kWh. For Laramie River Station, the costs in their July 2008 BART analysis[146] are used, as these are more consistent with PacifiCorp's reported cost of generation (as reported to FERC) than the values later used by Basin Electric or by EPA in our original cost analysis (that our proposed action was based on), which are more reflective of retail power prices rather than the cost to generate.

Comment: One commenter argued that the IPM model is not appropriate for generating site-specific cost estimates to evaluate the cost-effectiveness of BART projects because it does not account for those site-specific requirements that significantly impact overall project costs.

Response: As described in our proposal, the IPM is a multi-regional linear programming model of the U.S. electric power sector. IPM relies upon a very large number of data inputs and provides forecasts of least-cost capacity expansion, electricity dispatch, and emission control strategies for meeting energy demand and environmental, transmission, dispatch, and reliability constraints. EPA has used IPM to evaluate the cost and emissions impacts of proposed rules, such as the recent Mercury and Air Toxics Standard (MATS).[147]

We wish to clarify that, for our proposed action on Wyoming's Regional Haze SIP, we did not actually run IPM. Rather, we used information from one component of IPM, specifically, the component that develops the costs of air pollution control technologies. Broadly speaking, IPM relies upon numerous components and sub-components to specify constraints and

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[145] FERC Financial Report, FERC Form No. 1: "Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3Q: Quarterly Financial Report, PacifiCorp, Year/Period of Report 2010/Q4", pgs 402.2, 403, 403.2, see line 35.

[146] Black & Veatch, "Basin Electric Power Cooperative Laramie River Station Refined BART Visibility Modeling", July 24, 2008, pg 25 of 176.

[147] http://www.epa.gov/airmarket/progsregs/epa-ipm/docs/SuppDoc410MATS.pdf

variable values that feed into the model algorithms used during an actual IPM model run. The air pollution control cost development component is just one of these numerous components. We relied upon the cost information and equations contained in this component by manually placing them into a spreadsheet that calculated the capital, operating, and maintenance costs associated with pollution control options. While we relied upon the results of these spreadsheet calculations, we did not then use those results to run IPM, as the type of information generated by an actual IPM model run (e.g., generation dispatch decisions, capacity decisions) is not relevant to our action.

We documented our use of the equations from IPM's air pollution control technology cost component by placing the raw cost calculation spreadsheets in the docket for our proposal.[148] These spreadsheets contain the IPM equations, corresponding variable values, selected notes regarding assumptions and variable ranges, as well as selected tables from IPM Base Case v4.10 documentation. Because we did not perform an actual IPM model run, the spreadsheet and contractor's report in the docket for our proposal sufficiently document our use of the cost methodologies from the IPM air pollution control cost component.

We disagree with commenters' characterization of the cost-development methodology contained in IPM as generalized and inadequate for performing site-specific cost estimates. As noted in the documentation for IPM's cost-development methodology for SCR, the methodology is based upon two databases of actual SCR projects.[149] These databases include 2004 and 2006 industry cost estimates prepared for the Midwestern Ozone Group, and a proprietary in-house

[148] Wyoming EGU BART and Reasonable Progress Costs – 10/28/2013; Wyoming EGU BART and Reasonable Progress Costs for Jim Bridger – 10/28/2013.

[149] **http://www.epa.gov/airmarkets/progsregs/epa-ipm/docs/v410/Appendix52A.pdf**

database maintained by engineering firm Sargent & Lundy. The Midwestern Ozone Group information was cross-referenced with actual 2009 projects, and escalated accordingly. Sargent & Lundy then used the information in these databases to develop the equations described in the cost component, taking into account the pre-control NO_x emission level, degree of reduction, coal type, facility size, and numerous other unit-specific factors. While a costly engineering evaluation that included site visits in addition to use of satellite imagery might produce a more refined cost estimate, we disagree that our approach does not produce site-specific estimates. As noted by EPA in response to other comments, EPA's use of satellite imagery enabled us to evaluate each of the major site-specific issues raised by commenters.

Specifically, we input several site-specific factors, such as fuel type, baseline NO_x level, reagent cost and type, level of NO_x reduction, site-specific power and reagent costs, etc. into the algorithm. The algorithm also provides for adjustment of cost to account for retrofit difficulty. The CCM at section 2.5.4.2 (page 2-28 of Section 1 Chapter 2) calls for a retrofit difficulty factor to account for the site-specific costs associated with a retrofit, such as demolition or moving existing equipment, etc. A retrofit factor is also used in the IPM algorithm, making it consistent with the approach used in the CCM. Per the documentation for the IPM algorithms: "The formulation of the SCR cost estimating model is based upon two databases of actual SCR projects. The comparison between the two sets of data was refined by fitting each data set with a least squares curve to obtain an average $/kW project cost as a function of unit size. The data set was then collectively used to generate an average least-squares curve fit. The least squares curve fit was based upon an average of the SCR retrofit projects. Retrofit difficulties associated with an SCR may result in capital cost increases of 30 to 50 percent over the base model. The least squares curve fits were based upon the following assumptions: Retrofit Factor =1; Gross Heat

Rate = 9880; SO_2 Rate = < 3 lb/MMBtu; Type of Coal = Bituminous; Project Execution = Multiple lump sum contracts."[150]

Therefore, the IPM algorithm is based upon actual retrofit projects. As such, the average or typical retrofit found for the retrofit projects evaluated is assumed to use a retrofit factor of 1.0, and for more difficult than average retrofits, a retrofit factor greater than 1.0 would apply. On page 1 of the documentation of the IPM model for SCR, it states that "Retrofit difficulties associated with an SCR may result in capital cost increases of 30 to 50% over the base model." Therefore, EPA expects that retrofit difficulty factors may apply up to around 1.50 at the maximum. In effect, project elements that are typically included in an SCR retrofit are accounted for in the cost estimated by the algorithm, and deviations from those typical costs can be addressed by a retrofit factor. In fact, the algorithm *expressly* calls for a retrofit factor that can be varied (see Table 1 of reference, variable "B"), which makes it consistent with the retrofit difficulty factor method called for in the CCM. And, because the IPM algorithm is based upon actual projects, it already incorporates contingency. Finally, the IPM algorithm can be modified for other effects, such as elevation, and EPA has since examined this and modified its estimates in this final action to correct for the effects of altitude.

Comment: One commenter alleged that site elevation was not reasonably accounted for in EPA's cost estimates, particularly for PacifiCorp's Naughton Units 1 and 2 and Dave Johnston Unit 3. The commenter explained that algorithms in the IPM model were developed for a generic coal-fired power plant located at or near sea level. However, site elevation can have a significant impact on control system sizing and design. Thus, elevation of the site must be

[150] Sargent & Lundy, "IPM Model – Revisions to Cost and Performance for APC Technologies – SCR Cost Development Methodology, FINAL", August 2010.

considered separately and factored into the unit capacity (i.e. megawatts) accordingly due to its effects on the flue gas volume. The commenter pointed out that PacifiCorp's Wyoming BART units are located at elevations ranging from approximately 5,000 to 7,000 feet above mean sea level. At this elevation, flue gas flows will be 20-30 percent higher than similarly sized units at mean sea level. The higher flue gas flow requires larger ductwork, larger reactors, and more robust support structures, and these items have a profound influence on the overall project cost. While Wyoming had this information available in its SIP, EPA failed to account for site elevation in its FIP.

Response: EPA agrees with commenter that higher altitudes will increase the volume of flue gas, making it necessary to increase the cross-sectional area of associated ductwork and the SCR reactor. Increased flue gas volume also impacts the fan design. Consequently, EPA has revised its cost calculations for SCR in this final action to address issues associated with plant altitude. While altitude has a significant impact on the cost of SCR, it does not make a significant difference in the cost of SNCR because altitude does not affect the urea flow rate or the associated urea storage system, urea circulation system, or metering/mixing/pumping systems. There may be a slight increase in the number of injectors due to increased furnace cross-section, but this is expected to be a small part of the total cost of an SNCR system.

Comment: The same commenter argued that site configurations were not reasonably accounted for in EPA's cost estimates, particularly for the Naughton Units 1 and 2 and Dave Johnston Unit 3. The IPM model applies a retrofit factor to account for the difficulty of fitting new BART equipment into the existing site configuration. The Andover Report states that site visits were not possible. Thus, retrofit factors for Naughton Units 1 and 2, and Dave Johnston Unit 3 were determined based on a review of Google Earth™ images of the station. Accordingly, the

Andover Report applied retrofit factors for the units that are highly subjective based on minimal site information. The commenter argued that, when preparing site-specific cost estimates, site visits must be conducted to evaluate the true complexity associated with the retrofit and to assess specific modifications to the plant that would be required to overcome issues associated with congestion, as well as difficulties associated with construction. Neither Andover nor EPA sought permission from PacifiCorp to visit the sites of the BART units, nor did Andover explain why it "wasn't possible" to do so. Both Sargent & Lundy and Babcock and Wilcox have extensive experience with PacifiCorp's Naughton and Dave Johnston facilities. Just since 2005, Sargent & Lundy has been contracted by PacifiCorp to perform 14 projects at Dave Johnston station and over 25 projects at Naughton station. These projects range from site evaluations, studies, detailed engineering, or functioning as PacifiCorp's Owner's Engineer for major environmental retrofit engineer, procure, and construct projects. From having conducted many site visits at these stations, Sargent & Lundy is very aware of site-specific congestion and construction challenges that would affect SCR installations at Naughton Units 1 and 2 and Dave Johnston Unit 3. Similar to Sargent & Lundy's site-specific experience, Babcock and Wilcox has recently completed major environmental retrofit projects on Naughton Units 1 and 2 (wet scrubber additions) and Dave Johnston Unit 3 (dry scrubber and baghouse addition), making Babcock and Wilcox uniquely positioned to offer budgetary cost estimates for further retrofits to those facilities with significant first-hand knowledge. While Wyoming had much of this information available in its SIP, EPA failed to account for this site-specific information in its FIP.

Response: EPA disagrees with the commenter. EPA did account for site-specific factors when performing its cost estimates. Because SCRs are built on or next to the boiler structure, they are

often elevated, and there is usually equipment in one direction (the boiler) or the other (other air pollution control equipment, like an electrostatic precipitator (ESP), scrubber, or chimney) that limits access. This issue is complicated further with boilers that are located adjacent to one another – a common configuration. Due to the height of the SCR, large cranes play a vital role in their construction. The location of cranes next to where the SCR is going to be built can be difficult.

As noted in a paper by Babcock & Wilcox,[151] key issues for SCR constructability are site access and ability to locate a crane and the resulting erection sequence. The erection sequence is impacted by the crane that is available and whether it can fit on site because the crane and its location will limit the size of material that can be lifted into place. A larger crane allows for the lifting of larger pieces of ductwork, resulting in fewer lifts and less fabrication in the air. Without adequate access for a crane and proximity to a lay-down area for material, erection must be done with smaller pieces, which will require more labor and expense.

Access around and between the boilers will determine crane location and location of material receiving areas. In some cases, it may be necessary to demolish equipment or buildings in order to gain adequate access. In other cases, it may be necessary or preferable to erect cranes on the top of the boiler structure (as was performed for the SCR installed at Dominion's Brayton Point Unit 3).[152]

Because of its easy availability and it usefulness in providing a "bird's eye" view of the site congestion (how close equipment is located to each other, room for a crane, etc.), site access,

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[151] Hines, J.A., Kokkinos, A., Fedock, D., "Benefits of SCR Design for Constructability", Power Gen, International 2001, December 11-13, 2001, Las Vegas

[152] Wright, B., Erickson, C., Phillipo, M., "Keys to Success: SCR Installations at Dominions Brayton Point Units 1 and 3", Electric Power, May 2008.

local transportation options, availability of a lay-down area to locate material on site, and other limitations around the site, satellite imagery has become a very important tool in evaluating these site-specific factors. In fact, the major air pollution control original equipment manufacturers use satellite imagery to assist them in estimating site congestion issues, determining location of construction equipment and other limitations on and around the site in this way. Site visits are also useful, but are normally performed *in addition to* rather than *in lieu of* careful examination of satellite images. For example, in their comments to EPA in 2010, the Utility Air Regulatory Group used satellite photographs to demonstrate the relative difficulty of different SCR installations.[153]

While a site visit can be useful and provide additional information, assessing satellite imagery provides adequate information to determine access to the site, access around the boilers, availability of space for locating construction equipment and materials, and whether buildings or equipment must be demolished to make room for the equipment. Notably, the budgetary price provided to PacifiCorp from Babcock & Wilcox was not developed from a site visit. Per the cover page of the budgetary proposal, "[g]iven the budgetary nature of this request, we have not made site visits to consider layout options: instead, we have used available drawings and made necessary assumptions to enable us to establish a basis to derive quantities of material and associated costs."

For SCR installations, site visits and more detailed boiler drawings provide additional information regarding air preheater location and whether it must be relocated to make room for the SCR, or if ductwork limitations require demolition of other large pieces of equipment such as

[153] Cichanowicz, E., "Current Capital Cost and Cost-Effectiveness of Power Plant Emissions Control Technologies", Prepared for Utility Air Regulatory Group, January 2010.

ESPs. Such costs will significantly increase the cost of retrofitting an SCR. However, relocation of the air preheater or ESP was not identified as a concern by any of the commenters. Instead, most commenters raised retrofit issues that are commonly encountered in SCR retrofits, including location of SCR support steel and possible interferences with other equipment on site; penetration of boiler building by SCR ductwork; location of cranes for units that are side-by-side; the need for increased fan capacity and associated electrical modifications; and stiffening of ductwork due to increased pressure drop from SCR. As a result, the retrofit costs in the IPM algorithms that were developed from actual SCR projects should capture these more common retrofit issues and to the extent that some situations seem more difficult, can be addressed with retrofit factors.

In its cost estimates, PacifiCorp provided a long comparative table (over 100 rows with 25 columns of data) for Dave Johnston 3 and Naughton 1 and 2 showing different cost estimating methods. The table showed vendor budgetary pricing for Direct Capital Costs based upon a proposal from Babcock & Wilcox. While EPA accepts the proposal from Babcock & Wilcox as part of our final action, we have a few general comments. The proposal, while providing a detailed total scope of supply, provides a total cost for the project without line items. In addition, the items included under the Owner's scope by Black and Veatch are limited to: boiler modifications; air-preheater modifications; medium voltage power source; asbestos, lead, and polychlorinated biphenyls (PCB) remediation; commercial licenses and permits; and spare parts. Some of these costs, such as air-preheater modifications, will not be required, while others will have a small to modest impact on the overall cost. Notably, the cost estimate includes items like potable water systems, fire protection, service water, other assorted auxiliaries, as well as roads, fences, etc. Therefore, the proposal is close to being "turnkey" and includes nearly all costs for

the project. It also includes some items that would fall into the category of General Facilities. The proposal assumes that other modifications to the Naughton plant will result in abandonment of existing chimneys and ESPs on Units 1 and 2. Currently, these chimneys are in service. Babcock & Wilcox also determined that the existing fans are likely to be sufficient for the additional draft loss from the SCR. As was noted in the Andover Report, we think that there may be some substantial conservatism built into the Babcock and Wilcox estimate. For example, the proposal states that the offset of Naughton Units 1 and 2 is just enough to make it impractical to make a common structure for both SCR reactors. However, examination of the drawings in the proposal shows that Babcock & Wilcox has sized the ductwork to compensate for the offset so that the SCR reactors should be able to be supported with a common structure. Also, the proposal assumes that the abandoned stacks at both sites will be dismantled, although this does not appear to be necessary for Naughton Unit 2 and may not be necessary for Dave Johnston Unit 3 if shorter horizontal duct runs are used. Finally, comparison of the cost estimate provided by PacifiCorp for Naughton Unit 1 and 2, and Naughton 1 especially, to historical costs shows that the costs are well in excess of what other SCRs have cost. This is particularly perplexing because additional fan capacity is not needed, and it is not necessary to move the air preheater.

In light of the proposal and its fairly comprehensive scope of supply, PacifiCorp's capital cost estimate included a number of items that EPA is not including in our cost estimate, as noted below:

1. Process Contingency: Although the CCM permits a process contingency of 5%, in EPA's opinion this is not necessary today for SCR on coal-fired boilers firing the coals used in Wyoming. According to the Department of Energy's National Energy Technology

Laboratory,[154] "Process contingency is intended to compensate for uncertainty in cost estimates caused by performance uncertainties associated with the development status of a technology. Process contingencies are applied to each plant section based on its current technology status." According to the document, for commercially available technologies, process contingency could range from 0-10%.

When the CCM was issued in January 2002, SCR was commercially available but was only emerging in application on coal-fired utility boilers in the U.S. According to a study by Cichanowicz,[155] there was only about 13,000 MW of coal-fired capacity using SCR in the U.S. at the end of 2001, with nearly all SCRs installed in the prior two years, meaning that there was very limited long-term experience with SCR on coal-fired units. SCR usage on coal-fired boilers has since increased about ten-fold to about 130,000 MW of coal capacity (over 40% of all U.S. coal capacity), and is therefore a very well proven and well understood technology on a wide range of U.S. coals, including Powder River Basin coal. As a result, the process contingency for SCR on coal-fired utility boilers should be much lower today than what it was when the CCM was issued in January 2002, which was 5%. EPA believes that for SCR applications on utility boilers burning Powder River Basin coals (the Wyoming utility boilers), which are very well understood SCR applications, there should not be any need for process contingency.

2. Project Contingency: Because the cost estimates developed for PacifiCorp are already very conservative and based upon detailed estimates of the labor and materials to build the SCR, a 15% project contingency is excessive. According to the CCM at Section 1.1, Chapter 1, pages

[154] U.S. Department of Energy, National Energy Technology Laboratory, "Cost Estimating Methodology for NETL Assessments of Power Plant Performance", DOE/NETL-2011/1455, April 2011, pg 4.
[155] From data in Cichanowicz, J., Muzio, L., Hein, M., "The First 100 GW of SCR in the U.S., - What Have We Learned?" - 2006 Mega Symposium.

1-4: "The accuracy of the information in the Manual works at two distinct levels. From a regulatory standpoint, the Manual estimating procedure rests on the notion of the "study" (or rough order of magnitude - ROM) estimate, nominally accurate to within ± 30%. This type of estimate is well suited to estimating control system costs intended for use in regulatory development because they do not require detailed site-specific information necessary for industry level analyses."

The methods and cost elements of the CCM were adapted from the American Association of Cost Engineers, or AACE (CCM Section 1, Chapter 2, pages 2-5). AACE 16R-90[156] states that, "Project Contingency is included to cover the costs that would result if a detailed-type costing was followed as in a definitive-type study." According to National Energy Technology Laboratory (NETL), "AACE 16R-90 states that project contingency for a 'budget-type' estimate (AACE Class 4 or 5) should be 15% to 30% of the sum of [bare erected cost], [engineering, procurement, and construction] fees and process contingency."[157] AACE 18R-97 defines different classes of estimates, from Class 5 (least detailed) to Class 1 (most detailed).[158] The methodology used in the CCM falls into a Class 4 or Class 5, while the methodology used by PacifiCorp's contractor, Babcock and Wilcox, is clearly a far more detailed estimate that does not leave out any aspect of the project. Therefore, the project contingency factor is not applicable. The 15% project contingency factor in the CCM for SCR is based upon use of the cost-estimating method described in the CCM to develop the Total Direct Capital Costs. It is not intended to apply to a detailed estimate that:

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[156] AACE Recommended Practice, AACE 16R-90; *www.aacei.org/non/rps/18R-90.pdf.*
[157] U.S. Department of Energy, National Energy Technology Laboratory, "Cost Estimating Methodology for NETL Assessments of Power Plant Performance", DOE/NETL-2011/1455, April 2011, pg 5.
[158] AACE Recommended Practice, AACE 16R-87; *www.aacei.org/non/rps/18R-97.pdf.*

- Includes many cost items not explicitly included in the estimating method described in the CCM to develop the Total Direct Capital Costs and meant to be included in the 15% project contingency; and
- Already has substantial contingency built into it through conservative assumptions.

In fact, the CCM discusses the importance of not double-counting contingency in multiple places, such as retrofit factor and contingency: "Due to the uncertain nature of many estimates, analysts may want to add an additional contingency (i.e., uncertainty) factor to their estimate. However, the retrofit factor is a kind of contingency factor *and the cost analyst must be careful to not impose a double penalty on the system for the same unforeseen conditions.* Retrofit factors should be reserved for those items directly related to the demolition, fabrication, and installation of the control system. A contingency factor should be reserved (and applied to) only those items that could incur a reasonable but unanticipated increase but are not directly related to the demolition, fabrication, and installation of the system. For example, a hundred year flood may postpone delivery of materials, but their arrival at the job site is not a problem unique to a retrofit situation." (emphasis added). The CCM, therefore, explicitly anticipates that some analysts may, incorrectly, apply multiple contingencies for the same areas of uncertainty even when using the methods described in the CCM for estimating Total Direct Capital Costs.

Because the cost estimates developed for PacifiCorp are already very conservative and based upon detailed estimates of the labor and materials to build the SCR, rather than study-level estimates, they have double-counted both the costs that are intended by the CCM to be included in the project contingency when using the CCM method, plus they have added additional contingency in the form of conservative assumptions to address uncertainties in their estimate.

For this reason, a 15% project contingency is excessive, and we have not revised our cost estimates to include one.

3. General Facilities: The cost estimate from Babcock & Wilcox, submitted by PacifiCorp, includes several items that would fall into the category of General Facilities, and in order to avoid double-counting, EPA has not included an additional line item for General Facilities.

Comment: The same commenter suggested that the project-specific scopes were not reasonably accounted for in EPA's cost estimates, particularly for Naughton Units 1 and 2 and Dave Johnston Unit 3. Additional project-specific scope concerns (related to the addition of SCR on-site) include limited capacity of the existing induced-draft fans and auxiliary power system, as well as National Fire Protection Association-related equipment reinforcement requirements. Larger, more powerful, induced-draft fans may overload existing electrical systems, and the electrical systems may require significant modifications. Structural stiffening of the duct work, and equipment downstream of the boiler and upstream of the new fans may also be required by National Fire Protection Association regulations to operate at more negative pressures due to the installation of the SCR. These types of costs are not generally reflected in the base case IPM cost algorithms, but they must be taken into consideration in the development of a project-specific cost estimate. Wyoming had this information available in the Wyoming SIP, but EPA failed to account for this important cost information in its FIP.

Response: All SCR systems experience a pressure drop across the SCR, and therefore some consideration must be made to fan capacity for every SCR system. The algorithm used by EPA explicitly includes a "balance of plant" cost line item such as an allowance for additional fans

and auxiliary electrical work.[159] As for the duct stiffening, this is frequently necessary when new fans are installed. However, as noted in the proposal by Babcock & Wilcox, additional fan capacity is not expected to be necessary at Naughton Units 1 and 2 or Dave Johnston Unit 3.

Comment: The same commenter alleged that Owner's costs were not reasonably accounted for in EPA's cost estimates, particularly for Naughton Units 1 and 2 and Dave Johnston Unit 3. Owner's Costs include a variety of non-financial costs incurred by the owner to support implementation of the air pollution control project. Owner's Costs are project-specific, but generally include costs incurred by the owner to manage the project, hire and retain staff to support the project, and costs associated with third party assistance associated with project development and financing. Owner's Costs are real costs that the owner will incur during the project and are typically included in cost estimates prepared for large air pollution control retrofit projects. In fact, EPA's Coal Quality Environmental Cost (CUECost) model includes Owner's Costs (or "Home Office" costs) in its air pollution control system cost estimating workbook and interrelated set of spreadsheets. *See* CUECost Workbook User's Manual Version 1.0, prepared by Raytheon Engineers & Contractors, Inc. and Eastern Research Group, Inc., EPA Contract No. 68-D7-0001, Appendix B, pages B-3 and B-6. Wyoming had this information available in its SIP, but EPA failed to account for this important cost information in its FIP.

Response: Home office fees are Owner's costs, and these are accounted for in the CCM in the 10% allowance for Engineering and Owner's Costs. *See* CCM at Section 4.2, Chapter 2, page 2-44). As described in Table 2.5 of the CCM, engineering and home office fees represent 10% of purchased equipment costs. In this respect, we agree with the commenter's assertions that the

[159] Sargent & Lundy, "IPM Model – Revisions to Cost and Performance for APC Technologies – SCR Cost Development Methodology, FINAL", August 2010, Table 1, pg. 5.

CCM does discuss some of the items that roll up into these line items. For example, the CCM does provide for "Engineering and Home Office Fees" that includes the home office and plant support costs described in the comments. We have included the portion of Owner's Costs/Surcharge in the total cost, up to the value specified for "Engineering and Home Office Fees" indicated by the CCM, which is 10%.

The cost factors used in the CCM include home office fees in the 10% that is applied to engineering fees; however, the line item for Owner's Cost in the IPM estimate was made zero. The reason Owners Cost was removed is that the CCM includes owner's cost with the 10% for engineering and home office fees. A 10% engineering charge was already applied and therefore an additional allowance for home office fees would be greater than the cost allowed under the CCM. Even if that cost were added at a 5% rate, it would increase capital cost by 5%. This difference would not change the determination.

Comment: The same commenter argued that regional labor concerns were not reasonably accounted for in EPA's cost estimates, particularly for Naughton Units 1 and 2 and Dave Johnston Unit 3. Regional labor concerns are not accounted for in the IPM model. Regional labor characteristics must be taken into consideration in a site-specific cost estimate to account for factors including labor availability, project complexity, local climate, and working conditions. Because the Naughton and Dave Johnston facilities are in relatively remote locations, higher labor rates must be paid to attract the kind of skilled workers required to construct an SCR project. In addition, the locations are subject to extreme cold and wind that can result in significant productivity and construction challenges and delays, adding to the overall project cost. Wyoming had this information available in its SIP, but EPA failed to account for this important cost information in its FIP.

EPA's flawed analyses of incomplete "new" cost information directly resulted in EPA's proposed requirements for PacifiCorp to install SCR on Naughton Units 1 and 2 and Dave Johnston Unit 3. In contrast, to be responsive to EPA's request for additional information, PacifiCorp has solicited budgetary project-specific cost information from Babcock and Wilcox, an active and uniquely positioned competitive market participant for SCR technology, for these same units. In conjunction with Sargent & Lundy's expertise, PacifiCorp has incorporated the site-specific budgetary cost information from Babcock and Wilcox into updated EPA CCM side-by-side comparisons with the Andover Report results to further demonstrate the inaccuracies in the new cost information developed by EPA. (The following included tables to summarize the results of these comparisons.) It is important to note that PacifiCorp has utilized a 20-year remaining equipment life and has excluded AFUDC from the results in the tables for comparison purposes.

As demonstrated by the results in the tables, EPA significantly understated costs per ton of pollutant removed. As such, EPA based its cost-effectiveness conclusions on significantly inaccurate information. Before taking any final action on the proposed FIP, EPA must consider in its final BART analyses the additional cost information being provided by PacifiCorp.

Response: EPA disagrees with this comment. The commenter claims that remote locations require offering higher wage rates and that conditions at the site, including inclement weather, reduce worker productivity. Because the commenter claims that these are important factors that impact cost, the commenter should have provided data to support its assertions. The commenter did not provide any data to demonstrate that wage rates in the area near its facilities are higher than in more populated areas. The commenter also did not provide any specific productivity factors or other evidence to show how the commenter arrived at its man-hour estimates or

explain how those estimates differ from a normal productivity. Without such information, EPA cannot review and validate the commenter's claims that labor productivity is low or that labor cost is high.

On the other hand, labor rates for union construction labor are available from the Construction Labor Research Council (CLRC),[160] and these rates are consistently well below what appears to have been assumed in the itemized estimate provided with Basin Electric's comments. The difference is too large to be explained by per diem. Because both Basin Electric and PacifiCorp used Sargent & Lundy to prepare their cost estimates, it is reasonable to assume that both companies have made similar assumptions. Moreover, in addition to the high labor rates assumed, there are additional line item costs for overtime and per diem. As a result, the estimates provided by commenters appears to incorporate additional costs or provisions well beyond the normal costs both in the labor rates and in the line item for additional labor costs.

While EPA welcomes the use of SCR vendor estimates, such as those used by PacifiCorp, or engineering estimates, such as those provided by Basin Electric, specific details supporting the estimates must be provided in order for them to be useful. Without details on the scope of supply, the estimates cannot be used as a reliable source of information because vendor scope could potentially be in error or could be duplicative of other costs included in the estimate elsewhere.

With regard to adjustment for regional labor concerns, neither PacifiCorp nor Basin Electric's submittals were satisfactory. Deficiencies in Basin Electric's submittal with regard to regional labor concerns are addressed elsewhere in these responses to comments. The proposal

[160] Construction Labor Research Council Union Wages and Supplements, available from the National Construction Boilermaker Employers website, www.nacbe.com.

from Babcock & Wilcox, while showing a total lump sum price, did not demonstrate how they factored in regional labor concerns.

Comment: The IPM methodology relied upon in the Andover Report is inconsistent with the assumptions set forth in the CCM. While EPA states that its revised cost analyses "followed the structure of the EPA CCM," EPA acknowledges that "we have largely used the Integrated Planning Model cost calculations to estimate direct capital costs and operating and maintenance costs." 78 FR 34749. *See also* Andover Update ("In estimating the costs of controls, the following were considered: IPM Cost Models, US EPA Air Pollution CCM."). The IPM model is a regulatory model that uses cost algorithms developed by Sargent & Lundy to estimate system-wide costs of air pollution technology for adoption of national regulations. The inputs in the IPM model do not conform to the methodology set forth in the CCM, and neither Andover nor EPA offers any explanation for the discrepancies. This failure epitomizes the arbitrary and capricious nature of EPA's decision making.

A careful reading of the Andover Report evidences that Andover only followed the CCM on a limited basis, and in doing so, read into the CCM requirements that are non-existent, while ignoring wholesale many of the CCM's recommendations. The following language from the report illustrates the concern: "The BART Guidelines recommend use of the EPA Air Pollution CCM, and the methodology used here for estimating costs is consistent with the recommendations in the manual, such as inclusion of taxes, insurance and administrative costs, and the use of overnight cost for capital cost."

As an initial matter, the CCM does not anywhere recommend the use of "overnight cost" for estimating capital costs. *See* Section XI.B.3. The overnight approach assumes construction of a project "overnight," which means a party would not incur any interest charges, including

AFUDC, or experience any cost escalations. While a "constant dollar approach" may be read to exclude escalation, the CCM does not recommend that users assume that the interest costs related to constructing a capital-intensive, multi-year project will cost the same as an off-the-shelf control technology that can be installed in a day. Furthermore, based on the acknowledgment in its report, Andover appears only to have followed the methodology set forth in the CCM in these three limited respects. In all other respects, Andover relied on the IPM cost algorithms for its SCR estimate, without regard to the CCM. For SNCR capital costs, Andover relied on an assumed $20/kW cost rather than using the IPM algorithms or the methodology set forth in the CCM.

The high-level cost algorithms in the IPM model and the assumed $20/kW capital cost for SNCR resulted in a substantial underestimate of the costs of designing and constructing both the SCR and SNCR systems. For example, the only inputs to the IPM cost modules are unit size, heat input, fuel type, and NO_x removal efficiency. The CCM uses these inputs, but also provides for using SCR design parameters, such as flue gas flow rate, actual stoichiometric ratio (the amount of reagent needed to achieve target NO_x emissions), space velocity and area velocity (a measure of flue gas resident time in the SCR reactor), catalyst volume, SCR reactor dimensions, and reagent consumption. The CCM methodology includes similar design parameters specific to SNCR, which the IPM model does not include and which Andover did not consider in its cost estimate.

Andover also used the IPM model to calculate indirect capital costs in the SCR cost estimate. The IPM model includes in its indirect capital cost algorithm factors for Engineering and Construction Management, Labor, and Contractor Profit/Fees. Andover removed from the IPM capital cost calculation both Owner's Costs and AFUDC. Moreover, the IPM Model does

not include a number of other inputs that are included in the CCM, including preproduction costs, inventory capital, and initial catalyst costs, and Andover did not adjust the model to incorporate these additional costs. Andover's selection of certain IPM model inputs and exclusion of inputs in the CCM resulted in the substantial underestimation of the indirect capital costs necessary to design and install an SCR system.

For SNCR, Andover arbitrarily assigned a capital cost of $20/kW, without using the IPM algorithms or performing an analysis of direct and indirect costs consistent with the CCM. Andover relied on the IPM model to calculate operating and maintenance costs except for urea reagent costs for SNCR, which uses factors that differ from those recommended in the CCM and costs utilized by Sargent & Lundy. The model's simplistic treatment of catalyst costs, for example, is inconsistent with the recommendations in the CCM and underestimates annual catalyst replacement costs for SCR and for SNCR. For SNCR, Andover adjusted the urea utilization rate from the IPM model without explanation, which cut in half estimated annual urea costs. Andover also assumed urea would be used as the reagent for SCR, which increased reagent costs above those calculated by Sargent & Lundy based on the use of anhydrous ammonia.

Neither Andover nor EPA explains why the cost estimate uses only limited portions of the CCM, or why Andover believes use of the IPM cost methodology is somehow more representative of the costs of control that would be incurred by Basin Electric for installation of SCR and SNCR systems. It is inherently contradictory, and therefore arbitrary and capricious, for EPA to base its proposed disapproval of Laramie River BART on the alleged failures of Wyoming to follow the CCM, while at the same time relying on a consultant's report that does not comply with those same standards.

Response: EPA disagrees with the commenter. The methodology used by EPA is consistent with the CCM for the following reasons: 1) EPA used the overnight cost method, which excludes certain cost elements such as AFUDC; 2) The comparative nature of BART costs makes use of the IPM algorithms a reasonable approach; and 3) as demonstrated in the Exhibit 14 of Basin Electric's comments, use of the cost equations in the CCM would have actually resulted in lower costs than predicted by the IPM algorithms.

Moreover, both the IPM algorithms and Sargent & Lundy's estimates for Basin Electric are empirically based from data collected at other projects. According to page 21 of Exhibit 14 to Basin Electric's comments: "…Cost estimates prepared for LRS are based on equipment costs and budgetary quotes available from similar projects and Sargent & Lundy's experience with the design and installation of retrofit SNCR and SCR control systems. The LRS cost estimates are conceptual in nature; thus, Sargent & Lundy did not procure equipment quotes specifically for the LRS control systems. Rather, equipment costs for the LRS projects are based on conceptual designs developed for the control systems, preliminary equipment sizing developed for the major pieces of equipment, and recent pricing for similar equipment…" As a result, the estimates provided by Basin Electric are not more valid than those developed by EPA.

Commenter claims that AFUDC should be included in the cost analysis. As described in our responses to other comments, the CCM explicitly excludes AFUDC from control costs, and EPA's estimates were correct in excluding AFUDC. This is central to the overnight cost methodology.

Commenter is critical of EPA's method for estimating SNCR capital cost. With regard to SNCR cost methodology, the cost of SNCR is driven primarily by the operating cost. Capital cost has a small effect on total cost of SNCR. Therefore, a simplifying assumption that yields a

reasonable estimate of capital cost will result in an annualized cost accurate to within ± 30%. Based upon input from technology vendors on cost for other units[161] and based upon the fact that EPA's contractor Andover has over 25 years of direct experience designing, specifying and optimizing SNCR systems, $20/kW was a very reasonable estimate. EPA's contractor also reviewed the SNCR algorithms developed by Sargent & Lundy for EPA and is of the opinion that in most cases $20/kW provides a better estimate than the IPM algorithm because the IPM algorithm assumes greater economies of scale than generally exist in SNCR applications.

On the other hand, as will be described later in this response, the high reported furnace temperature at Basin Electric's Laramie River Station means that SNCR will require a more complex injection system and will have a higher urea injection rate than what is typical for most SNCR systems. For this reason EPA has accepted the capital cost of SNCR estimate provided by Basin Electric. In any event, SNCR capital cost generally has a small effect on cost compared to operating cost.

Commenter is critical of EPA's use of the IPM algorithm as not utilizing the same input design parameters. As described in other responses to comments, the IPM algorithm for SCR incorporates either directly or by inference all of the inputs the commenter has raised. But, commenter is incorrect about some of the claimed inputs. Stoichiometric ratio, space velocity, area velocity, catalyst volume, SCR reactor volume, and reagent consumption are not inputs to an SCR design, but are all direct results of design calculations using the inputs of initial NO_x level, final NO_x level (and by inference percent reduction), unit size, heat rate, and fuel characteristics – all inputs to the IPM model. Gas flow rate is also normally calculated based

[161] E-mail from Alex Dainoff, Fuel Tech, to James Staudt, Andover Technology Partners, Wednesday, June 27, 2012.

upon fuel type, unit size and heat rate – again, IPM inputs. The IPM model therefore directly develops SCR reactor cost based upon all of the same inputs, but using algorithms based upon a database of the cost of actually constructed units. Other costs, such as preproduction costs and initial inventory of ammonia are incorporated into the capital costs. In any event, these are very small portions of total cost. Initial catalyst cost is incorporated into the direct capital costs of the project in the IPM estimate, and in any event, initial catalyst cost is typically a very small portion of total capital cost.

Commenter is critical of EPA's treatment of the associated costs for replacement catalyst. Regarding treatment of catalyst cost, EPA's approach is reasonable, factoring in the NO_x reduction, coal, facility size, capacity factor, and catalyst cost – all of the same factors that impact catalyst replacement cost. PacifiCorp, on the other hand, uses excessive catalyst replacement costs. PacifiCorp's use of $290/ft3 for replacement catalyst cost equates to $10,422/m3. This is nearly double the current cost of new catalyst. The difference cannot be accounted for in the labor to install catalyst, which is a very small fraction of the catalyst cost.[162] Moreover, replacement catalyst is frequently regenerated catalyst which costs roughly half the cost of new catalyst. EPA conservatively assumed new catalyst at roughly $5,500/m3,[163] when in fact most catalyst replenishments will likely be at a much lower cost due to the extensive availability of regenerated catalyst. As a result, EPA's catalyst costs are much more reasonable and are in fact, conservative in light of the availability of regenerated catalyst.

[162] From data in Cichanowicz, J., Muzio, L., Hein, M., "The First 100 GW of SCR in the U.S., - What Have We Learned?" - 2006 Mega Symposium, page 4.
[163] Cichanowicz, J.E., "Current Capital Cost and Cost-Effectiveness of Power Plant Emissions Control Technologies" Prepared for, Utility Air Regulatory Group, January 2010.

Commenters are critical of EPA's estimates of SNCR reagent consumption. Because of the importance of reagent consumption on SNCR system capital and operating cost, chemical utilization is an important factor. Utilization is a measure of how efficiently the SNCR reagent reduces NO_x. With SNCR, NO_x reduction does not occur on a one-for-one basis as reagent is added because a portion of the chemical introduced does not contribute to NO_x reduction. The utilization of reagent (normally urea) declines as temperature (or carbon monoxide concentration) increases because more of the urea becomes oxidized (forming NO_x), which reduces the amount of reagent available for the NO_x reduction reaction. The net difference between the amount of NO_x reduced and the amount of NO_x formed equals the overall reduction in NO_x, and at a sufficiently high temperature, NO_x can actually increase as urea is injected. Hence, furnace temperature is a critical parameter in determining utilization.

Chemical utilization is equal to the percent NO_x reduction divided by the treatment rate, expressed in terms of Normalized Stoichiometric Ratio. The IPM model assumes a default chemical utilization rate of 15%. Commenter states that Andover adjusted the urea utilization rate in the IPM model without explanation. On the contrary, on page 3 of its memo, Andover provided actual utility data and explained why 25% was a more common utilization rate for utility boilers. Chemical utilization is a strong function of furnace temperature, and because chemical consumption is the single largest expense associated with SNCR, using an incorrect chemical utilization will lead to large discrepancies in cost.

Commenter states that the furnace exit gas temperature is 2710°F. While EPA suspects that this may be in error (high), it is the data provided by the company. If this temperature is correct, SNCR may only be marginally effective. Sargent & Lundy estimated a chemical utilization of 12%, which is possibly optimistic. Information from Fuel Tech, the leading

supplier of SNCR technology, stated that at the unusually high furnace exit temperature of 2500°F, well below 2710°F assumed by Sargent & Lundy, a 25% reduction was possible at a particular facility from a similar NO_x baseline with a Normalized Stoichiometric Ratio of 1.75 (utilization of 14.3%). Hence, EPA will accept the 12% utilization and 20% NO_x reduction assumed by Sargent & Lundy for Laramie River Station.[164]

The model in the IPM, which was developed by Sargent & Lundy, assumes a utilization rate of 15%, which Andover's data, as well as Fuel Tech's input, demonstrates is too low for most facilities. It is therefore a very conservative estimate of chemical utilization. In fact, Andover reviewed Sargent & Lundy's model when it was developed for EPA and Sargent & Lundy did not provide any supporting data regarding the assumed utilization rate at that time. However, in light of the high assumed furnace temperature at Laramie River Station, EPA is assuming a 12% chemical utilization at a 20% NO_x removal rate for those units.[165]

On the other hand, in the October 28, 2013 memo by Andover for EPA, test data for utility boilers was provided showing that 25% is a more reasonable utilization rate for most units. Moreover, Andover's principal has conducted numerous electric utility SNCR optimization programs, among them are programs described in referenced papers, which makes him qualified to make this determination.[166, 167, 168] So, in applications where more typical furnace temperatures are expected, a chemical utilization rate closer to 25% can be reasonably assumed.

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[164] E-mail from Alexander Dainoff to Jim Staudt, June 27, 2012.
[165] Exhibit 16 to Basin Electric comment, page 25
[166] Staudt, J., Casill, R., Tsai, T., Ariagno, L., "Commercial Application of Urea SNCR for NO_x RACT Compliance on a 112 MWe Pulverized Coal Boiler", 1995 EPRI/EPA Joint Symposium on Stationary Combustion NO_x Control, Kansas City, May 16-19, 1995.
[167] Staudt, J, Hoover, B., Trautner, P., McCool, S., Frey, J., "Optimization of Constellation Energy's SNCR System at Crane Units 1 and 2 Using Continuous Ammonia Measurement", The MEGA Symposium, Baltimore, MD, August 31-September 2, 2010.

It is also likely that, in light of the higher furnace exit temperature at Laramie River Station, it will be necessary to utilize a more complex and costly injection system that requires injection of urea into convective regions of the furnace using multiple-nozzle lances in addition to the more typical wall injectors. For this reason, EPA is accepting the capital cost developed by Sargent & Lundy for Basin Electric of $16.9 million per unit.

Regarding the reagent used for SCR, as the commenter points out, EPA's initial estimates assumed that urea would be used as the feed reagent for SCR, which results in a higher reagent cost than for anhydrous ammonia. Because commenters have indicated that anhydrous ammonia will be used as a reagent rather than urea, EPA's revised estimates assume ammonia as a reagent. This will result in lower reagent costs. EPA is also using anhydrous ammonia costs provided by Potash Corporation instead of the value provided by the utility.[169] The cost used by EPA represents the actual delivered cost of anhydrous ammonia, as quoted by a major reagent supplier.

Basin Electric provided a site-specific estimate. EPA generally supports the use of vendor quotes and site-specific estimates but only as used within the parameters of the overnight cost methodology and the CCM. The BART Guidelines, are clear that "[y]ou should include documentation for any additional information you used for the cost calculations, including any information supplied by vendors that affects your assumptions regarding purchased equipment costs, equipment life, replacement of major components, and any other element of the calculation

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[168] Staudt, J.E., Kehrer, K., Poczynec, J., Cote, R., Pierce, R., Afonso, R., and Sload, A., "Optimizing Selective Non-Catalytic Reduction Systems for Cost-Effective Operation on Coal-Fired Electric Utility Boilers", presented at ICAC Forum '98, Durham, March 1998.
[169] E-mail from Potash Corporation to Andover Technology Partners, September 27, 2013.

that differs from the CCM." [170] When supporting documentation to site estimates are not provided, assumptions based upon these cannot be considered.

Much of the documentation owners cite to support additional costs were not provided to us. For instance, although Basin Electric provided a table that listed their cost line items, this spreadsheet (in pdf format), over 600 lines in length (and including line items such as 4" gravel surfacing and chain link fence), was stripped of all cell calculations, preventing any meaningful review.

There was also inadequate explanation for how man-hour rates were developed. For example, current union boilermaker rates for Lodge 101 (Denver) range from $57.62 per hour for a Journeyman to $60.12 per hour for a Foreman, with apprentices at lower rates.[171] The CLRC reports similar union boilermaker rates in the Mountain-Northern Plains area at $56.59/hr for July 2013.[172] For non-union boilermakers, the cost is expected to be less. Yet, for tasks that appear to be for boilermakers (ductwork) rates of $90.79 per man-hour are used.[173] This is a large unexplained difference in cost. It may be that part of it is per diem ($55/day for over 70 miles and $70/day for over 120 miles per Lodge 101 information), but per diem does not explain the full difference. Per diem, however, is also provided as a separate cost later in the estimate, making the high labor rate more difficult to explain. Some portion may be for overtime, but there is no explanation provided (overtime is also added as a separate line item later in the estimate). Without an explanation it is not possible to evaluate these costs, which clearly deviate

[170] 70 FR 39166, footnote 15.
[171] Wage & Benefit Information, Western States Field Constructions Bargaining Agreement, Effective January 1, 2013 through September 31, 2013.
[172] Construction Labor Research Council Union Wages and Supplements for the Period 07/01/2008-07/01/2013. Available from the National Association of Construction Boilermaker Employers website: www.nacbe.org.
[173] Appendices to Exhibit 14. Page 6 of SCR estimate (pdf page 43).

from publicly available costs for labor. In addition to not providing the necessary required supporting documentation, Basin Electric did not follow the overnight cost methodology. Thus, Basin Electric has failed to meet the test that is required to support deviations from the CCM.

Comment: The IPM methodology relied upon in the Andover Report is inconsistent with the BART Guidelines. The Guidelines require that to conduct a cost analysis, a state must "[i]dentify parameters" for emission control and then "[d]evelop cost estimates based upon those design parameters." 70 FR 39166. The cost analysis includes development of "estimates of capital and annual costs," based on the CCM "where possible," but "tak[ing] into account any site-specific design or other conditions identified above that affect the cost of a particular BART technology option." *Id*. Andover failed to adhere to the methodology set forth in the CCM "where possible." More importantly, however, Andover neither followed the three-step process in the BART Guidelines for estimating costs of compliance nor appropriately considered the critical site- and project-specific variables that affect the cost of both SCR and SNCR at Laramie River. EPA's failure to comply with its own Guidelines results in an inaccurate cost estimate that should not form the basis of a BART determination.

Response: EPA disagrees with the commenter. The three step process was followed for all cost estimates for affected Wyoming units. The three-step process requires that states (or EPA): 1) Identify the emissions units being controlled; 2) Identify design parameters for emission controls; and 3) Develop cost estimates based upon those design parameters. The BART affected units were already identified by the State and confirmed by EPA, which addresses step one.

Andover clearly identified design parameters that are included in the spreadsheets associated with the memo under the tab "Plant Data Summary". This includes plant data such as

fuel, capacity, capacity factor, heat rate, baseline and controlled NO_x level, retrofit factor and firing configuration. These parameters are directly used in the cost analysis that developed capital and annual costs. Andover performed the cost estimates as described in the spreadsheet. Andover considered site and project-specific parameters as described in other responses to comments.

Commenters may disagree with the cost methodology used by EPA, and our response to comments regarding the cost methodology used is in other responses; however, there is no question that EPA followed the three-step process.

Comment: The IPM methodology relied upon in the Andover Report is inconsistent with the three-step process in the BART Guidelines for estimating costs of compliance. The three-step process in the BART Guidelines requires: 1) identification of emission units being controlled; 2) identification of design parameters for emission controls; and 3) development of cost estimates based on those design parameters. 70 FR 39166. The Andover Report did not adequately define the emission units being controlled, failed to identify appropriate site-specific design parameters that affect cost and performance of these controls; and developed cost estimates that are neither technically indefensible nor representative of the costs of SCR and SNCR systems at Laramie River.

Andover's reliance on the overly simplistic IPM model precluded an appropriate BART analysis. First, because the IPM cost algorithms are designed to provide high-level system cost, Andover used generalized information regarding design and baseline operating conditions at the Laramie River boilers to identify the emission units to be controlled. Second, because the IPM model includes only four inputs, Andover's cost analysis could not account for unit-specific

operating parameters that affect both design of the control system and the attendant costs of installing the controls.

As a result, the Andover Report failed to comply with the requirement in the BART Guidelines that cost estimates account for site-specific variables. 70 FR 39166. The site-specific design and operational variables have an important effect on the costs of NO_x control technologies at Laramie River, particularly the installation of SCR. Finally, because Andover used generic inputs to an overly simplistic model, the resulting cost estimate is not technically defensible. As Sargent & Lundy opined "[b]ased on our evaluation of the Andover cost estimates, it is our opinion that cost estimates prepared by Andover are not reflective of the costs BEPC would incur to install air pollution control systems on LRS Units 1, 2, & 3, and that control technology costs included in the February 7, 2013 Andover Report should not be used to determine BART for the Laramie River generating units."

Response: EPA disagrees with the commenter. The three step process requires that states (or EPA): 1) Identify the emissions units being controlled; 2) Identify design parameters for emission controls; and 3) Develop cost estimates based upon those design parameters.

Commenter states that "The Andover Report did not adequately define the emission units being controlled, failed to identify appropriate site-specific design parameters that affect cost and performance of these controls; and developed cost estimates that are neither technically indefensible nor representative of the costs of SCR and SNCR systems at LRS." However, the BART affected units were clearly identified and defined in the analysis. The units are identified and described in the memo and the associated spreadsheets.

EPA's contractor clearly identified design parameters that are included in the spreadsheet associated with the memo under the tab "Plant Data Summary". This includes plant data such as

fuel, capacity, capacity factor, heat rate, baseline and controlled NO_x level, retrofit factor and firing configuration. These parameters are directly used in the cost analysis that developed capital and annual costs. This is the very same data as used by Sargent & Lundy in their analysis, except that EPA did not correct for elevation, which EPA is correcting in this response to comments and calculations.

Andover then performed the cost estimates as described in the spreadsheet using algorithms developed by Sargent & Lundy that utilize the same inputs as used by Sargent & Lundy in their analysis for commenters. Other than a site visit and an adjustment for elevation, commenters have not identified any other inputs that they used that are different or not the direct result of the inputs utilized by EPA. With this response to comments EPA is correcting cost estimates for elevation and EPA has provided detailed comments regarding how site characteristics were addressed using available satellite imagery and why this is a valid approach for providing estimates that are acceptable for BART analysis.

We disagree with commenter's characterization of the cost development methodology contained in IPM as generalized. As noted in the documentation for IPM's cost development methodology for SCR,[174] the cost estimate methodology is based upon two databases of actual SCR projects. These databases include 2004 and 2006 industry cost estimates prepared for the Midwestern Ozone Group, and a proprietary in-house database maintained by Sargent & Lundy. The Midwestern Ozone Group information was cross-referenced with actual 2009 projects, and escalated accordingly. Sargent & Lundy then used the information in these databases to develop the equations described in the cost component taking into account the pre-control NO_x emission level, degree of reduction, coal type, facility size, and numerous other unit-specific factors.

[174] http://www.epa.gov/airmarkets/progsregs/epa-ipm/docs/v410/Appendix52A.pdf

While a costly engineering evaluation that included site visits in addition to our use of satellite imagery would potentially produce a more refined cost estimate, we disagree that our approach has produced cost estimates that do not adequately address site-specific issues. As noted by EPA in our responses related to satellite imagery, EPA's use of satellite imagery enabled us to evaluate each of the major site-specific issues raised by commenters.

Comment: The Andover Report fails to consider site-specific conditions as required by the BART Guidelines. The BART Guidelines and the CCM emphasize the importance of taking into account site-specific conditions in developing a cost estimate, particularly with respect to construction of SCR. 70 FR 39166 (cost estimates should "into account any site-specific design or other conditions . . ."). See also CCM section 2.4, page 2-40 (with respect to SCR, "[a]ctual selection of the most cost-effective option should be based on a detailed engineering study and cost quotations from system suppliers."); *id.* section 2.5.4.1, page 2-27 ("Manual deviates from its standard approach of providing study level costs [for SCR] and, instead, provides a detailed description of the factors" influencing costs). Yet as Andover acknowledges in its report, its engineers did not visit Laramie River and had no engineering plans, process flow diagrams, or other site-specific information regarding Laramie River when it developed EPA's cost estimate. The only information Andover collected regarding the site was the generating capacity of the station, annual heat input for a baseline period, NO_x emission rates for certain years, and the type of coal burned. As a result, Andover's cost estimation methodology fails to comply with the BART Guidelines or follow the methodology recommended by the CCM, and the final estimate radically underestimates the cost for SCR and SNCR at Laramie River Station.

Moreover, Andover's use of the IPM model compounded its failure to review site-specific considerations relevant to costing SCR or SNCR at Laramie River Station. Indeed, the

fact that the model has only four input parameters, and does not take into account other site-specific parameters that are required by the BART Guidelines and recommended by the CCM, renders any resulting cost estimate both technically and legally deficient. As noted by Sargent & Lundy, which developed the IPM algorithms for SCR and SNCR, "[b]ecause of the limited number of site-specific inputs, the IPM cost algorithms provide only order-of-magnitude control system costs, and do not provide case-by-case project-specific cost estimates meeting the requirements of the BART Guidelines."

By relying on the IPM model, Andover deliberately skirted the issue of site-specific conditions, other than the most generic inputs of unit size, heat rate, coal type, and a retrofit factor. The Andover Report describes the retrofit factor in such a way as to emphasize its site-specific nature, and yet makes no attempt to carefully analyze the site-specific variables inherent in the application of the retrofit factor: "The retrofit factor is a subjective factor used to account for estimated difficulty of the retrofit that is unique to the facility. Because site visits were not possible, the retrofit factor was estimated from satellite images that provide some insight to the configuration of the units and degree of congestion around the site and in the vicinity of where the SCR would be installed. These factors impact the ability to locate large cranes on the site – that impact how the SCR is assembled (are large sections lifted into place or is the SCR "stick built"), how much duct work is needed, if the SCR must be built onto a large, elevated steel structure or can be built near the ground, and if other equipment must be relocated to accommodate the space of the SCR."

The Andover Report never provides any analysis of these site-specific factors in determining the appropriate retrofit factor for Laramie River. Andover merely notes that the difficulties of retrofitting an SCR unit at Units 1 and 3 is "average," and applies a retrofit factor

of 1.0 to Units 1 and 3. Andover does note that retrofit at Unit 2 will be more difficult and added an adjustment for retrofit difficulties at Unit 2, but with no explanation of what unique site-specific conditions contributed to the factor. Instead, the report notes "a modestly higher SCR retrofit difficulty factor is assumed for Unit 2 because access will be poorer than for Units 1 or 3." In sum, Andover makes no adjustments for Units 1 or 3 and accords a 20% cost retrofit factor to Unit 2, though it had previously noted that "when using the IPM Capital Cost Model, retrofit difficulties associated with an SCR may result in capital cost increases of 30% to 50% over the base model." Thus, even when it accords a retrofit factor, as it did for Unit 2, Andover inexplicably low balls that retrofit factor and the attendant cost increase for the SCR system. When Andover's retrofit factors are compared across units and across facilities, it appears that Andover arbitrarily assigned the retrofit factors without adequately accounting for site congestion and constructability issues. Subjective retrofit factors, especially factors randomly chosen without knowledge of site conditions, cannot account for site-specific circumstances as provided in the BART Guidelines.

A comparison of the broad brush approach taken by Andover with the detailed, site specific, scoping-level study taken in the Sargent & Lundy evaluation illustrates the inadequacies with Andover's methodology. As an initial matter, Andover made a fundamental error by failing to account for the effect of site elevation on the project costs. Laramie River Station is situated at 4,750 feet above sea level, resulting in flue gas volumes approximately 20% greater than a similarly sized unit at sea level. These larger flue gas volumes will require larger SCR reactors, larger duct work, and increased structural support. None of these additional costs are accounted for in Andover's estimate because the IPM model assumes the plant is located at sea level. Indeed, IPM model guidance provides that "elevation of the site must be considered separately

and factored into the MW size accordingly due to its effects on the flue gas volume." *Id.* (citing the IPM SCR Cost Development Document (August 2010)).

Andover's reliance on the IPM model also resulted in failure to account for a regional labor productivity factor. Regional productivity must be taken into consideration in a site-specific cost estimate to account for local workforce characteristics, labor availability, project location, project complexity, local climate and working conditions. This is a key factor for Laramie River Station, because experienced, knowledgeable labor is difficult to acquire and requires premium pay, further adding to the cost of an SCR system.

The most substantial failing of the Andover Report, however, is its reliance on an aerial photograph of the plant from Google Earth™ to account for site-specific conditions at Laramie River Station. There are numerous important elements that cannot be discerned from an aerial photograph. Specifically, a Google Earth™ photograph cannot identify: 1) the site constraints posed by the location of the coal conveyor rooms; 2) the location of the existing fan buildings and the space constraints between the existing fan buildings and the existing electrostatic precipitators; 3) the necessary information to determine duct work routing and SCR tie-ins to the existing economizers and air heaters; and 4) information regarding plant subsystems such as the fan capacity, equipment reinforcement, auxiliary power systems, electrical plant system capacity, and other plant subsystems that would be affected by installation and operation of the SCR systems. Further, the aerial photograph provides no information about where the ammonia handling system could be located and necessary pipe routing and other support systems for the ammonia handling system. Nor does it show the need to penetrate the 20-story boiler wall and provide related structural support to install duct work, to provide structural support columns for

the SCR reactors in very tight spaces, and the need for special cranes to lift heavy equipment into place in a congested space.

While Andover indicated that some of these site-specific issues are addressed by the retrofit factor, the fact that Andover accorded no retrofit factor to Laramie River Station Units 1 and 3, and low balled the retrofit factor for Unit 2, resulted in a failure to include site-specific costs in its estimate for the Laramie River, in direct contravention of the requirements of the BART Guidelines and suggestions of the CCM. Site-specific conditions are illustrated in Section 5.1.1.1 of the Sargent & Lundy Critique. Finally, Andover failed to include costs for the balance of plant systems required for the SCR. Sargent & Lundy Critique section 5.1.1.3. These items, which require enlarging existing plant systems to provide for the additional power and airflow and other systems necessary to operate the SCRs, include the following: 1) Replacement of induced draft fans by larger fans to support the SCR units; 2) Upgrading of the existing electrical system to support the SCR units; 3) Structural stiffening of the duct work downstream of the SCRs; and 4) Expand existing control system to accommodate six new SCRs (two for each generating unit).

Wyoming used actual, site-specific data regarding the BART-eligible sources in development of its plan. In contrast, EPA did not use site-specific data; instead, it relied on nothing more than aerial photographs available in the public domain.

Response: EPA disagrees with the commenter. First, as discussed elsewhere in responses, we are no longer relying on the IPM cost algorithms, including the application of retrofit factors, to estimate capital costs for the Laramie River Station units. Instead, we have evaluated the cost information provided by Basin Electric in comments and incorporated it as appropriate. Therefore, the arguments made by the commenter related to our use of the IPM algorithm are no

longer relevant. Nonetheless, below we discuss how our use of the IPM algorithm in the proposed rule was based on reason and evidence and addressed the site-specific concerns raised by the commenter.

As noted in responses to other comments, EPA adequately addressed site-specific issues in using the IPM SCR cost model. The SCR cost model for IPM, being developed from actual SCR retrofit data, incorporate all of the costs that would normally be associated with an SCR retrofit. As such, retrofit issues that are common to all SCR retrofits are incorporated into the cost. To the extent that there are additional costs, as described in other comments, these can be addressed with the retrofit difficulty factor.

Basin Electric did not follow the BART guidelines in developing their cost analyses, and importantly, did not provide adequate documentation when they deviated from it. There are only very limited situations under which an analyst can depart from the CCM methodology under the BART Guidelines: "The basis for equipment cost estimates also should be documented, either with data supplied by an equipment vendor (i.e., budget estimates or bids) or by a referenced source (such as the OAQPS CCM, Fifth Edition, February 1996, EPA 453/B–96–001). In order to maintain and improve consistency, cost estimates should be based on the OAQPS CCM, where possible. The CCM addresses most control technologies in sufficient detail for a BART analysis. The cost analysis should also take into account any site-specific design or other conditions identified above that affect the cost." 70 FR 39166.

This section of the BART Guidelines makes it clear that the CCM is the intended methodology for conducting a BART cost determination. It also states why: to maintain and improve consistency. However, the CCM does state that site-specific conditions should be incorporated. Site-specific conditions could include space constraints, or a design feature that

could complicate installing a control. Importantly, a footnote at the bottom of the same page of the BART Guidelines makes it clear that the analyses should document any deviations from the CCM: "You should include documentation for any additional information you used for the cost calculations, including any information supplied by vendors that affects your assumptions regarding purchased equipment costs, equipment life, replacement of major components, and any other element of the calculation that differs from the CCM."

The record does not point to any "unusual circumstance" that explains why Basin Electric's SCR costs are higher than costs of SCRs at other similar facilities, other than the use of a different cost methodology. In fact, there is nothing in the record to support claims that the cost of SCR was in fact based on detailed site-specific vendor bids, or is in any manner more site-specific than the costs relied upon by EPA in our proposed rule. As an example, the BART application submitted by Basin Electric, and relied upon by Wyoming, shows that only the cost of catalyst is based on a vendor quote.[175] There is no documentation to substantiate that the remaining costs are based on vendor quotes or any other site-specific data. The mere fact that the cost analysis was submitted by Basin Electric is not a basis to conclude that it is somehow highly site-specific. Indeed, even the updated cost information recently submitted by Basin Electric during the comment period is conceptual in nature and not based on vendor quotes. As stated on page 21 of Exhibit 14 to their comments: "The LRS cost estimates are conceptual in nature; thus, S&L did not procure equipment quotes specifically for the LRS control systems. Rather, equipment costs for the LRS projects are based on conceptual designs developed for the

[175] Wyoming Regional Haze SIP, Attachment A, "Basin Electric Power Cooperative Laramie River Station
Refined BART Visibility Modeling", prepared for Basin Electric Power Cooperative by Black & Veatch Corporation, July 24, 2008, Attachment 1, page 7 of 7.

control systems, preliminary equipment sizing developed for the major pieces of equipment, and recent pricing for similar equipment."

Commenter correctly notes that EPA did not account for elevation. EPA acknowledges that it did not account for elevation in the estimate when using the IPM algorithm and EPA's revised estimate does account for elevation. Commenter states that the regional labor productivity was not factored into EPA's estimate. EPA's estimate did provide an allowance for overtime which is a line item in the estimate labeled "Labor Adjustment." However, commenter did not provide sufficient information to evaluate commenter's estimate and how productivity factors were developed or applied in their estimate to produce their estimate. Labor costs comprise roughly half of the total cost of Basin Electric's estimate of what SCR would cost to install at Laramie River Station, and the significance of this cost makes the lack of information very important. Moreover, if this is an important element of commenter's critique of EPA's method, they should have provided sufficient data and supporting justifications for EPA to evaluate commenter's estimate. Notably, this is an important deviation from the CCM and more detailed supporting data should have been provided. As noted in EPA's responses to other comments, the commenter has not provided any data to explain the high labor charge rates or claimed low productivity, as required under the BART Guidelines.

Commenter claims that "a Google Earth™ photograph cannot identify: (1) the site constraints posed by the location of the coal conveyor rooms". On the contrary, the coal conveyors are prominent features in the images[176] and it is clear from the coal conveyors where the coal conveyor rooms are located. This location for coal conveyor rooms is not unusual. In

[176] *Review of Estimated Compliance Costs for Wyoming Electric Generating (EGUs)—Revision of Previous Memo,* memo from Jim Staudt, Andover Technology Partners, to Doug Grano, EC/R, Inc., February 7, 2013, Figures 6a and 6b.

general, coal conveyor rooms are located either to one side of the boiler or the other, depending upon the location of the coal pile to the boiler. Moreover, the resulting need to route ductwork through the boiler building wall is commonly performed in SCR retrofits. As such, this is not an unusual issue and should not significantly impact retrofit cost versus a typical retrofit.

Commenter claims that EPA did not account for "(2) the location of the existing FD fan buildings and the space constraints between the existing FD fan buildings and the existing electrostatic precipitators…" It is clear from the images that there is a building located immediately below where the SCR reactor would be located, and this is not an unusual situation. The location of the ESP is also very clearly shown on the images. The space between the ESP and the fan rooms is also visible from the photo in Figure 6a of the Andover memo. Nevertheless, having to install SCR support structure in close proximity to existing buildings or equipment, as may be necessary at Laramie River, is not unusual because SCRs are commonly erected in that location and buildings or other equipment are normally in the area below. It is also possible that SCR support structure could be built to largely avoid the forced draft fan buildings by extending beyond them with a common support structure for all three, or at least more than one, SCR reactor. The space between the ESP and the fan buildings is only significant with regard to location of a crane for erection of Unit 2, and this is why a higher retrofit difficulty is assumed for Unit 2. Middle unit crane access issues are not unusual either and have been addressed numerous ways, including assembling a temporary crane above the boiler building, as was performed at the Brayton Point plant for their Unit 3.

Commenter claims that EPA did not adequately account for "(3) the necessary information to determine duct work routing and SCR tie-ins to the existing economizers and air heaters…" EPA disagrees with the commenter. The general routing can be estimated from the

images, and there was nothing in the images to suggest any problems with routing ductwork. It was apparent that a penetration was necessary in the boiler building, which is routinely necessary because boilers are typically housed in boiler buildings and the SCRs are not, making penetration of a boiler building wall necessary in any SCR retrofits where the boiler is in a boiler building. This is the case with most SCR retrofits. In fact, Figures 2 and 3 of Exhibit 16 to Basin Electric's comments demonstrate that the ductwork tie in to the boiler and associated modifications are similar to what is done routinely and ductwork length is reasonable. For an SCR cost estimate, the most critical cost issues that require closer examination than possible with a satellite photo is if it is necessary to move major pieces of equipment, such as an air preheater, in order to accommodate the ductwork. Had it been determined that relocating the air preheater was necessary, this would entail some significant additional cost over what would be considered a "typical" retrofit. Basin Electric did not indicate any such need and therefore their costs for ductwork are expected to be within the normal cost for a retrofit.

Commenter claims that EPA did not properly account for "(4) information regarding plant subsystems such as the FD fan capacity, equipment reinforcement, auxiliary power systems, electrical plant system capacity, and other plant subsystems that would be affected by installation and operation of the SCR systems. Sargent & Lundy Critique section 5.1.1.2. – 5.1.1.3." The IPM algorithm explicitly assumes that it will be necessary to replace the forced draft (FD) fan[177] and make modifications to auxiliary electrical systems and associated boiler structure and has a line item cost for this. As such this was addressed in the cost.

[177] Sargent & Lundy, "IPM Model – Revisions to Cost and Performance for APC Technologies – SCR Cost Development Methodology, FINAL", August 2010.

Commenter claims that "Further, the aerial photograph provides no information about where the ammonia handling system could be located, and necessary pipe routing and other support systems for the ammonia handling system. Nor does it show the need to penetrate the 20-story boiler wall and provide related structural support to install duct work, to provide structural support columns for the SCR reactors in very tight spaces, and the need for special cranes to lift heavy equipment into place in a congested space." EPA disagrees. It is apparent from the image, and the open spaces on the images that have no structures, that there are any of a number of places at the Laramie River site that the ammonia storage system could be located. Selecting the ideal location does require closer examination of the site than possible with an aerial photograph. However, the impact on total capital cost is relatively small. With regard to modifications to the boiler building, this has already been discussed along with the installation of structural support columns for the SCR and need for cranes. These modifications are routinely necessary for SCR retrofits and would be factored into the historical SCR projects that the IPM algorithms are based upon.

Expansion of the controls is another cost identified by commenters as not adequately addressed by EPA. EPA disagrees with commenter. Every SCR retrofit requires expansion of controls. So, this is incorporated into the IPM model. There may be specific issues that may be associated with tailoring the controls to the existing site that make this portion of the cost slightly more or slightly less expensive than normal. But, controls are generally a small contributor to total SCR cost and these differences would have a minor effect.

Comment: When all of the site-specific and balance of plant conditions are included, Sargent & Lundy estimated that the capital cost of installing SCR at Laramie River Station is $746,906,000. This is twice as much as Andover's flawed cost estimate of $330,000,000. The discrepancy in

the cost estimates is not surprising in light of Andover's failure to comply with the BART Guidelines and to follow the CCM where appropriate. For example, the site congestion and balance-of-plant upgrades alone total approximately $290 million - costs which accurately reflect site-specific constraints to installing SCR, but which were not accounted for in the Andover Report. While the costs estimated in the Sargent & Lundy Evaluation are significantly greater than those set forth in the Andover Report, they are a far more accurate and representative assessment of the costs of installing SCR and SNCR at Laramie River Station.

Response: EPA disagrees with the commenter, having found the following discrepancies in the commenter's estimates for cost of SCR and SNCR at Laramie River Station:

1. Apparently double-counts General Facilities

The itemized cost estimate in the Appendices to Exhibit 14 includes items that are normally incorporated into the General Facilities cost, while Sargent & Lundy took an additional provision for General Facilities (Exhibit 14 at page 31). General Facilities are costs that are not directly associated with the process equipment, and include such things as access roads, access platforms, safety equipment (such as eye-wash stations), etc. On the other hand, ductwork, piping, structural steel to support process equipment are direct capital cost and do not fall into the category of General Facilities. The itemized cost estimate by Sargent & Lundy in the Appendices to Exhibit 14, however, includes the cost of many items that would normally fall under the category of General Facilities. This includes the cost of roads and a parking area ($930,226 at page 2 of SCR estimate), eye wash stations (page 3), a pre-engineered building for the construction warehouse ($780,000 page 8), fire protection systems (page 16), gratings, handrails, ladders (page 22). As a result, Sargent & Lundy double counts for General Facilities

by having these costs accounted for in the itemized direct capital cost as well as in its Indirect Capital costs.

2. *Labor rates in Sargent & Lundy's itemized capital cost in the Appendices to Exhibit 14 appear to already have a significant contingency built in and additional costs for overtime and per diem – already incorporating contingency in apparent double-counting of contingency.*

According to Basin Electric's comments, their labor rates were taken from the publication RS Means.[178] However, examples of how the labor rates from RS Means were used to develop what was ultimately used in their estimate were not provided. RS Means is a subscription service that can cost up to $1,100, depending upon the package.

However, there are publicly available labor rates for the major construction trades from the CLRC that are available for download at the National Association of Construction Boilermaker Employers' website.[179] The Laramie River Station estimate assumes boilermaker labor tasks with a labor rate of $90.79/hr while according to the CLRC boilermaker rates in the Mountain and Northwest Plains as of July 2013 were $56.79/hour, which is close to the values for Lodge 101 of the boilermakers union, ranging from $57.62 for a Journeyman to $60.12 for a Foreman, and lower rates for apprentices.

The Laramie River estimate assumes pipefitter labor tasks with a labor rate of $81.72/hour, while according to the CLRC pipefitter rates in the Mountain and Northwest Plains as of July 2013 were $43.57/hour. Plumber rates are only slightly higher are $47.47/hour. In fact, there are several areas where the Laramie River itemized estimated rates in the Appendices

[178] Exhibit 14, page 25.
[179] Construction Labor Research Council Union Wages and Supplements, available from the National Construction Boilermaker Employers website, www.nacbe.com.

far exceed Mountain-Northern Plains reported rates for union craft labor for July 2013. The ratio of assumed rate versus reported is as high as 187%. It is only for the installation of an architectural door that the reported rate for carpenters is even close to the assumed rate for Laramie River Station. Carpenters also build concrete forms.[180] For carpenters doing concrete forms, the paid rate ($65.02 – see page 2 of estimate) is more than double the union rate. For most of these crafts, these rates cannot be explained by per diem. For example, if *all* of the boilermakers lived 120 miles from the location and were eligible for $70/day per diem and also drove 120 miles each way every day of an eight-hour shift receiving $0.565/mile, that would only increase the hourly rate by $25.70, which does not explain the $34+ difference.

It may be that Sargent & Lundy applied an escalation to the labor charges for future expected rates. If so, this is inconsistent with the CCM, which does not allow for this. In light of the fact that labor comprises the single largest expense and is nearly half of the total direct cost of the project—per Basin Electric's estimate in the Appendices to Exhibit 14—the high labor rates assumed by Sargent & Lundy are critical cost items that require much more complete explanation than was provided.

3. Additional Labor Costs

In addition to the high labor rates incorporated into Sargent & Lundy's itemized estimate, roughly $47 million in additional labor costs are included for five ten-hour days and six ten-hour days and per diem.[181] This schedule (which results in overtime) is stated to be necessary to attract necessary labor.[182] No further explanation is provided for these costs. It is unclear why it is necessary to offer these in light of the fact that power plant construction labor demand is well

[180] Bureau of Labor Statistics, 47-2031 Carpenters., www.bls.gov/oes/current/oes472031.htm.
[181] Appendices to Exhibit 14 of Basin Electric comments, page 4 of SCR estimate.
[182] Exhibit 14, page 25.

off of its peak and is especially low in the Western States. As a key power plant construction trade, boilermaker man-hours are a good indication of general power plant construction activity. Boilermaker man-hours demonstrate that labor demand is well off of past peaks, and for the first two quarters of 2013, boilermaker employment in the Western States is 18.6% below 2012 levels for the same period. Boilermaker man-hours in 2012 nationally totaled 27 million, well off the years of 2006 through 2009 that were all above 30 million, and peaked in 2008 at over 40 million. 2012 levels were still below 2010's rate of 28 million.[183]

It is also unclear why such high expenses are needed for overtime and per diem, particularly in light of the high assumed wage rates discussed earlier. Moreover, the need for overtime needs to be incorporated into a discussion of schedule, which was not provided. The time available for installing the SCRs may allow for spreading of activities over longer periods of time than in past retrofit efforts that may have allowed less time than the RHR, which allows for five years. However, there is no discussion of the need for overtime in the context of schedule.

4. Quantity and Cost of Materials and Impact on Labor Hours

Throughout the spreadsheets provided as Attachments to Exhibit 14 to Basin Electric's comments, no information was provided on how the quantities of materials were estimated, such as tons of steel for ductwork, etc. This makes it impossible to evaluate if Sargent & Lundy estimated the correct quantities of materials, associated material costs, or the associated hours associated with erecting the materials. The spreadsheet was provided as a pdf document, and therefore any underlying equations could not be examined. As noted in our comments to other

[183] http://nacbe.com/manhour-reports/. Also see: Staudt, J.E., "Engineering and Economic Factors Affecting the Installation of Control Technologies - An update", Developed for US EPA Clean Air Markets Division, December 15, 2011, figure 2-2 on page 12.

questions, it is necessary to include documentation for any additional information used for the cost calculations that differs from the CCM. Since the quantities of materials also relate to the labor needed to install the materials, this also impacts the labor costs estimated by Sargent & Lundy.

5. AFUDC

Sargent and Lundy includes AFUDC in its SCR cost. This cost of about $22-$23 million cost per unit, for a total of $68 million, is not permissible under the CCM as discussed in response to other comments.

6. Process Contingency

Although the CCM shows an allowable process contingency of 5% for SCR, in EPA's opinion, this is not necessary today for SCR on coal-fired boilers firing the coals used in Wyoming. According to the Department of Energy's NETL:[184] "Process contingency is intended to compensate for uncertainty in cost estimates caused by performance uncertainties associated with the development status of a technology. Process contingencies are applied to each plant section based on its current technology status." According to this document, for commercially available technologies process contingency could range from 0-10%. When the CCM was issued in January 2002, SCR was commercially available but was only emerging in application on coal-fired utility boilers in the U.S. According to a study by Cichanowicz,[185] at the end of 2001, there was only about 13,000 MW of coal SCR capacity in the U.S., with nearly all installed in the prior two years, meaning that there was very limited long-term experience with SCR on U.S. coals.

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[184] U.S. Department of Energy, National Energy Technology Laboratory, "Cost Estimating Methodology for NETL Assessments of Power Plant Performance", DOE/NETL-2011/1455, April 2011, pg 4.

[185] From data in Cichanowicz, J., Muzio, L., Hein, M., "The First 100 GW of SCR in the U.S., - What Have We Learned?" - 2006 Mega Symposium.

SCR usage on coal-fired boilers has since increased about ten times to about 130,000 MW of coal capacity (over 40% of all coal capacity) and is therefore a very well proven and well understood technology on a wide range of U.S. coals. As a result, the process contingency for SCR on coal-fired utility boilers should be much lower today than what it was when the CCM was issued in January 2002 – 5%. EPA believes that for SCR applications on utility boilers burning Powder River Basin coals, which are very well understood SCR applications, there should not be a need for process contingency.

7. Sulfur Trioxide (SO_3) mitigation measures are not needed

Sargent & Lundy assumed that a SO_3 mitigation system is necessary for the Laramie River SCR. We disagree as this adds unnecessary capital and operating cost. An SO_3 mitigation system is unnecessary because of the relatively low sulfur content of the coal and the fact that the coal fly ash is high in free calcium oxide. The available free lime will neutralize the SO_3 making SO_3 mitigation unnecessary. In fact, in the model they developed for the IPM, Sargent & Lundy assumed that SO_3 mitigation was unnecessary for boilers using coals with SO_2 levels below 3 lb/MMBtu, making it unnecessary for Laramie River, which fires a much lower sulfur coal from the Dry Fork Mine, with an uncontrolled SO_2 rate of roughly 0.50 to 1.0 lb/MMBtu.[186,187, 188] In fact, Sargent & Lundy uses the same rationale for arguing (correctly) that air preheater modifications are not necessary to address potential ammonium bisulfate formation from an

[186] Sargent & Lundy, "IPM Model – Revisions to Cost and Performance for APC Technologies – SCR Cost Development Methodology, FINAL", August 2010, page 5.
[187] http://www.westernfuels.org/member-services/mining-operations
[188] BNSF Mine Guide, at *www.bnsf.com/customers/pdf/**mine**guide.pdf*. SO2 calculated by multiplying sulfur content (expressed as a decimal) times 2 million and dividing by the heating value in Btu/lb.

SNCR system.[189] Moreover, even if SO_3 formation were a legitimate concern, low oxidation SCR catalysts are available and any additional cost impact would be very small. SO_3 mitigation is not a large capital cost compared to the other costs that contribute to the SCR, but it is illustrative of the manner in which Sargent & Lundy has taken efforts to overdesign the system while adding unnecessary costs.

8. Labor Productivity factor apparently not site-specific

Basin Electric has commented that local labor productivity is a major factor that impacts cost. However, it appears that the labor productivity factor being selected at the site may have been broadly applied by Sargent & Lundy at multiple sites in an inconsistent manner. According to Basin Electric, "Labor productivity accounts for things such as labor availability, site access and working conditions, climate, season changes, and project size and complexity" and it is a common practice on large construction projects to apply a productivity factor to account for local worker productivity and construction site conditions. A labor productivity factor of 1.15 was selected to account for labor productivity in the southeastern Wyoming region as compared to the benchmark of 1.00 for Texas, cited in Basin Electric's comments. Although the comments refer to the Compass International Global Construction Cost and Reference Yearbook, the value in that document for the southeastern Wyoming region is not expressly stated, and it is unclear if 1.15 is, in fact, the value in that document as we were not able to confirm the number in the document referenced.[190]

In another Sargent & Lundy BART analysis, performed for Oklahoma Gas & Electric Sooner Units 1 & 2 and Muskogee Units 4 & 5, Sargent & Lundy also used a Labor Productivity

[189] Exhibit 14, page 17.
[190] Exhibit 14, page 25.

factor of 1.15.[191] Since the Oklahoma Gas & Electric units are in a climate far more similar to Texas (only about 150 miles from Texas) than Wyoming, and the Oklahoma plant likely draws from similar construction labor pools as Texas, it seems that they should have a similar productivity factor as Texas. It is also unusual that Sargent & Lundy would select the exact same productivity factor for the Oklahoma BART analysis as Laramie River Station's BART analysis, although these facilities are roughly six hundred to seven hundred miles away, with very different climates and draw on different labor pools. In this case, it appears that Sargent & Lundy has used the same productivity factor for Laramie River Station as for other BART analyses. In summary, there is no evidence that the labor productivity factors suggested by the commenter are site-specific.

9. *Contractor's fees and profit are excessive*:

Commenter's estimate for contractor's fees Expense and Profit total nearly $51 million, or 14% of the estimated total Labor, Material, Subcontract, and Process Equipment.[192] By contrast, Sargent & Lundy estimated for the IPM algorithm total contractor fees and profits of 10% of the estimated Labor, Material, Subcontract, and Process Equipment cost. When this higher percentage is combined with a high direct cost, the contractor's fees become excessive. The high contractor fees and profits assumed in the Laramie River Station estimate also seem inconsistent with a weak power plant construction market, as demonstrated by the boilermaker man-hour data discussed earlier.

10. Labor, Material, Subcontract, and Process Equipment costs in excess of historical norms, with substantial additional and unnecessary costs added.

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[191] Oklahoma Gas & Electric, "Sooner Units 1 & 2, Muskogee Units 4 & 5 Dry FGD BART Analysis Follow-Up Report", December 28, 2009, see pdf pages 28 and 43.
[192] Attachments to Exhibit 14 to Basin Electric Comments, page 4 of SCR estimate.

It is not unusual for owners to report excessive costs because owners are most interested in a cost estimate that has a very low risk of an overrun rather than a ±30% cost estimate, which has a higher risk of overrun (about 50%), but is likely to be a better estimate of actual project cost. Commenter's estimate for total Labor, Material, Subcontract, and Process Equipment is $361 million. Adding Sargent & Lundy's estimated cost of scaffolding, freight, and consumables that is in the Appendices to Basin Electric's Exhibit 14 to their estimated Labor and Material, Subcontract, and Process Equipment raises the cost to $383 million (Sargent & Lundy provides no supporting documentation for this $22 million in additional cost). This is 27% above the expected cost of $301 million (with elevation accounted for) developed from the IPM SCR model, which is developed from actual project data. This suggests that Sargent & Lundy made a fairly conservative estimate of these costs for Basin Electric. But, in addition to the cost of Labor, Material, Subcontract, and Process Equipment, scaffolding, consumables and freight, in their estimate for Basin Electric, Sargent & Lundy added very high costs for overtime, per diem (that were not explained as required) and high costs for contractor's fees and profits, and then added *additional* project and process contingencies, unnecessary costs such as SO_3 mitigation and un-allowed costs such as AFUDC that increased total project cost to nearly $750 million - about double what they had estimated in 2008.[193] The combined effect of the conservative cost estimates with additional contingencies or unnecessary cost adders, results in what appears to be an unrealistically high cost.

11. Project Contingency of 15% is too high in light of the method used and very conservative underlying assumptions.

[193] Attachments to Exhibit 14 to Basin Electric Comments, page 4 of SCR estimate and Exhibit 14 page 31.

Because the cost estimates developed for Basin Electric are already very conservative, and based upon detailed estimates of the labor and materials to build the SCR, a 15% project contingency is excessive. According to the CCM, Section 1.1 Chapter 1, page 1-4: "The accuracy of the information in the Manual works at two distinct levels. From a regulatory standpoint, the Manual estimating procedure rests on the notion of the "study" (or rough order of magnitude - ROM) estimate, nominally accurate to within ± 30%. This type of estimate is well suited to estimating control system costs intended for use in regulatory development because they do not require detailed site-specific information necessary for industry level analyses."

The methods and cost elements of the CCM were adapted from the American Association of Cost Engineers (AACE) (CCM Section 1, Chapter 2, p 2-5). AACE 16R-90[194] states that, "Project Contingency is included to cover the costs that would result if a detailed-type costing was followed as in a definitive-type study." According to NETL,[195] "AACE 16R-90 states that project contingency for a "budget-type" estimate (AACE Class 4 or 5) should be 15% to 30% of the sum of BEC, EPC fees and process contingency." AACE 18R-97[196] defines different classes of estimates, from 5 (least detailed) to 1 (most detailed). The methodology used in the CCM falls into a Class 4 or Class 5, while the methodology used by Basin Electric in their comments, with hundreds of line items and thousands of input parameters, is clearly a far more detailed estimate that does not leave out any aspect of the project.

The 15% project contingency factor in the CCM for SCR shown in Table 2.5 on page 2-44 of Section 4.2 Chapter 2 is based upon use of the cost estimating method described in the

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[194] AACE Recommended Practice, AACE 16R-90; *www.aacei.org/non/rps/18R-90.pdf.*
[195] U.S. Department of Energy, National Energy Technology Laboratory, "Cost Estimating Methodology for NETL Assessments of Power Plant Performance", DOE/NETL-2011/1455, April 2011, pg 5.
[196] AACE Recommended Practice, AACE 16R-87; *www.aacei.org/non/rps/18R-97.pdf.*

CCM to develop the Total Direct Capital Costs. It is not intended to apply to a detailed estimate that: 1) Includes many cost items not explicitly included in the estimating method described in the CCM to develop the Total Direct Capital Costs and meant to be included in the 15% project contingency, and 2) Already has substantial contingency built into it through conservative assumptions.

In fact, the CCM discusses the importance of not double-counting contingency in multiple places such as retrofit factor and contingency at page 2-30 of Chapter 2 - Cost Estimation: Concepts and Methodology: "Due to the uncertain nature of many estimates, analysts may want to add an additional contingency (i.e., uncertainty) factor to their estimate. However, the retrofit factor is a kind of contingency factor *and the cost analyst must be careful to not impose a double penalty on the system for the same unforeseen conditions.* Retrofit factors should be reserved for those items directly related to the demolition, fabrication, and installation of the control system. A contingency factor should be reserved (and applied to) only those items that could incur a reasonable but unanticipated increase but are not directly related to the demolition, fabrication, and installation of the system. For example, a hundred year flood may postpone delivery of materials, but their arrival at the job site is not a problem unique to a retrofit situation." (emphasis added). The CCM, therefore, explicitly anticipates that some analysts may, incorrectly, apply multiple contingencies for the same areas of uncertainty even when using the methods described in the CCM for estimating Total Direct Capital Costs.

Because the cost estimates developed for Basin Electric are already very conservative and based upon detailed estimates of the labor and materials to build the SCR, rather than study-level estimates, they have double-counted both the costs that are intended by the CCM to be included in the project contingency when using the CCM method, plus they have added additional

contingency in the form of conservative assumptions to address uncertainties in their estimate. For this reason a 15% project contingency is excessive for their estimate.

12. The cost information in Exhibit 14 does not appear to be consistent with the cost information in the Appendices to Exhibit 14.

The table on page 4 of the SCR cost estimate for Units 1-3 shows a total cost of $481 million. This is inconsistent with the Total Direct Capital Costs shown on page 31 of Exhibit 14, which total $465 million. It is unclear what the cause of the $16 million difference is. In either case, EPA believes that the cost is not adequately explained.

13. Laramie River Station does not require an SNCR system with four injection zones

The Laramie River Station is a base loaded unit, with capacity factors well above 80%. This means that the boiler rarely operates at part load. Sargent & Lundy designed the SNCR system with four injection zones to accommodate the "entire load and temperature range within the boiler".[197] Because the unit will rarely operate at part load and the emission rate is a 30-day average, there is likely no need for four injection levels. Four injection levels are only required on load-following units that spend a significant amount of time at low or middle loads or units that must comply with emission limits of much shorter averaging times, such as 24 hour averages or less. In practice, this system would be designed with two, or, at most, three injection zones. The additional injection zone adds cost in the form of additional injectors and furnace penetrations, and associated labor. On the other hand, EPA has accepted Basin Electric's estimate of the cost of the SNCR system. Although we believe that there would likely be fewer injection levels, based upon the furnace exit temperature reported by the company, we expect that at least one of the injection levels will require a convective zone injection system using

[197] Exhibit 14, page 17.

multi-nozzle lances, which will increase the cost. Therefore, these effects offset one another and we are accepting the cost provided by Basin Electric.

14. Similar Labor Rate Issues for SNCR as for SCR Estimate

Examination of the labor rates for the Sargent & Lundy cost estimate revealed that Sargent & Lundy assumed the same high labor rates for crafts as they did for SCR without the rates explained sufficiently. They also assumed an additional $2.7 million in additional overtime and per diem rates that are not explained.[198]

For these reasons, the Sargent & Lundy capital cost estimates for SCR and SNCR are deficient, for the reasons as described above. However, because EPA expects that the SNCR injection system necessary for Laramie River Station may require more costly multiple-nozzle lances in at least one injection zone, this should offset the cost impact of the deficiencies we have identified, and we are accepting the capital cost of the SNCR system provided by Basin Electric equal to $16.9 million per unit.

For the SCR capital cost at Laramie River, EPA is accepting some costs and not others, as described in more detail in supporting information with these comments.[199]

Comment: We are very concerned to see that EPA has introduced a retrofit factor greater than "1" (the default) for 13 of the 15 EGUs evaluated. The IPM model used by EPA to estimate control costs in Wyoming already includes retrofit costs in its costing algorithms. It is generally accepted that retrofit projects will incur costs over and above those for a "greenfield" site, and most of those retrofit costs are already included in the database used to generate the IPM

[198] Appendices to Exhibit 14 of Basin Electric comments, page 4 of SNCR estimate.
[199] Andover Technology Partners, "Cost of NOx Controls on Wyoming EGUs", October 28, 2013; Wyoming EGU BART and Reasonable Progress Costs – 10/28/2013.

algorithms. So, unless a particular situation is so extreme as to warrant an additional retrofit factor, applying a retrofit factor to an algorithm that already includes retrofit costs is double counting those costs. Not only is the application of a retrofit factor not mentioned in the Federal Register Notice, its only supporting documentation appears in docket item EPA-R08-OAR-2012-0026-0086[1], "Review of Estimated Compliance Costs for Wyoming Electricity Generating Units (EGUs) - revision of previous memo": "Selective Catalytic NO_x Reduction (SCR) capital cost is estimated using the IPM algorithms with retrofit factors adjusted on a unit by unit basis." The retrofit factor is a subjective factor used to account for the estimated difficulty of the retrofit that is unique to the facility. Because site visits were not possible, the retrofit factor was estimated from satellite images that provide some insight to the configuration of the units and degree of congestion around the site and in the vicinity of where the SCR would be installed. These factors impact the ability to locate large cranes on the site - that impact how the SCR is assembled (are large sections lifted into place or is the SCR "stick built"), how much ductwork is needed, if the SCR must be built onto a large, elevated steel structure or can be built near the ground, and if other equipment must be relocated to accommodate the space of the SCR. When using the IPM capital cost model, retrofit difficulties associated with an SCR may result in capital cost increases of 30 to 50% over the base model.[200]

A proper estimation of retrofit factors involves more than an inspection of satellite images. For example, EPA Region 8 visited the four-unit Colstrip power plant in Montana before concluding that a retrofit factor of "1" was appropriate. Once such a site visit is

[200] Sargent & Lundy, "IPM Model – Revisions to Cost and Performance for APC Technologies SCR Cost Development Methodology FINAL", August 2010, Project 12301-007, Perrin Quarles Associates, Inc. p 1.

conducted, retrofit factors should be developed for each element of the cost analysis - not the "blanket" approach used by EPA here.

Another example is provided by Sargent & Lundy's "Constructability Review" for addition of SCR at Navajo Generating Station. Navajo Generating Station consists of three EGUs, with the middle unit constrained by a coal conveyor passing through. Even so, Sargent & Lundy estimated that construction effort would be only 25% greater for Unit 2 than for the other two units. EPA needs to clarify why they chose to add a retrofit factor greater than 1 (average retrofit factor of 1.33 for 13 of 15 units reviewed) to the costs when retrofit costs are already contained within data used to generate the IPM and when neither Wyoming, Basin Electric, or PacifiCorp included a comparable retrofit factor. By adding the retrofit factor, EPA has overestimated the costs of SCR: in the case of Dave Johnston Units 1, 2, and 4 and Wyodak Unit 1, this has led EPA to propose less-efficient controls than SCR.

Chapter 2, "Cost Estimation: Concepts and Methodology" of the CCM provides a lengthy discussion of retrofit factors. The CCM addresses SCR retrofits specifically "A correction factor for a new installation versus a retrofit installation is included to adjust the capital costs" (Section 4, NO_x Controls, Section 4.2, NO_x Post- Combustion, Chapter 2, SCR). The CCM retrofit factor is $728/MMBtu/hr and, for medium-size boilers like Dave Johnston Unit 4 or Wyodak, this represents a 23% - 24% increase in the direct capital cost.

EPA inconsistently and without explanation applied "retrofit factors" that improperly increase the reported capital costs of SCR installation. Such retrofit factors are intended to account for the increased costs of unusually difficult retrofits, i.e., those that present more challenges than assumed for the "typical" SCR retrofit, for which costs are described by the IPM SCR cost module. The EPA unjustifiably determined that only two of the fifteen Wyoming

EGUs (Laramie River Station Units 1 and 3) would be of average difficulty, while applying increases of between 20 and 50 percent to the remaining units. The EPA applied such retrofit factors even for units for which the source owners did not claim above-average installation challenges. The EPA's exclusive evidence of potential retrofit challenges - satellite images - does not support the EPA's application of retrofit factors. (The commenter submitted a TSD that elaborated on some of these points.)

The descriptions given of the EPA's view of the retrofit difficulty at each plant based on satellite images make it clear that many guesses were made and/or that the EPA erred on the side of high retrofit difficulty to be conservative. Being conservative in cost estimates may be acceptable if such conservatism is applied equally to all units and if the EPA provides a reasoned basis for its assumptions, but the EPA did not do so. The EPA assumed that the two units in the middle at Jim Bridger "will be somewhat more difficult to achieve access for equipment" and applied the highest retrofit factor of 1.5 to these units, while for Laramie River Unit 2, the EPA assumed more retrofit difficulty due to its location in the middle but only applied a retrofit factor of 1.2. The EPA essentially made guesses that the middle units may have more retrofit difficulty, and did not consistently apply the same retrofit factors to the middle units of these two plants. We found it telling that PacifiCorp's capital cost estimates for installation of SCR systems at all four Jim Bridger units (which are of equal size to each other) were identical for each unit, and the same is true of Basin Electric's capital cost estimates for installation of SCR systems at all three Laramie River units (which are also equal in size). Given these facts, the EPA has no basis for its application of a higher SCR retrofit factor for the units in the middle (i.e., Jim Bridger Units 2 and 3 and Laramie River Unit 2).

To summarize, the EPA has not adequately justified the application of any retrofit factor to the costs of SCR at any of the EGUs in Wyoming, and the EPA should not apply retrofit factors to increase the capital costs of SCR without adequate justification for those retrofit factors. Further, the EPA must remember that the IPM cost module for SCR is based on actual cost data for SCR retrofits, and that virtually all SCR retrofits would have some space constraints due to most power plants being built without ever planning for SCR installation. The EPA should only apply a retrofit factor if it can justify that the cost of SCR installation would noticeably deviate from a typical installation.

Response: As noted by commenter, the IPM cost model is based upon actual retrofits and incorporates all of the costs normally associated with retrofit of an SCR. This means that many of the retrofit issues commenters have raised are incorporated into the base cost, which can then be adjusted with a retrofit difficulty factor based upon the perceived difficulty of the retrofit relative to typical retrofits. EPA disagrees with the commenter in its assertion that the EPA inconsistently and without explanation applied "retrofit factors" that improperly increase the reported capital costs of SCR installation.

EPA applied retrofit factors while carefully considering site conditions. Where there was uncertainty, EPA did lean toward making more conservative estimates, which would explain the average retrofit factor exceeding 1.0. Section 2.5.3.2 of the CCM discusses retrofit cost considerations as "Probably the most subjective part of a cost estimate." The CCM states that, "Since each retrofit installation is unique, no general factors can be developed. A general rule of thumb as a starting point for developing an appropriate retrofit factor is: The larger the system, the more complex (more auxiliary equipment needed), and the lower the cost level (e.g. study

level, rather than detailed), the greater the magnitude of the retrofit factor." Thus, retrofit difficulty factor may factor in some uncertainty and be higher to account for that.

In the cost estimates EPA developed, retrofit factors were determined from satellite images using the following considerations: 1) Available access to and from the site for transportation of equipment and available space for laying down construction materials; 2) Location of equipment relative to each other and whether there is a substantial amount of demolition necessary in order to make room for SCR equipment; and 3) Access for a crane. At a highly congested site, crane access can be difficult and may entail a more costly approach. Access for a crane is a particular concern for internal units when units are located side-by-side.

There are no strict guidelines used for determining the actual value of retrofit factors. They are a matter of judgment. Per the CCM at 2.5.4.2 (page 2-28, Chapter 2 Cost Estimation: Concepts and Methodology), "[t]he proper application of a retrofit factor is as much an art as it is a science, in that it requires a good deal of insight, experience, and intuition on the part of the analyst." What follows is the explanation for each of the retrofit factors used at each of the sites. As will be shown, the retrofit factors were the result of a thoughtful process, and were not arbitrary.

With regard to the Dave Johnson site, this is one of the more congested sites in Wyoming. Per the Andover report on estimated costs of NO_x controls: "Based upon the close proximity of the boilers and associated equipment to one another, decommissioned chimneys that will limit access and ability to move a crane, the coal pile and coal conveyors that also limits access to the area of the units where construction would occur, the office building that is adjacent to Unit 1 and limits access, and the Unit 4 scrubber, retrofit of an SCR on Units 1-4 would likely entail a significantly higher than average retrofit cost. Unit 4 probably has the best access of all

of the units because there may be some space between the boiler and the scrubber, but it is difficult to say for sure from the image and therefore a conservatively high retrofit difficulty was used for unit 4 that is consistent with the other units."[201] As noted, the site is fairly congested for all units, justifying a high retrofit factor of 1.5 for all units, not just the middle units.

Jim Bridger is also limited on space, but not so much so as Dave Johnston: "Based upon the satellite photo, the SCR reactors would likely be installed above the ESPs and ductwork routed to the boiler. The boilers do not appear to be unusually constrained from the perspective of installing SCR ductwork; however, access for construction equipment will be much more difficult to achieve for the two middle units. The scrubbers and associated piping will limit access somewhat. Unit 4 access will be limited somewhat by the coal conveyor and because it's scrubber takes up more room than the other scrubbers. For this reason a retrofit difficulty factor of 1.5 is assumed for the middle units and 1.25 for units 1 and 4."[202]

On the other hand, as is apparent from the satellite image, Laramie River is a more open site than Dave Johnson. Satellite images "show a less constrained site than Dave Johnston, with good access to both units 1 and 3. The coal conveyor is clearly visible and will be an obstruction for the unit 2 SCR. As a result, retrofit difficulty of installing SCR is expected to be average, except possibly for unit 2 which is located between units 1 and 3. Access of a crane will be somewhat more challenging for Unit 2 and an SCR retrofit difficulty of 1.2 is assumed for

[201] Andover Technology Partners, "Cost of NOx Controls on Wyoming EGUs", October 28, 2013, p. 30; Wyoming EGU BART and Reasonable Progress Costs – 10/28/2013.
[202] Andover Technology Partners, "Cost of NOx Controls on Wyoming EGUs", October 28, 2013, p. 35; Wyoming EGU BART and Reasonable Progress Costs – 10/28/2013.

estimating SCR capital cost. In all cases the SCR reactor is likely to be installed above the ESP ductwork." [203]

Naughton is much more congested than Laramie River, although access appears slightly better than for Dave Johnson. Per the Andover report:

> "Babcock & Wilcox provided cost estimates for the Naughton unit 1 & 2 SCRs. Babcock & Wilcox's estimate assumed that it would be necessary to demolish stacks that will be abandoned after a planned scrubber installation and they also determined that additional fan capacity was not necessary. Babcock & Wilcox also assumed a complex support structure would be needed, which adds cost. Babcock and Wilcox also stated that units 1 and 2 are slightly offset which makes it impractical to build a common support structure for the SCR reactors; however, . . . Babcock & Wilcox has used a longer horizontal duct run on the unit 1 SCR which places the unit 1 and unit 2 SCR reactors side-by-side so that a common support structure is likely to be possible, offering some potential savings from what they have estimated. Alternatively, a shorter horizontal duct run on unit 1 may make it possible to avoid demolition of the unit 1 chimney that will be abandoned. When using the IPM algorithm a retrofit difficulty factor of 1.3 is assumed. This was based upon the fact that it appeared to be a less congested site than Dave Johnston, but there were potential challenges, such as the chimneys, that could result in longer duct runs or additional demolition.
>
> For unit 3 it is also unclear if there is enough space to install the SCR reactor on the same side of the chimney as the boiler, which, means that demolition of that chimney may be

[203] Andover Technology Partners, "Cost of NOx Controls on Wyoming EGUs", October 28, 2013, p. 39; Wyoming EGU BART and Reasonable Progress Costs – 10/28/2013.

needed. There appears to be access for construction equipment, such as a crane, in the area east of the plant (the upper part of the photo) and to the north of unit 3. In estimating the cost of the SCR for unit 3, retrofit difficulty is above average because more lengthy duct runs or demolition of the chimney are likely needed, and an assumed retrofit difficulty factor of 1.3 is assumed for unit 3."

Hence, Naughton is assumed to be an above average retrofit difficulty because of the potential for some significant interference from some equipment and the possible need for longer than average duct runs.

For Wyodak, access to the site appears good, but there are some possible issues that might come up if the existing (but decommissioned) ESP needs to be demolished, which was the reason for the above average retrofit factor of 1.3. Per the Andover report:

"In the event SCR were installed at the site, the SCR reactor would likely be located above the existing (but decommissioned) ESP shown between the boiler building and the chimney . . . There is ample room on the site for lay down of material. Location of a crane near the construction site appears to be possible; however, in every direction from the boiler there is a potential interference that might complicate crane location relative to the lay-down area. Therefore, the difficulty of this retrofit is probably average to perhaps above average. A conservative estimate of retrofit difficulty of 1.3 is assumed, although a closer examination of the site may show that a lower retrofit difficulty may be possible." [204]

[204] Andover Technology Partners, "Cost of NOx Controls on Wyoming EGUs", October 28, 2013, p. 52; Wyoming EGU BART and Reasonable Progress Costs – 10/28/2013.

As a result, the retrofit factors used were not arbitrary but the result of a thoughtful process of examining the site for issues that would affect the difficulty of the retrofit.

Comment: EPA's application of the maximum retrofit factor (1.5) to Dave Johnston Units 1 and 2 is unsupported and leads to a significant $1.5 million/year and $800/ton overestimation of average costs. Neither PacifiCorp nor Wyoming proposed a retrofit factor for these units. It is especially surprising that EPA has applied the maximum retrofit factor to all four units at Dave Johnston, and that even an "end" unit like Unit 1 is considered to have the highest degree of retrofit difficulty. It has been our experience that end units are typically the easiest to retrofit, while the more difficult retrofits are associated with "middle" units. Once the SCR costs are corrected to address the issue discussed above, the incremental costs become $5,700 - $5,800/ton (versus $7,050/ton at Bridger Unit 2).

The EPA applied a retrofit factor of 1.5 to Dave Johnston Units 1-3, citing close proximity of boilers, decommissioned chimneys and the coal pile. It is not clear that these issues warrant a 50 percent increase in SCR costs due to retrofit difficulty at Units 1-3.

Response: EPA's estimate of retrofit factor is based upon a thoughtful consideration of the various factors described in the previous response. With regard to the Dave Johnston site, this appears to be one of the more difficult sites in Wyoming from the perspective of retrofit.

Comment: EPA's application of the maximum retrofit factor (1.5) to SCR on Dave Johnston Unit 4 is unsupported and leads to a significant $3.8 million/year and $900/ton overestimation of average costs. Neither PacifiCorp nor Wyoming proposed a retrofit factor for this unit. We disagree with EPA's decision to apply the maximum retrofit factor to all four units at Dave Johnston, and that even an "end" unit like Unit 4 is considered to have the highest degree of

retrofit difficulty. It has been our experience that end units are typically the easiest to retrofit, while the more difficult retrofits are associated with "middle" units.

The CCM retrofit factor is $728/MMBtu/hr and, for medium-size boilers like Dave Johnston Unit 4 or Wyodak. This represents a 23% - 24% increase in the direct capital cost. For Dave Johnston Unit 4, the EPA applied a retrofit factor of 1.5 to the costs of SCR because "[t]here may be more space available near unit 4 for a retrofit of SCR, but this is unclear from the photograph." This is a very questionable basis to justify increasing the costs of SCR by 50 percent.

Response: Because of the congestion of the overall site at Dave Johnson plant, a large reduction of retrofit factor to well below 1.5 was not justified even though Unit 4 is an end unit. There appears to be other equipment in the vicinity of Unit 4 that would obstruct access and maintaining a retrofit factor of 1.5 seems reasonable.

Comment: The EPA assigned a 1.3 retrofit factor to the SCR cost estimate for the single unit Wyodak plant. It appears the main reason for applying this factor is because the SCR would likely have to be placed on top of the decommissioned ESP, and that space constraints were not an issue. Although the EPA summarized that "...the difficulty of this retrofit is probably average to above average since it is common to have some relocation of equipment," the EPA applied a 30 percent increase to the SCR costs for Wyodak.

Response: As noted by the commenter, EPA determined that a retrofit factor of 1.3 is conservative at Wyodak. But, because of the possible items that are apparent (as described above) from the satellite photograph and that could get in the way, it was not regarded as below average difficulty, but perhaps something slightly above average. EPA therefore does not

believe that the retrofit factor should be lower than 1.0 and it may be as high as 1.3. EPA is basing its cost analysis on the more conservative estimate.

Comment: In Montana, EPA used the IPM algorithms for some sources and not for others, asserting only that use of IPM "was intended to ensure that the direct capital costs reflect the most recent cost levels seen in the marketplace" and thus did not over-estimate costs. 77 FR 57888. EPA also used IPM for the Arizona FIP but failed to address how its use was consistent with either the BART Guidelines or the CCM. 77 FR 72512 (Dec. 5, 2012). In Colorado, EPA said the State's cost estimates for Craig Unit 1 deviated from the CCM but accepted them anyway because EPA was pleased with a State law that required emission reductions from certain other EGUs. 77 FR 76875. EPA sometimes supplements the CCM with a rule that installed SCR retrofit costs must fall between $79/kW and $316/kW, unless the state justifies a deviation from this range. North Dakota SIP, 77 FR 20929; Montana FIP, 77 FR 57889; New Mexico FIP, 76 FR 52388, 52392. EPA has proposed to apply this rule to the Wyoming SIP and FIP, 78 FR 34738. This cost range is derived from "industry studies" and does not appear anywhere in the CCM. Supplementing the CCM with this new requirement is inconsistent from the terms of the CCM and BART Guidelines.

Response: We agree that we have used the IPM control cost algorithms in various regional haze rulemakings as noted by the commenter. And as noted by the commenter, our intent in using the IPM cost algorithms was to ensure that our capital cost estimates for SCR reflect those currently found in the marketplace. Elsewhere in these responses to comments, we have documented in some detail how our use of the IPM algorithms is consistent with the BART Guidelines and CCM. We disagree that we have supplemented the CCM with a rule that retrofit costs must fall between $79/kW and $316/kW – 2010 dollars ($81/kW to $324/kW when escalated to 2013 dollars), which was the range of actual installed capital costs found in recent industry studies as cited in our final rule for North Dakota. In the North Dakota rulemaking, we used this information to assess whether costs supplied to EPA by states or sources were consistent with those observed in the industry for numerous other retrofits spanning a wide range of retrofit difficulties. As such, this in no way represents a requirement imposed by EPA; rather, it represents a very practical means by which EPA has gauged the validity of costs. We acknowledge that, given exceptionally difficult retrofit circumstances or other factors, it is possible for a particular retrofit to fall outside of this range. In fact, we note that our revised costs supporting this final rule are in some cases in excess of the cited range. Our revised SCR costs for BART EGUs, when represented on a dollar per kilowatt basis, range from $222/kW to $467/kW, with a median cost of $322/kW (2013 dollars).[205] From this, it is clear that we have not established a requirement that SCR capital costs fall within the cited range as suggested by the commenter. For our Colorado final action, we are currently in litigation over our approval

[205] Andover Technology Partners, "Cost of NO_x Controls on Wyoming EGUs", October 28, 2013; Wyoming EGU BART and Reasonable Progress Costs – 10/28/2013; Wyoming EGU BART and Reasonable Progress Costs for Jim Bridger – 10/28/2013.

of the State's BART determination for Craig.

Comment: EPA inappropriately claimed that "Wyoming's SCR capital costs on a $/kW basis often exceeded real-world industry costs" (78 FR 34748) and then refers to industry studies conducted between 2002 and 2007 that report installed unit capital costs actually incurred by owners broadly ranging "from $79/kW to $316/kW (2010 dollars)." *Id.* EPA also noted "instances" in its proposed FIP "in which Wyoming's source-based cost analyses did not follow the methods set forth in the EPA CCM." EPA is simply incorrect in stating that Wyoming's analyses were flawed and did not reflect real-world industry costs for the units being analyzed. The commenter states that they are presenting information on the "real-world" costs for the upcoming Jim Bridger Units 3 and 4 SCR projects, which recently were competitively bid for engineering, procurement, and construction contracts to be installed in accordance with the requirements in the Wyoming SIP. These real-world costs, in turn, can easily be compared to the costs assessed by Wyoming and by EPA in their BART determinations.

Even when including AFUDC, the Wyoming SIP cost basis aligns closely with the EPA's cost basis, with each agency again understating real world costs for these projects. By extension, this real-world cost information for Jim Bridger Units 3 and 4 validates the methodology used by Wyoming to determine cost information for each of PacifiCorp's BART Units. This information clearly disputes EPA's claims in its FIP that Wyoming "did not properly or reasonably take into consideration the costs of compliance" and that its SCR cost analyses exceeded real world industry costs and were flawed. *Id.*

Response: We disagree that it was incorrect for EPA to state Wyoming's cost analyses for SCR were flawed. As discussed in our proposed rule, EPA found several deficiencies with Wyoming's cost analyses, including: inclusion of AFUDC, inclusion of some inappropriate owner's costs, insufficient documentation to support vendor estimates or bids, and use of incorrect baseline emission rates. 78 FR 34749. These deficiencies represented a departure from the procedures outlined in the CCM and BART Guidelines and, particularly when taken collectively, had a material impact on the cost estimates. We have addressed why each of these items are inconsistent with the CCM and BART Guidelines in other response to comments here.

Moreover, since the time of the State's analyses, EPA has been made aware of additional pertinent information by commenters, much of which has been incorporated into the revised costs presented in this final rulemaking. Examples include: inclusion of certain costs submitted by the facility owner's where appropriately documented, shorter useful life for one facility, correction for elevation, use of ammonia instead of urea as SCR reagent, revised SNCR reagent consumption for some facilities, and use of busbar costs for auxiliary power in place of market prices.

Regarding whether Wyoming's costs exceeded real world industry costs, see EPA's response to comment immediately above.

Comment: Wyoming did not overestimate the costs of SCR. The EPA claimed to have identified a number of flaws in Wyoming's cost analyses for SCR (78 FR 34748), but only identified one flaw – that "Wyoming's SCR capital costs on a $/kW basis often exceeded real-world industry costs." The EPA's use of the word "often" indicates that Wyoming's costs did not always exceed real-world costs, but the EPA did not explain which costs exceeded real-world costs and which did not.

The EPA specifically alleged only that the cost estimates for Dave Johnston Units 3 and 4, Naughton Units 1, 2, and 3, and Wyodak "are in excess of the range of capital costs documented by various studies for actual installations," and that the EPA based this conclusion of five industry studies conducted between 2002 and 2007. The EPA did not explain why the State was wrong to rely on vendor submitted, engineered, site-specific cost estimates instead of reports of installations at other facilities as long as a decade ago. The State's costs of compliance are based on site-specific capital costs, operating costs, and maintenance costs provided by the companies in their applications for a state BART permit, and over 50 percent of the costs of compliance is driven by the capital cost to engineer and physically install a SCR system. Such costs must be evaluated on a case-by-case basis in accordance with Appendix Y. Variable costs, including reagent usage (ammonia), account only for 2 to 7 percent of SCR costs.

The BART Guidelines not only allow, but encourage states to take into account site-specific conditions that impact the cost of installing emission controls. Until the EPA explains why it was unreasonable for Wyoming to prefer site-specific, real-world costs over speculative extrapolation of costs incurred at other facilities many years past, the EPA cannot lawfully displace the State's judgment simply because EPA prefers one approach over the other.

Response: We disagree that EPA only identified one material flaw in Wyoming's costs estimates for SCR. See EPA's response to comment immediately above where we identify several flaws. Because Wyoming's approach to estimating SCR costs was not consistent with the BART Guidelines and CCM, it was appropriate for EPA to revise these costs in our proposed rule.

We agree that the BART Guidelines encourage states to take into account site-specific conditions that impact the cost of installing emission controls. However, we disagree with the

commenter's characterization of the State's costs of compliance for SCR as site-specific in nature on the mere basis that they were submitted by the sources. There is nothing in the record to support claims that these costs were in fact based on detailed site-specific vendor bids, or are in any manner more site-specific than those costs relied upon by EPA in our proposed rule. As an example, the BART application submitted by PacifiCorp for Dave Johnston Unit 3, and relied upon by Wyoming, states that: "Costs and schedules for the LNBs and OFA, SNCR, and SCR were furnished to CH2M HILL by PacifiCorp, developed using Sargent and Lundy's internal proprietary database, and supplemented (as needed) by vendor-obtained price quotes. The relative accuracy of these cost estimates is stated by S&L to be in the range of plus or minus 20 percent."[206]

From this, it is clear that PacifiCorp, and thereby also the State, based SCR costs on "S&Ls internal database" and not a unique quotation specific to Dave Johnston Unit 3 supplied by an SCR vendor. Moreover, while the BART application refers to "vendor-obtained quotes", it does not make clear for which items these quotes were obtained, if any, nor are any quotes for SCR included in the BART application. Instead, the total installed capital cost of SCR (with combustion controls) is shown in PacifiCorp's economic analysis as a single line item with a value of $83,301,164, but without any detail or supporting documentation.[207] In an update to its initial BART application, PacifiCorp subsequently increased the capital cost to $129,700,000, but again without any detail or supporting documentation.[208]

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[206] Wyoming Regional Haze SIP, Attachment A, "BART Analysis for Dave Johnston Unit 3", prepared for PacifiCorp by CH2MHILL, December 2007, page 3-7.
[207] Wyoming Regional Haze SIP, Attachment A, "BART Analysis for Dave Johnston Unit 3", prepared for PacifiCorp by CH2MHILL, December 2008, Attachment 1.
[208] Wyoming Regional Haze SIP, Attachment A, "Addendum to Dave Johnston Unit 3 BART Report", prepared for PacifiCorp by CH2MHILL, March 26, 2008, Attachment 1.

We note that the capital cost estimates for SCR presented by EPA in our proposed rule were also based on the Sargent & Lundy databases as these in turn underlie the IPM cost algorithms. As such, the commenter is mistaken when characterizing Wyoming's capital costs as superior to those from EPA. However, the costs presented by EPA went on to correct the deficiencies that we have identified elsewhere (e.g., improper calculation of baseline emissions). Therefore, the capital costs provided from each agency were ultimately generated in a similar manner, but only the overall costs generated by EPA were in keeping with the BART Guidelines and CCM.

It is notable that, in order to address our concerns regarding lack of site-specific costs and associated documentation, the Wyoming sources have submitted additional cost information during the comment period for the proposed rule. The PacifiCorp comments include capital costs based on a vendor budgetary quote from Babcock and Wilcox, as opposed to capital costs based on the Sargent & Lundy databases. Similarly, Basin Electric has submitted a consultant's report that, while conceptual in nature and without vendor-based equipment costs, provides a more detailed analysis of SCR costs for Laramie River than before. These submittals contain more recent and more detailed cost information than relied upon by Wyoming in their cost analyses. The submission of these updated costs from the sources, intended to supply more site-specific costs to EPA, belies claims by the commenter that the costs originally used by the State were "vendor submitted, engineered, site-specific cost estimates."

Comment: We would like to point out that while the EPA makes a point of saying in their proposed rule that they have followed their own guidelines in the CCM, that manual has not been updated since 2002. Representative Lummis of Wyoming has authored language to require the EPA to update its cost manual for the first time in over a decade. The old data in the old

handbook no longer reflects the true costs of designing, engineering and installing controls. Before rejecting state data on the cost of compliance, the EPA must engage states and regulating entities to acquire real-world cost data and use that data to update its manual.

Response: We consider the use of the broader costing methodology used by the CCM, the overnight method, as crucial to our ability to assess the reasonableness of the costs of compliance. Evaluation of the cost of compliance factor requires an evaluation of the cost-effectiveness associated with the various control options considered for the facility. A proper evaluation of cost-effectiveness allows for a reasoned comparison not only of different control options for a given facility, but also of the relative costs of controls for similar facilities. If the cost-effectiveness of a control technology for a particular facility is outside the range for other similar facilities, the control technology may be rejected as not cost-effective. In order for this type of comparison to be meaningful, the cost estimates for these facilities must be performed in a consistent manner. Without an "apples-to-apples" comparison of costs, it is impossible to draw rational conclusions about the reasonableness of the costs of compliance for particular control options. Use of the CCM methodology is intended to allow a fair comparison of pollution control costs between similar applications for regulatory purposes.

Just as importantly, while we have followed the broad methodology of the CCM as required by the BART Guidelines, we have also accounted for the cost of controls currently observed in the marketplace. In particular, our use of the cost calculations taken from the IPM, released in 2010, is designed to reflect modern day costs. Moreover, operation and maintenance costs for items such as labor, reagent, and catalyst, reflect current market values. In short, we have adhered to the broad overnight cost methodology specified in the CCM, while updating

both capital and operation and maintenance costs to reflect current market conditions. Therefore, the commenter is mistaken in asserting that our costs are based on outdated information.

Comment: EPA's regional haze FIP also is improper because it assumes BART NO_x controls over $5,000 per ton are "cost effective." (See e.g., 77 FR 33053.) Appendix Y, on the other hand, states that BART NO_x control costs per ton above $1,500 are not "cost effective." In the preamble to the BART Guidelines, EPA suggests that 75% of the EGUs would have BART NO_x removal costs between $100 and $1,000 per ton, and almost all of the remaining EGUs could install sufficient BART NOx control technology for less than $1,500 per ton. EPA also recognized in the preamble that SCR was generally not cost effective for EGUs, except for EGUs with cyclone boilers (where the cost per ton was less than $1,500 per ton, with an average of $900 per ton). Based upon EPA's Preamble, BART NO_x control technology that costs more than $1,500 per ton should not be considered "cost effective." Here, EPA found BART NO_x controls with a "cost effectiveness" number much more than $1,500 per ton to be "cost effective." Therefore, EPA should withdraw its regional haze FIP.

Response: We disagree with this comment. For each source subject-to-BART, the RHR, at 40 CFR 51.308(e)(1)(ii)(A), requires that states identify the level of control representing BART after considering the factors set out in CAA section 169A(g), as follows: "States must identify the best system of continuous emission control technology for each source subject to BART taking into account the technology available, the costs of compliance, the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use at the source, the remaining useful life of the source, and the degree of visibility improvement that may be expected from available control technology." 70 FR 39158. Because the preamble generally discusses costs, this does do not obviate the need for states (or EPA in the case of a FIP) to

identify the best system of continuous emission control technology on a case-by-case basis considering the five factors. While EPA described various dollar-per-ton costs as "cost-effective" in various preambles (e.g., 70 FR 39135-39136), EPA did not establish an upper cost effectiveness threshold for BART determinations.

Comment: Far from stating that the CCM must be the exclusive source of cost information, the BART Guidelines state that "[t]he basis for equipment cost estimates also should be documented, either with data supplied by all equipment vendor (i.e., budget estimates or bids) or by a referenced source (such as the EPA CCM])." Although the BART Guidelines then say that cost estimates should he based on the CCM, it also says that the CCM should only he used "where possible." The Guidelines go on to say that the CCM "addresses most control technologies in sufficient detail for a BART analysis."

The CCM does not say that it addresses 'all' control technologies, just "most", implying that the CCM does not supply all of the necessary information. Further, the Guidelines state that the cost analysis should "take into account any site-specific design or other conditions identified above that affect the cost of a particular BART technology option." Again, the CCM acknowledges that there are conditions, design scenarios, etc. that are not addressed in the CCM but that exist in the real world that must he addressed.

Response: We acknowledge that our BART guidelines state, "In order to maintain and improve consistency, cost estimates should be based on the [CCM], where possible" and that "[w]e believe that the [CCM] provides a good-reference tool for cost calculations, but if there are elements or sources that are not addressed by the Control CCM or there are additional cost methods that could be used, we believe that these could serve as useful supplemental information." The CCM contains two types of information: 1) Study level cost estimates of

capital and operation and maintenance costs for certain specific types of pollution control equipment, such as SCR, and 2) a broader costing methodology, known as the overnight method. We agree that the language of the BART Guidelines does not require strict adherence to the study level equations and cost methods used to estimate capital and operating and maintenance costs.

We consider the use of the broader costing methodology used by the CCM, the overnight method, as crucial to our ability to assess the reasonableness of the costs of compliance. Evaluation of the cost of compliance factor requires an evaluation of the cost-effectiveness associated with the various control options considered for the facility. A proper evaluation of cost-effectiveness allows for a reasoned comparison not only of different control options for a given facility, but also of the relative costs of controls for similar facilities. If the cost-effectiveness of a control technology for a particular facility is outside the range for other similar facilities, the control technology may be rejected as not cost-effective. In order for this type of comparison to be meaningful, the cost estimates for these facilities must be performed in a consistent manner. Without an "apples-to-apples" comparison of costs, it is impossible to draw rational conclusions about the reasonableness of the costs of compliance for particular control options. Use of the CCM methodology is intended to allow a fair comparison of pollution control costs between similar applications for regulatory purposes. This is why the BART guidelines specify the use of the CCM where possible and why it is reasonable for us to insist that the CCM methodology be observed in the cost estimate process. The overnight method has been used for decades for regulatory control technology cost analyses, and its use ensures equitable BART determinations across states and across sources.

Comment: Although EPA contends that States must conform in all respects to the Agency's CCM, its own consultant ignores the Manual when calculating capital costs and operating and maintenance costs, and instead uses an entirely different methodology called the IPM. 78 FR 34749. EPA tries to finesse this problem by asserting that the consultant followed "the structure of" the CCM and BART Guidelines, *id.*, but that simply is not true. The IPM is a fundamentally different tool and uses a fundamentally different methodology than the CCM - it does not follow the CCM. Therefore, to rely on the consultant's cost report to disapprove Wyoming's cost analysis and BART analysis would be arbitrary and capricious, and not in accordance with law.

Response: We disagree. As noted elsewhere in these responses to comments, in our revised cost estimates, we have followed the broad methodology of the CCM, referred to as the overnight method, while updating capital and operating and maintenance costs to reflect current real-world costs. In doing so, we directed our consultant (Andover) to reconcile anything in the IPM cost algorithms that would be inconsistent with the CCM's overnight method. For example, the IPM cost algorithms include AFUDC, which as we have established elsewhere in these response to comments, is not part of the overnight costs. Accordingly, our consultant eliminated this cost when utilizing costs derived IPM cost algorithms. In effect, we have "squared" the IPM-based costs with the methodology required by the CCM.

Comment: EPA's average cost effectiveness for combustion controls and SCR for the Laramie River units is higher than Wyoming's average cost effectiveness. *Compare, e.g.*, 78 FR 34773, Table 36 (Wyoming's SCR average cost effectiveness of $3,372/ton for Unit 1) with 78 FR 34775, Table 39 (EPA's SCR average cost effectiveness of $3.718/ton for Unit 1). The higher the cost effectiveness of a given technology, the stronger the case for rejecting it. If the State was justified in rejecting SCR based on its lower predicted cost of SCR, it would be even more

justified in rejecting SCR if it had used EPA's higher cost. The outcome would not have changed, and so any error alleged by EPA is not material.

EPA's incremental cost effectiveness for combustion controls plus SCR, compared with the cost effectiveness of combustion controls plus SNCR, is lower than Wyoming's incremental cost effectiveness. However, in considering cost effectiveness for purposes of both its SIP disapproval and its FIP proposal, EPA cites and relies primarily on the average cost effectiveness for SCR, not the incremental cost. 78 FR 34776 ("[T]he cost-effectiveness for new LNBs with OFA and SCR ranges from approximately $3600/ton to $3900/ton with significant visibility improvement at the most impacted Class I area . . . . When considering the cost effectiveness and visibility improvement of new LNBs plus OFA and SCR, it is within the range of what EPA has found reasonable for BART in other SIP and FIP actions.") EPA refers to incremental cost only incidentally - not as an affirmative reason for disapproving Wyoming's BART. *Id.* ("We also propose to find that the incremental cost-effectiveness does not preclude the selection of new LNBs with OFA and SCR.").

Response: We disagree. The commenter fails to note that the visibility improvement presented by EPA in our proposed rule is higher than that found by the State. The tables cited by the commenter show a visibility improvement from SCR of 0.44 deciviews resulting from the State's analysis, while EPA's analysis showed a visibility improvement of 0.79 deciviews. We found that, when balancing all of the BART factors, this level of visibility improvement was significant enough to justify the costs associated with SCR. In our revised visibility modeling analysis for this final rule, we have presented a lower visibility improvement for Laramie River Unit 1 of 0.57 deciviews. We continue to find that this level of visibility improvement, and consideration

of the other BART factors, warrants installation of SCR. The same can be said for the other two Laramie River units

Additionally, the SCR costs and visibility improvement for the Laramie River units provided by the State and EPA are not directly comparable. In the BART application submitted by Basin Electric, and relied upon by the State, and unlike in the case of SNCR, no additional combustion controls are assumed in the SCR control scenario. Since the time that Basin Electric submitted the BART application to the State, additional combustion controls have been installed on the Laramie River units. We have taken account of these additional controls in our analyses. When assessing the emission reductions from SCR (or SNCR), and the associated costs and visibility improvement, we incorporated the actual emission rates currently being achieved with the additional combustion controls. We have presented the costs of compliance and visibility for the additional combustion controls plus SCR, much in the same way that the State presented the same factors for the PacifiCorp units.

Comment: The costs of SCR plus combustion controls are cost effective at all of the Wyoming EGUs regardless of whether the costs are based on EPA's cost analyses or the commenter's 2012 cost analyses conducted for the original Wyoming SIP. SCR costs for each EGU in Wyoming, show that SCR plus combustion controls is very cost effective for all BART-subject EGUs and also Dave Johnston Units 1 and 2. Further, even EPA's June 2013 cost estimates for SCR plus combustion controls show that these controls are cost effective at all Wyoming EGUs, despite what the commenter believes are deficiencies in EPA's cost effectiveness analyses that overestimate the costs of SCR plus combustion controls. These costs are within the range that has been required or proposed of other similar sources to meet BART as follows:

- Final NO_x BART determination for San Juan Units 1-4 requires installation of SCR at all four units to meet a NO_x emission limit of 0.05 lb/MMBtu, found that the costs ranged from $1,987/ton to $2,651/ton of NO_x removed, in 2010 dollars.
- EPA Region 9 has proposed SCR as BART for Four Corners Units 1 - 5 to meet a NO_x limit of 0.11 lb/MMBtu at a cost effectiveness of $2,515/ton to $3,163/ton in 2008 dollars. That converts to $2,407/ton to $3,028/ton in 2010 dollars.
- In its FIP for Montana, EPA found that the cost effectiveness of SCR controls for Colstrip Units 1 and 2 of approximately $3,200/ton per unit (in 2010 dollars) was reasonable.
- In its FIP for Arizona regional haze, EPA is requiring SCR along with combustion controls to meet BART at the BART-subject coal-fired units at Apache, Cholla, and Coronado power plants at cost effectiveness values ranging from $2,275/ton to $3,472/ton.

Response: We agree that the costs for SCR plus combustion controls presented in our proposed rule, taken without consideration of the remaining BART factors, may generally be considered cost effective. However, the CAA and RHR require a consideration of all five BART factors. For example, a control that is considered cost effective may not be warranted if the visibility improvement is minor. Also, there may be occasions that, while the average cost effectiveness of a control is reasonable, the incremental cost effectiveness may not be. In short, EPA must weigh more than just the cost effectiveness when considering BART.

Also note that, as described elsewhere in these responses to comments, we have revised the SCR cost estimates that we presented in our proposed rule. In today's final rule, we have

again balanced the costs along with the remaining BART factors when considering the selection of BART controls.

Comment: EPA's proposed FIP is arbitrary, capricious, and contrary to law for a number of reasons, including that the EPA's BART analyses ignored relevant data. Wyoming based its BART analyses on site-specific, engineered, vendor submitted bids for installing emission controls (citing the SIP Attachment A materials related to Laramie River Station), and Basin Electric has submitted to EPA comments extensively explaining the bases for these cost estimates, including the substantial technical difficulty of installing SNCR and SCR at Laramie River Station due to the design of the three units. The EPA has disregarded the site-specific cost estimates submitted for Laramie River Station and the other BART sources in Wyoming, and the EPA has alleged without any specificity that Wyoming did not properly or reasonably take into consideration the costs of compliance. The EPA relied on the IPM Model with retrofit factors adjusted on a source-by-source basis, instead of relying on the site-specific costs.

EPA's October 23, 2012 revised cost memo states that "[t]he retrofit factor is a subjective factor used to account for the estimated difficulty of the retrofit that is unique to the facility" and noted that these retrofit factors were determined without site visits, but based on satellite images of the facilities. At EPA's public hearing in Casper, Wyoming, on July 26, 2013, Basin Electric's consultant, Kenneth Snell, explained to EPA in detail how the satellite images fail to reveal multiple conditions specific to Laramie River Station that make installing SCR far more expensive than EPA's consultant assumed. EPA's failure to rebut those positions is arbitrary and, moreover, that the EPA's methodology - relying on a subjective interpretation of satellite images - is itself arbitrary and capricious because it strains credulity to claim that one can assess retrofit costs by simply looking at hazy satellite pictures of a power plant.

Response: EPA disagrees. First, Wyoming's BART analysis[209] was based upon a 2008 cost estimate by Basin Electric, which, when adjusted for the fact that they were performed prior to addition of combustion controls, resulted in similar capital costs for SCR and similar cost effectiveness. Moreover, and as noted in previous responses, the costs submitted by Wyoming should not be considered site-specific estimates, and therefore superior to EPA's costs, on the mere basis that they were submitted by a source. In any case, with their comments on EPA's reproposal, Basin Electric has roughly doubled their claimed cost of SCR, but these were not part of the Wyoming BART analysis. These new costs submitted by Basin Electric are presumably intended to be more site-specific in nature than those originally submitted to the State.

Second, the new costs offered by Basin Electric were found to be deficient in a number of respects that are discussed more specifically in other responses to comments. The new costs estimates included numerous costs that were inadequately explained or without any supporting documentation. The new cost estimates also did not include vendor quotes. Per Basin Electric's Exhibit 14, page 21: "The LRS [Laramie River Station] cost estimates are conceptual in nature; thus, S&L did not procure equipment quotes specifically for the LRS control systems."

EPA also disagrees with the commenter regarding the use of satellite images for assessing retrofit difficulty. As noted in responses to other comments, because they provide a unique "bird's eye" view, satellite images are routinely used to evaluate conditions at a site: available space for a crane, access to and from the site, interferences that may exist at the site boundary, interferences between major pieces of equipment, available space for laying down material. With regard to SCR installation, satellite images cannot reveal whether or not the air

[209] Wyoming Department of Environmental Quality Air Quality Division BART Application Analysis AP-6047 May 28, 2009.

preheater must be relocated to accommodate SCR ductwork; however, none of the commenters indicated that any affected Wyoming BART sources found it necessary to relocate their air preheater. Satellite images cannot reveal the "ideal location" for reagent storage equipment, although this is not a large impact on cost. When possible and resources allow, site visits may also provide useful data in addition to satellite images, but these are generally performed in addition to rather than in lieu of analysis of satellite images.

Mr. Snell's comments are largely addressed in other comments and broadly fall into three areas: 1) Criticism of EPA's use of the IPM algorithm for estimating SCR cost; 2) Assertions that EPA failed to take into account site-specific factors affecting cost; 3) Assertions that EPA failed to take into account balance of plant systems that would need to be upgraded. Each of these items raised by Mr. Snell as well as the specific issues within each item has been addressed elsewhere in other responses to comments.

Comment: It has been our experience that the effectiveness of SNCR is highly dependent upon the characteristics of each boiler. EPA states that SNCR typically reduces NO_x an additional 20 to 30% above combustion controls without excessive NH_3 slip. NO_x reduction with SNCR is known to be greater at higher NO_x emission rates than lower rates. Accordingly, EPA has estimated that the NO_x reduction from SNCR as 30% for initial NO_x greater than 0.25 lb/MMBtu, 25% for NO_x from 0.20 to 0.25 lb/MMBtu and 20% for NO_x less than 0.20 lb/MMBtu.

To support this statement, EPA cites a memo from Jim Staudt, Andover Technology Partners ("Review of Estimated Compliance Costs for Wyoming Electric Generating (EGUs)—Revision of Previous Memo", memo from Jim Staudt, Andover Technology Partners, to Doug Grano, EC/R, Inc., February 7, 2013, p 7), but this memo provides no evidence or documentation to support the assumptions that these control levels can be achieved. Such assumptions, whether

or not supported, can significantly affect the outcome of a BART determination, as EPA explained regarding Laramie River: "Therefore, EPA predicts that the reduction that can be achieved with SNCR at the Laramie River units is 20%, which is much lower than the 48% assumed by Wyoming. This significantly reduces the tons reduced by SNCR which is in turn used in the calculation of cost effectiveness. It also affects the incremental cost effectiveness between SNCR and SCR (both in combination with additional combustion controls)." The use of incremental costs in this manner is extremely sensitive to bias due to the interjection of control strategies based upon invalid assumptions of control efficiency.

Another commenter stated that the EPA is wrong to claim that Wyoming overestimated the ability of SNCR to reduce NO_x. The commenter made the following points in support of this claim:

- The CCM claims that "[r]eductions of up to 65% have been reported for some field applications of SNCR in tandem with combustion control equipment such as low NO_x burners (LNB)."
- Wyoming's estimates are entirely consistent with demonstrated SNCR effectiveness. One study clearly concluded that "SNCR has the capability of NO_x reductions in the range of 30-60%, depending on the specific retrofit application." *See* EPRI, *Cardinal 1 Selective Non-Catalytic Reduction (SNCR) Demonstration Test Program*, at 1-2 (2000). That study showed, for example, that a 600 MW unit equipped with LNB could reduce NO_x by an amount greater than EPA's "typical" results.
- The EPA's *AP 42, Fifth Edition, Volume I, Chapter 1: External Combustion Sources* recognizes that "[t]he effectiveness of SNCR depends on the temperature where reagents are injected; mixing of the reagent in the flue gas; residence time of the reagent within the

required temperature window; ratio of reagent to NO_x; and the sulfur content of the fuel that may create sulfur compounds that deposit in downstream equipment."

The commenter concluded that EPA's own literature, as well as other studies, recognize that SNCR effectiveness is highly contextual and that it can achieve reductions far in excess of Wyoming's estimates.

The commenter asserted that the EPA, without explanation, disregarded its own position on the contextual nature of SNCR effectiveness, and in turn disregarded Wyoming's well-reasoned analysis by relying instead on "typical" NO_x reductions. The commenter believes that the EPA has practiced arbitrary decision making because the EPA did not explain in its proposal why it now prefers a generic approach to SNCR effectiveness in reducing NO_x over its previously expressed recognition that effectiveness depends on a host of facility-specific factors.

Response: EPA agrees with the commenter that the effectiveness of SNCR is highly dependent upon the characteristics of each boiler, and those characteristics include furnace temperature, furnace CO concentration, NO_x level and other factors, but furnace temperature, CO concentration, and NO_x level are most important. The tendency of NO_x reduction to decrease as the NO_x concentration is reduced is a well-established phenomenon. Utility boiler upper furnace temperatures are typically in the range of 2000-2300°F, but can sometimes be lower or higher. As described in Section 1.2.3, SNCR Performance Parameters in the Control CCM, and also by Sun, Hofmann and Pachaly in 1990, and by Muzio, Montgomery, Quartucy and Texeira in 1993,[210] [211] the percentage reduction in NO_x is strongly impacted by the residence time, furnace

[210] Sun, W., Hofmann, J., and Pachaly, R., "Post-Combustion NOx Reduction With Urea – Theory and Practice", Seventh Annual International Pittsburgh Coal Conference, September 10-14, 1990.

[211] Muzio, L., Montgomery, T., Quartucy, G., Texeira, D., "The Effect of Residence Time On

temperature and the starting, or baseline, NO_x. Because most utility boiler furnace temperatures and residence times fall into an expected range, the possible NO_x reduction is generally related to baseline NO_x and Figure 1.5 of the CCM demonstrates the effect of baseline NO_x and temperature on NO_x reduction. Of course, there are some units that may fall outside the typical range of furnace temperatures or CO levels, and can achieve higher or lower levels of NO_x reduction. As noted in our response to other comments, the furnace temperatures at Laramie River Station as reported by Basin Electric in their recently submitted comments are much higher than typical, and this will limit the possible NO_x reduction.

On the other hand, EPA disagrees that EPA "disregarded its own position on the contextual nature of SNCR effectiveness, and in turn disregarded Wyoming's well-reasoned analysis". On the contrary, EPA carefully considered the contextual situation at Laramie River Station and the State's analysis in reaching its opinion. Experience has shown that for utility boilers NO_x reductions of 48% using SNCR alone have only been possible from much higher NO_x baselines than exist at Laramie River Station. In practice, facility owners have generally found that, when using SNCR, the lowest cost approach is to first reduce NO_x as far as possible with combustion controls and then use SNCR for additional reductions beyond what combustion controls can provide. As a result, SNCR is rarely used alone to provide 48% NO_x reduction on electric utility boilers because the baseline levels in practice are typically too low to achieve such high NO_x reduction through SNCR.

SNCR Processes", EPRI/EPA 1992 Joint Symposium on Stationary Combustion NOx Control, Bal Harbor, FL, May 24-27, 1993.

The Cardinal Station citation raised by the commenter is from a test on a 600 MW unit that had a NO_x baseline of around 450-500 ppm of NO_x[212] - in the range of about 0.6 to 0.7 lb/MMBtu, well above the emission rate of the Laramie River Station units, which, after additional combustion controls is about 0.19 lb/MMbtu (annual). This unit achieved 25% NO_x reduction at full load and 30% NO_x reduction at 350 MW in long term tests. As a result, this project does not support the possibility of 48% NO_x reduction with SNCR at Laramie River Station, which has a much lower baseline NO_x level than at the Cardinal Station.

Finally, in Exhibit 14 to Basin Electric's comments,[213] Sargent & Lundy states that a "33% reduction is not likely to be achievable" and conditionally indicates that a 20% reduction should be achievable from a baseline emission rate of 0.19 lb/MMBtu. EPA agrees that based upon the information that is available, 20% is a more reasonable level of reduction to expect from SNCR at Laramie River Station.

Comment: Contrary to EPA's assertion, Wyoming's estimate of the reduction achievable with SNCR does not depart from the BART Guidelines. The Guidelines do not specify the effectiveness of SNCR, so there is no contradiction. EPA observes that Wyoming assumed that after installation of combustion controls (new LNBs and OFA), SNCR would reduce NO_x emissions from 0.23 lb/MMBtu to 0.12 lb/MMBtu, a 48% reduction. EPA, however, insists that its consultant contends that SNCR typically reduces NO_x by 20% to 30%, depending on the level of NOx going to the SNCR unit. According to EPA's consultant, when the input level of NO_x is 0.19 lb/MMBtu, which EPA says was the annual average at Laramie River Station Unit 1 in

[212] Stallings, J., "Cardinal 1 Selective Non-Catalytic Reduction (SNCR) Demonstration Test Program. EPRI Report 1000154, July 2000, pages 4-7 and 8-1.
[213] Exhibit 14, pages 15, 16.

2012, then after installation of new LNBs and OFA the reduction achievable with SNCR is only 20%. 78 FR 34748. The consultant says that would reduce the NO_x emission rate only to 0.15 lb/MMBtu. Andover Report at 7.

The only authority cited by EPA's consultant for the assumed 20% reduction is an October 15, 2012 e-mail from Fuel Tech. *Id.* at 13. No information is provided by EPA or its consultant about the expertise of Fuel Tech, who at Fuel Tech sent the e-mail, why an e-mail from Fuel Tech should be deemed reliable, persuasive or authoritative, or why it should take precedence over Wyoming's analysis.

EPA's statements in the Montana FIP demonstrate that EPA's critique of Wyoming's estimate is misplaced. In that case, EPA determined that with an inlet concentration of 0.20 lb/MMBtu, SNCR can reduce NO_x emissions by 25%, as compared to the 20% EPA endorses for a nearly identical inlet concentration at Laramie River Station. 77 FR 23988, 24023, 24032, 24039; 77 FR 57864, 57885-57886. EPA relied on information from Fuel Tech to support the feasibility of a 25% NO_x reduction at this inlet concentration. 77 FR 57885. EPA explained that: "[H]igher NO_x reductions can be achieved at mid to low load heat inputs, possibly up to 40%. Given that the Colstrip Unit 1 and 2 frequently operate at below full load, it is likely that on an annual basis SNCR can achieve better than the 25% emission reduction assumed by EPA.

EPA further explained that its review of Clean Air Markets Division (CAMD) emissions data showed that "there are many EGUs equipped with SNCR (with combustion controls) that are achieving an emissions rate of 0.15 lb/MMBtu *or lower* on a monthly basis." *Id.* at 57886 (emphasis added). For example, Boswell Unit 4 had a NO_x rate of 0.35 lb/MMBtu with LNB and close-coupled over fire air (CCOFA). *Id.* With SNCR and SOFA, the unit achieved a monthly NO_x rate between 0.11 and 0.14 lb/MMBtu over a full 12 month period - a reduction of

60% to 69%. *Id.* In response to comments that EPA had overstated the benefits of SNCR, EPA stated that it would not adopt a higher post-SNCR emission rate "without a showing that there are circumstances unique to Colstrip Unit 1 and 2 that would prevent SNCR from achieving the same reductions as at Boswell Unit 4." *Id.*

Response: As noted in other comments, EPA carefully considered the contextual situation at Laramie River Station in reaching its opinion. The Wyoming analysis[214] indicated that NO_x was reduced by SNCR from 0.23 lb/MMBtu to 0.12 lb/MMBtu. This seemed to be a higher level of NO_x reduction than expected and inconsistent with other experience. The BART analysis suggests no additional NO_x reduction from OFA versus LNB. Experience has shown that for utility boilers NO_x reductions of 48% using SNCR alone have only been possible from much higher NO_x baselines than exist at Laramie River Station, and a NO_x reduction from 0.19 lb/MMBtu (the NO_x emissions rate after installation of combustion controls) to 0.12 lb/MMBtu - roughly 37% reduction - is not likely to be feasible either. In practice, facility owners have generally found that, when using SNCR, the lowest cost approach is to first reduce NO_x as far as possible with combustion controls and then use SNCR for additional reductions beyond what combustion controls can provide. Those coal-fired utility units that the commenter states are achieving below 0.15 lb/MMBtu emission rates and are equipped with SNCR are also using combustion controls – most often LNBs and SOFA - that lower the NO_x sufficiently that less than 20% NO_x reduction is necessary to achieve under 0.15 lb/MMBtu.

As a result, SNCR is rarely used *alone* to provide 48% NO_x reduction on electric utility boilers because the baseline levels in practice are typically too low to achieve such high NO_x

[214] Department of Environmental Quality, Air Quality Division, BART Application Analysis, AP-6047, Laramie River Station, May 28, 2009.

reduction through SNCR. In fact, Exhibit 14 to Basin Electric's comments, Sargent & Lundy states that "33% reduction is not likely to be achievable" and conditionally indicates that 20% reduction should be achievable from a baseline emission rate of 0.19 lb/MMBtu. This is more consistent with what EPA has determined.

EPA also cited input from SNCR technology supplier, Fuel Tech, which supports EPA's opinion that an expected NO_x reduction would be in the range of 20%. Fuel Tech is the largest supplier of SNCR technology to the electric utility industry and is therefore a very knowledgeable source of information on SNCR.

Comment: Wyoming did not underestimate the usage and cost of urea, and its estimate regarding urea does not conflict with the BART Guidelines. EPA contends that producer prices for urea have increased over the past three years and that Wyoming's analysis is defective because it does not take those price increases into account. EPA, however, cannot use information not available at the time of Wyoming's BART determination to second-guess that determination. EPA's own Guidelines counsel that in making a BART determination, a state should consider technologies "available before the close of the State's public comment period," but explicitly provide that "in order to provide certainty in the process," a state "*need not* consider technologies that become available after this date." 40 CFR Pt. 51, App. Y., section IV(D)(2)(3) (emphasis added). This makes sense. Absent some time cutoff, a state's SIP would be in a constant state of flux, subject to constant challenge based on ever changing information and technology not available to the State at the time it made its BART determination. This is particularly true given the amount of time it takes EPA to review a state's SIP. It is also consistent with 40 CFR 51.308(f), which requires states to reevaluate and revise their regional haze SIPs every ten years. That regulation

clearly contemplates that states have a duty to take into account new information only in connection with the required periodic SIP revisions - not on an ongoing basis.

EPA is again overstepping its role in this process. Wyoming completed its BART analysis in 2009, more than three years ago, and it would have been impossible to incorporate the alleged urea price increases in that analysis. Simply put, Wyoming's BART determination is hardly arbitrary and capricious simply because it failed to take into account alleged urea price increases some three years after Wyoming completed its BART analysis. Wyoming did precisely what the Guidelines instruct: made a BART determination based on information available before the close of its public comment period. 40 CFR Pt. 51, App. Y., section IV(D)(2)(3). To disapprove Wyoming's cost analysis based on information that was not available to would be to employ a "gotcha" approach that runs contrary to EPA's own regulations and counter to EPA's commitment to do its job fairly and objectively. If the urea issue is truly material, EPA should, at a minimum, allow Wyoming to consider whether this new information would affect its BART determination before disapproving that determination.

Another commenter made a number of the same points, stating that changes in urea prices are not a valid basis for disapproving the state's cost analyses, and even if they were, EPA's facts are mistaken. According to the commenter, the EPA asserted that the BART sources underestimated the cost of SNCR and EPA supported this conclusion by stating that Wyoming underestimated "SNCR reagent (urea) usage and cost." The commenter indicated that the EPA did not explain how Wyoming underestimated urea usage, but the EPA asserted that "prices for urea have increased in the last three years" since Wyoming submitted its plan to EPA.

This commenter finds it remarkable that EPA would claim that a change in urea prices in the time since Wyoming submitted its SIP somehow invalidates the SIP, indicating that the time

that has elapsed since Wyoming submitted its plan to EPA is due in large part to EPA's failure to take timely action on Wyoming's plan. According to the commenter, the EPA did not claim that Wyoming's analyses were invalid when Wyoming submitted its plan in January 2011, and the EPA did not explain how the change in urea market prices led Wyoming to unreasonable conclusions. The commenter stated that the EPA appears to believe that Wyoming and other states must constantly update their BART analyses to account for changing urea market prices up until the date that EPA takes final action on the plan. The commenter asserted that under this theory, the EPA can hold SIPs hostage, waiting for commodity prices to change, and then disapprove SIPs on that basis alone. The commenter indicated that the EPA cited no legal basis for this theory.

The commenter noted that the BART Guidelines expressly acknowledge that "[i]n order to provide certainty in the process," states "need not consider technologies that become available after [the close of the comment period on the state plan] (citing 40 CFR pt. 51, App. Y, section IV(D)(2)(3)). The commenter believes that in order "to provide certainty in the process," the EPA cannot claim that state plans are perpetually subject to invalidation as a result of changing commodity prices. The commenter stated that the State's price for urea does not conflict with the BART Guidelines, and EPA offers no evidence that its price is more reliable than the State's price. Commenter provided the following additional statements: Even if urea prices have increased, assumptions regarding such prices do not constitute a failure to follow the BART Guidelines because the Guidelines do not specify what the price is or how it should be determined. EPA relies on its consultant's report to claim that prices have increased, but that report also says that there has been significant variability in cost. Andover Report at 7-8. There is no analysis by the consultant as to whether, given the cited price variability, the current price

is likely to go up or down in the future or what the actual cost of urea is likely to be going forward. The consultant relies on a single source at a single point in time to pick a urea price to apply for the life of an SNCR installation, with no consideration of the price variability. The reliability of the resulting price is no greater than a roll of the dice at Las Vegas, and EPA offers no explanation why its consultant's price is superior to the State's price. It is merely different, and this is yet another technical issue upon which EPA is required to defer to the State's assessment.

EPA's consultant modified its initial report issued in October 2012 in the revised report issued in February 2013, purportedly to account for an alleged change in urea prices. However, the February 2013 report cites the very same source for current urea prices as the October 2012 report. Compare Andover Report (Oct. 23, 2012) at 7. n.23, EPA docket cite EPA-R08-OAR-2012-0026-0081, with Andover Report (Feb. 7, 2013) at 7 n.22, EPA docket cite EPA-R08-OAR-2012-0026-0086. Both reports cite the same 10/12/2012 e-mail from Doug Kirk of Fuel Tech. The additional 10/15/2012 e-mail from Jennifer Zagorsky of Potash Corp that is cited in the October report is deleted from the February report. There is no explanation for the change.

Moreover, urea prices are relevant to operating costs for SNCR but are not relevant to SCR. If the State's urea prices were too low, that would mean the State had underestimated the cost of SNCR, which is what EPA claims in its proposal. 78 FR 34748. Such an underestimate would have no material impact on the State's BART determination and thus provides no basis for EPA's disapproval. Once again, this is a fact that in retrospect supports the State's BART decision, rather than demonstrating it to be arbitrary. If Wyoming's estimate of the cost of SNCR should have been higher, as EPA maintains, the higher cost would tend to add further support for rejecting SNCR - the more expensive a control technology, the stronger the reason to

reject it as BART. So if EPA is correct in claiming the State's assumed urea price was too low, it is incorrect in claiming this made a difference in the State's BART determination. A mistake in a cost assumption, if there was a mistake, is not a *per se* reason to reject a BART determination. Such a mistake would help support disapproval of a cost analysis and resulting BART determination only if it overstated costs in a material way and thus tended to make a technology appear significantly more costly than it actually would be.

If the State rejected SNCR based on an allegedly too-low cost of urea, perhaps EPA could argue that the State was wrong in rejecting SNCR. But EPA makes no such argument. It asserts only that its consultant's urea price is different from the State's price. As explained above respecting SNCR, to succeed in arguing that the State's rejection of SNCR justifies disapproval of the State's BART, EPA would, at a minimum, have to show that the State was arbitrary and capricious. The choice of BART is the prerogative of the State, and the State is charged with evaluating and balancing all five BART factors and deciding how much weight to give to each factor. EPA may not disapprove the State's judgment merely because it disagrees with the State on what is a reasonable cost, or how the State balanced costs with other BART factors. In fact, nothing in EPA's proposal takes issue with how Wyoming weighed or balanced the BART factors, or with the State's judgment regarding the terms of the settlement agreement on which the State's BART determination for Laramie River was based. EPA's complaint is not with the State's judgment in applying the BART factors. Rather, it is that the State used information with which EPA disagrees. But that cannot justify disapproval of the State's cost analysis or BART determination.

Another commenter argued that the information EPA relied on to conclude that urea market prices have increased is itself outdated, noting that the report EPA cited as support for its

urea price claim was completed October 23, 2012, and relied on vendor emails from Fuel Tech and PotashCorp dated October 12, 2012 and October 15, 2012, respectively, to conclude that urea cost approximately $650 per ton. The commenter pointed out that the same report recognizes that "there has been significant variability in [urea] cost," and added that since the date of that report, urea prices have continued to vary significantly, falling by roughly 50 percent.[215] The commenter noted that in its February 2013 revised cost analyses, EPA acknowledged the beginning of the price decrease, pegging urea costs at $450 per ton. The commenter added that urea prices are today far closer to Wyoming's price assumptions than EPA's, which commenter stated were among the highest prices for urea in the last four years. Therefore, the commenter asserted, even if changes in commodity prices following SIP submission were a valid basis for disapproving SIP analyses that relied on prices at the time of SIP development, the EPA is factually mistaken to claim that Wyoming unreasonably underestimated urea prices; rather, the EPA has unreasonably overestimated urea prices by supporting its analysis with an abnormally high price that is not reflective of the current market.

Response: We agree that a change in the market price of urea, in and of itself, may have not provided EPA sufficient grounds for rejecting the State's SNCR analysis. However, we identified a number of deficiencies in our proposed rule, that when taken collectively, led EPA to conclude that Wyoming's consideration of the costs of compliance and visibility improvement for the EGUs was inadequate and did not properly follow the requirements in the BART Guidelines and statutory requirements. 78 FR 34748. Therefore, regardless of the market price of urea, EPA would have reached the same conclusion.

[215] Citing PotashCorp., Market Data, August 14, 2013, which can be found at http://www.potashcorp.com/customers/markets/market_data/prices.

Also, regardless of the cost of urea, EPA found material errors with the State's cost analyses for SNCR that required that we revise the analysis. In particular, as described in some detail in response to other comments, the State significantly overestimated the ability of SNCR to reduce NO_x at Laramie River Station. There, the State assumed that SNCR would reduce NO_x by 48%. In response to comments above, EPA has definitively established, using information from a number sources, including Basin Electric's own consultant, as well as a major SNCR supplier, that SNCR cannot approach this level of control in the case of Laramie River Station. As such, it was appropriate, if not obligatory, for EPA to revisit the SNCR analysis for Laramie River Station.

Finally, today we are providing updated SNCR cost analyses in order to address information provided by various commenters. Because we have taken into consideration input from a number of commenters when revising costs, we believe that they represent the most informed and robust costs for SNCR presented yet. In particular, we have revised the costs for Laramie River to reflect high furnace temperatures and low reagent utilization (a factor not considered in Wyoming's analysis). And we have also updated the SNCR costs to reflect the most recently available cost of reagent as delivered to Wyoming. Our analyses are consistent with our response on a similar comment in the Legal Section of this final action.

Comment: EPA erroneously calculated urea costs. EPA made two fundamental and significant errors that have the effect of overstating the costs of SNCR, which in turn justified the EPA's conclusion that SCR is cost effective. The errors are as follows:

- EPA mistakenly converted pounds to tons in its calculation of operation and maintenance costs for urea. *See* EPA's Revised Cost Analyses for Jim Bridger Units 1-4 - Detailed Spreadsheet Supporting Analyses (NO_x-SNCR tab, rows 62-64) (Bridger Costs); EPA's

Revised Cost Analyses for Wyoming Sources - Detailed Spreadsheet Supporting Analyses (NOx-SNCR_ 0 1_ 03 tab, rows 62-64) (EPA Costs). The cost formula multiplies the urea rate (pounds/hour) times the cost (dollars/ton) and divides that product by the source's megawatt rating to yield a dollar per megawatt hour cost for urea. In converting pounds to tons, EPA mistakenly divided by 1,000, when it should have divided by 2,000 (the number of pounds in a ton).

- EPA incorrectly calculated the water dilution variable for operation and maintenance costs in urea. See Bridger Costs (NO_x-SNCR tab, rows 62-64); EPA Costs (NO_x-SNCR_01_03 tab, rows 62-64). EPA's cost calculation incorporates the wrong spreadsheet cell (auxiliary power cost). It should have instead incorporated spreadsheet cell for the hourly water rate in thousands of gallons per hour.

Response: The reagent cost calculation is correct. The urea rate (assuming 100% urea) is multiplied by the cost for 50% by weight urea and is multiplied by 2 (to account for the fact that the cost is for 50% by weight urea) and then divided by 2000 (for the tons to pounds conversion). The effect is to divide by 1000, which is the equation shown. Commenter is correct that there was an error in the dilution water cost calculation. The error has been corrected in EPA's revised cost estimates. The error has negligible impact on the estimated cost of SNCR.

Comment: EPA asserts that it was an error for Wyoming to evaluate SNCR using a controlled emission rate of 0.12 lb/MMBtu, which is about a 48% reduction from 0.23 lb/MMBtu (the rate without new LNB and OFA). 78 FR 34748. EPA claims that after combustion controls reduce emissions to 0.19 lb/MMBtu, SNCR can achieve only a 20% further reduction, to 0.15lb/MMBtu. *Id.*, citing a Fuel Tech vendor report. EPA declined to accept Wyoming's conclusion that SNCR would cut emissions by 20% to 30%. *Id.*

This conflicts with EPA's findings in the North Dakota FIP. 77 FR 20898. EPA found that SNCR plus LNB and SOFA at Coal Creek Station Units 1 and 2 could reduce NO_x from a baseline of 0.22 lb/MMBtu to 0.115 lb/MMBtu, which is a 48% reduction. EPA explained that after combustion controls reduced emissions to a degree, SNCR by itself would cut emissions another 25%, despite the facility's claim that SNCR would achieve only a 20% reduction. *Id.*, citing a Fuel Tech report.

Response: EPA does not dispute that SNCR in combination with combustion controls can reduce NO_x by 48% in some cases. As described in our response to other comments, EPA does not agree that 48% reduction of NO_x is possible at Laramie River Station using SNCR alone.

Comment: We agree with EPA that on an annual basis SCR can achieve emission rates of 0.05 lb/MMBtu or lower. We recommend that EPA consider that some coal-fired EGUs are achieving lower emissions; e.g., our search of the CAMD database found seven conventional coal-fired EGUs averaging 0.04 lb/MMBtu or lower on an annual basis in 2012. Unlike SNCR, for SCR the ability to achieve low NO_x emissions is less a function of boiler characteristics and more a function of SCR design; it is generally accepted that SCR can reduce NO_x emissions by 80 - 90+%. However, the average control efficiency assumed by EPA for all Wyoming EGUs was 75% (74% median value).

The efficiency of NO_x removal is determined primarily by the amount of catalyst used, as pointed out by Hitachi in an email from Hitachi to EPA Region 9 regarding SCR at the Navajo Generating Station. In response to a question from the EPA on SCR NO_x performance guarantee, Hitachi replied that a 3 plus 1 SCR design could be designed to guarantee NO_x emissions of 0.05 lb/MMBtu on a 30-day rolling average. However, Hitachi also stated that the utility and their engineer need to determine what margin needs to be applied to insure the unit is

capable of achieving less than the permit level on a 30-day rolling average. The EPA stated that in an engineering study performed by Sargent & Lundy that with a NO_x permit limit between 0.07 and 0.08 lb/MMBtu, the SCR would be designed for 0.05 lb/MMBtu. The difference between 0.05 and 0.07 is the margin necessary for compliance. By underestimating the efficiency of SCR and potentially overestimating the efficiency of SNCR, EPA has overestimated the incremental costs for SCR.

Response: We agree with the information provided by the commenters that SCR technology has, in some cases, the potential to achieve emissions of less 0.05 lb/MMBtu (annual). However, emission limits associated with BART do not need to meet the lowest emission rate achieved with that technology at any coal-fired power plant. The RHR provides that: "The determination of BART must be based on an analysis of the best system of continuous emission control technology available and associated emission reductions achievable for each BART-eligible source that is subject to BART." 40 CFR 51.308(e)(1)(ii)(A).

In determining the controlled emission level, EPA must consider emission rates that are practically achievable in light of routine variations in operation and understanding that the SCR must be designed to maintain emissions below the required limit. SCRs in the U.S. are typically either 2 plus 1, or 3 plus 1 systems, with two or three initially full catalyst layers plus a spare layer for future catalyst additions. EPA is not aware of, nor has commenter provided information for, any 4 plus 1 SCR systems operating on coal-fired utility boilers. Therefore, EPA would favor more commonly used 2 plus 1 or 3 plus 1 SCR designs rather than the 4 plus 1 system described in commenter's citation from Hitachi.

Additionally, the BART Guidelines state that: "[i]n assessing the capability of the control alternative, latitude exists to consider special circumstances pertinent to the specific source under

review, or regarding the prior application of the control alternative" (40 CFR Part 51, Appendix Y, section IV.D.3) and that "[t]o complete the BART process, you must establish enforceable emission limits that reflect the BART requirements". (40 CFR Part 51, Appendix Y, section V). The five-factor BART analysis described in the Guidelines is a case-by-case analysis that considers site-specific factors in assessing the best technology for continuous emission controls. After a technology is determined as BART, the BART Guidelines require establishment of an emission limit that reflects the BART requirements, but does not specify that the emission limit must represent the maximum level of control achieved by the technology selected as BART.

While the BART Guidelines and the RHR do not preclude selection of the maximum level of control achieved by a given technology as BART, the emission limit set to reflect BART must be determined based on a consideration and weighting of the five statutory BART factors. Therefore, limits set as BACT during PSD review, or emission rates achieved from the operation of individual facilities under an emissions trading program (e.g., CAA Interstate Rule) may provide important information, but should not be construed to automatically represent the most appropriate BART limit for a given technology.

As noted in our response to other comments, EPA does not believe that we have overestimated the performance of SNCR, nor does EPA believe that the performance of SCR has been underestimated.

Comment: EPA's errors in calculating SCR costs resulted in significantly skewed cost-effectiveness determinations for every unit analyzed. EPA overstated the costs per ton of SCR by between 33 and 99 percent. Although even EPA's cost estimates for SCR are within the range that the EPA previously has found reasonable, the revised cost analyses correcting what

the commenter believes are EPA errors make it clear that SCR is cost effective for every Wyoming EGU.

Response: Commenter's assertion that EPA's costs are too high is largely based upon disagreement over the retrofit factors used, EPA's inclusion of a provision for taxes and insurance, and disagreement with use of 7% interest in determining the capital recovery factor. EPA has responded to each of these issues in other comment responses and has developed revised cost estimates that will incorporate changes where EPA believes the changes are warranted.

Comment: Wyoming has overestimated the cost of SCR. Wyoming has not provided justification or documentation for their cost estimates. We (the commenter) were not provided with any vendor estimates or bids, and Wyoming did not use the CCM, as recommended by the BART Guidelines. For example, the cost estimates used by Wyoming and EPA contained AFUDC, which is not allowed by the CCM and has been rejected by EPA Region 8 in other analyses. As a result, total capital costs estimated by Wyoming for SCR exceeded $300/kW at ten of the fifteen EGUs evaluated. EPA has compiled a graphic presentation of SCR capital costs adjusted to 2009 dollars. The EPA data confirm that SCR capital costs typically range from $73-$243/kW. Wyoming has not demonstrated unique features for the Wyoming EGUs that would justify cost estimates so much higher than the range for the industry.

Response: We agree that in some cases Wyoming has overestimated the cost of SCR. In order to address the cost analysis deficiencies noted by the commenter, EPA has performed revised cost analyses for EGUs where the cost of SCR is pertinent. In our revised cost analyses, we have followed the structure of the CCM, though we have used the IPM cost models to estimate direct capital costs and operating and maintenance (O&M) costs.

3. Consideration of the Five Factors

Comment: We received numerous comments that the State followed the requirements of the RHR and CAA, and simply did not come to the same conclusions as EPA. Commenters stated that Wyoming's BART determinations were based on a consideration of all five BART factors and that the State weighed each factor appropriately.

Response: We disagree with this comment. As discussed in detail in section VII.C.3.a of our proposed rulemaking, the EPA identified numerous issues and errors with the State's cost analyses, including the fact that the State underestimated the cost of SNCR and overestimated the cost of SCR; the State overestimated the emission reductions from SNCR; the State underestimated the control efficiency of SCR; the State overestimated the capital costs for SCR; and the State allowed for some costs not allowed by the CCM and thus their cost analyses did not meet the requirements of the RHR. 78 FR 34748.

Likewise, for the visibility improvement modeling, EPA discussed in detail in section VII.C.3.b of our proposed rulemaking why the State's visibility modeling did not meet the requirements of the RHR (78 FR 34749). As stated in our proposed rulemaking, Wyoming did not consider the visibility improvement associated with SNCR, which is clearly in conflict with the requirements set forth in section 169A(g)(2) of the CAA, as well as in the implementing regulations, which require that states take into consideration "the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology." In addition, it was not possible for EPA, or any other party, to ascertain the visibility improvement that would result from the installation of the various NO_x control options because Wyoming modeled the emission reductions for multiple pollutants together in its SIP. Finally, Wyoming did not establish baseline emission rates used for modeling in a manner consistent with BART

Guidelines. That is, Wyoming did not use "the 24-hour average actual emission rate from the highest emitting day of the meteorological period modeled (for the pre-control scenario)." 70 FR 39170. Instead, Wyoming modeled baseline emission rates reflective of permitted emission limits, leading to both an underestimation, and in some cases, overestimation of visibility impacts.

Therefore, contrary to the commenters claim, today's action is the result of Wyoming's failure to meet certain statutory and regulatory requirements, and not a simple matter of the State and EPA arriving at different conclusions.

Comment: Wyoming's BART NO_x determinations for the Naughton power plant further demonstrate Wyoming's consideration and balancing of all five factors, including visibility improvement, and its individualized consideration for each unit. For Naughton Units 1 and 2, Wyoming found that costs of compliance (total capital costs and cost effectiveness), power losses (energy impacts) caused by post-combustion NO_x controls, environmental considerations related to chemical reagents used with post-combustion NO_x controls (non-air quality environmental impacts), and visibility improvement information indicated that LNBs and OFA are BART NO_x. However, for Naughton Unit 3, based upon its much greater "visibility improvement", Wyoming determined that SCR is BART NO_x. Wyoming's BART NO_x analyses across the Naughton Plant's three units demonstrate Wyoming's consideration and weighing of all five BART factors, including the decision to require different levels of BART NO_x controls across various units at the same plant when Wyoming determined that the visibility improvements and other factors at one unit justified more stringent control. This example is yet one more indication, contrary to EPA's assertions, that Wyoming did adequately consider "visibility improvement" information in each of its BART determinations, including Wyoming

deciding in its discretion the "weight and significance" appropriate for each BART factor at each BART unit.

Response: We disagree with the commenter's assertion that the State's determination for the Naughton units shows how the State considered all five factors when the information that the State was relying on was not accurate as pointed out in our response above.

Comment: PacifiCorp submitted its BART studies to Wyoming in 2007, and the State completed its BART analyses during 2008. At that time the remaining useful life of all PacifiCorp BART units was considered to be at least 20 years. Primarily due to EPA's delays in dealing with the Wyoming Regional Haze SIP, this assumed twenty-year life span is no longer a valid basis for certain units. EPA now must take into account the current useful life of the units, rather than the useful life assumed under Wyoming's BART analyses completed at a different point in time. Dave Johnston Unit 3's current depreciable life ends in 2027 and the life for Naughton Units 1 and 2 ends in 2029.

As a practical matter, the SCRs required under the regional haze FIP at Dave Johnston Unit 3 and Naughton Units 1 and 2 could not be installed until shortly before the end of 2018, due to the regulatory processes that apply to PacifiCorp's major investment decisions, as well as the associated permitting and competitive procurement timelines. At that time, the useful life for Dave Johnston Unit 3 will be nine years, and for Naughton Unit 1 and 2 eleven years. EPA must use these shorter useful lives in its BART analyses. Taking into consideration the remaining useful lives of these particular BART units clearly demonstrates that EPA's current assessed cost effectiveness conclusions (whether using the Andover Report costs or PacifiCorp's updated information) do not support the installation of SCR on these units because they are not cost effective. To the extent EPA needs to include firm retirement dates commensurate with the

depreciable lives for purposes of finalizing the regional haze FIP, then PacifiCorp requests that EPA do so.

Response: We agree in part. However, because of our revised cost and visibility analyses, and our conclusions regarding BART that stem from those analyses, the comment is no longer pertinent to all of the units in question.

Using a remaining useful life of 20 years, our revised analysis for Naughton Unit 1 shows that the cost effectiveness of new LNBs with OFA and SCR is $3,109/ton, while the incremental cost effectiveness is $10,384/ton. The visibility improvement associated with new LNBs with OFA and SCR is 0.33 deciviews. Similarly, using a remaining useful life of 20 years, our revised analysis for Naughton Unit 2 shows that the cost effectiveness of new LNBs with OFA and SCR is $2,566/ton, while the incremental cost effectiveness is $8,440/ton. The visibility improvement associated with new LNBs with OFA and SCR is 0.42 deciviews. Given these costs and visibility improvements, taken along with the other BART factors, we no longer find that SCR is warranted for Naughton Units 1 or 2, even assuming a longer remaining useful life. Therefore, because the commenter suggested alternative control options in lieu of the proposed SCR, which we would otherwise not require, the comment is no longer pertinent to these two units. However, as described below, it remains relevant to Dave Johnston Unit 3.

Using a remaining useful life of 20 years, our revised analysis for Dave Johnston Unit 3 shows that the cost effectiveness of LNBs with OFA and SCR is $2,635/ton, while the incremental cost effectiveness is $7,583/ton. The visibility improvement associated with new LNBs with OFA and SCR is 0.51 deciviews. Given these costs and visibility improvement, taken along with the other BART factors, we continue to find that SCR would be warranted for Dave Johnston Unit 3. However, using a remaining useful life of 9 years, as identified by

PacifiCorp, our analysis shows that the cost effectiveness of LNBs with OFA and SCR is $3,742/ton, while the incremental cost effectiveness is $11,781/ton. Given the costs that result from the shorter remaining useful life, along with other BART factors, we find that SCR is not warranted. As a result, we find that combustion controls (LNBs) and an earlier retirement date are BART for Dave Johnston Unit 3.

We note that depreciable life is the result of financial accounting rules, such as for tax purposes, and is determined by capital investments in the plant and associated accounting rules for the timing of depreciation of those capital investments. As a result, the depreciable life is often shorter than the economic life of the facility. Economic life, which is the actual expected viable life of the facility, is the key consideration in regard to the remaining useful life (one of the five BART factors). As a result, depreciable life is not relevant to a BART analysis unless the depreciable life that results from a capital investment for BART is longer than the economic life of the facility, in which case asset impairment charges could result at the end of the economic life. Nonetheless, we understand PacifiCorp's comment as meaning that, for financial reasons, they would prefer to shutdown the units on an accelerated schedule in lieu of installing SCR.

Finally, while PacifiCorp has presented revised cost information along with their comments, we have not accepted these costs without examination. As described in other responses, while allowing some of the costs suggested by PacifiCorp, we have not allowed others. More information regarding our cost analyses for the units in question can be found in the cost report located in the docket.[216]

[216] Andover Technology Partners, "Cost of NO_x Controls on Wyoming EGUs", October 28, 2013; Wyoming EGU BART and Reasonable Progress Costs – 10/28/2013; Wyoming EGU

Comment: In its proposed rule, the EPA found that the limits and technologies mandated in the rule are cost effective based on amortizing those costs over a 20 year period. Here, the Agency's cost modeling is seriously flawed as many of the units subject to the new rule have remaining lives significantly less than 20 years. For example, Dave Johnston has a remaining life of only 14 years and Naughton 16 years. Amortizing the larger investment required by the FIP over these shorter lives would cause rates to go up even more, casting doubt on the veracity of the EPA's conclusion that the FIP is cost effective.

Response: See response above. We note, however, that we are using the remaining useful life periods as presented by PacifiCorp in the comment above for Dave Johnston Unit 3, which differ from this commenter's numbers for remaining useful life.

Comment: We received comments that the State considered the energy and non-air quality environmental impacts of compliance when developing the State's plan. The commenters went on to say that it is not apparent that EPA addressed the energy and non-air quality impacts in their analyses.

Response: We disagree with this comment. Throughout our proposed rulemaking, we consistently acknowledged that we are proposing to accept the State's energy and non-air quality impacts analysis (e.g. 78 FR 34759). In the State analyses for all BART sources, it states that the energy and non-air quality impacts do not preclude the selection of any of the control technologies the evaluated for the BART sources. In weighing all of the BART factors ourselves, we agree with this conclusion and adopt it as our assessment of the energy and non-air quality impacts.

Comment: There are three types of energy impacts that should be considered. These include the energy associated with operating the controls, the energy that must be provided when the unit is removed from service in order to install the controls, and most importantly to Wyoming and its citizens, the energy that must be replaced when the emissions controls prescribed for a given unit are not economically justifiable and result in accelerated unit retirements and replacements.

The latter scenario is of particular concern because the EPA has now proposed SCR controls for PacifiCorp's Naughton Unit 1, Naughton Unit 2 and Dave Johnston Unit 3. Unlike the Wyoming SIP, the EPA's FIP requires controls that are not expected to be justifiable and would result in accelerated unit retirements and replacements, potential natural gas conversions, and the associated costs and socio-economic impacts of removing major coal-fueled generation resources from service in areas of Wyoming that rely heavily on these facilities.

Response: The commenter raises concerns about energy impacts, specifically: the energy associated with operating the controls, the energy that must be replaced when the unit is taken out of service, and the energy that must be supplied if the unit is retired in lieu of addition of controls. The energy associated with operating the controls are accounted for in the variable operating cost of SNCR and SCR. Most of the construction occurs with the unit operating, but the unit must be shut down when ductwork tie-ins are made to the SCR. Regarding replacement energy when the unit is taken out of service, the generation units have periodic outages of several weeks for major maintenance items, such as turbine overhaul where there is adequate time to make the tie-ins for the equipment. It is reasonable to assume that facility owners would schedule outages for the SNCR or SCR retrofits during periods when other maintenance is being performed that requires the unit to be out of service, and this is what is commonly done in practice. EPA has allowed five years after the final rule to meet the emission limits, which

should provide companies ample opportunity to schedule retrofit activities during a normally scheduled outage. As a result, retrofit of NO_x controls would not have a significant impact on the energy production of the generating unit.

As for the energy that must be replaced if a unit is retired, the CAA and BART Guidelines do not explicitly require that this impact be taken into consideration as part of the non-air quality and energy impacts.

Comment: EPA's proposed approach is a myopic effort to focus on only one portion of what is supposed to be a multi-faceted decision. Appendix Y became law after notice-and-comment rulemaking, and states are justified in relying on it when crafting their regional haze SIPs. Indeed, EPA made clear that the Appendix Y guidelines "are designed to help States and others ... determine the level of control technology that represents BART for each source."

BART determinations are composite decisions, with many facts and data from each of the five BART factors playing a role in the ultimate BART determination as decided by Wyoming. EPA's proposal to pluck out a single BART factor (visibility improvement) as the sole justification for rejecting Wyoming's entire NO_x BART determination for some units is arbitrary and capricious because it makes a single factor more important than any of the others and also more important than the composite BART determination as a whole. EPA's approach also disregards each of the five BART factors as Wyoming evaluated them and ignores the "weight and significance" of each factor alone, and in combination with the others, as Wyoming determined in its BART decisions.

Response: We disagree with this comment. The commenter is not correct in asserting that EPA rejected the State's BART determinations for certain sources based only on a single BART factor – visibility improvement. EPA's rejection of the State's BART determination was based on

EPA's consideration of all five BART factors. Nowhere in our notice do we indicate that we are rejecting the State's BART determination based solely on the consideration of visibility improvement. Moreover, as noted elsewhere in these responses to comments, we found several instances in which the State's analyses were inconsistent with the RHR and BART Guidelines, requiring that EPA revise the State's analyses.

Comment: Use of the BART guidelines is only required for sources located at electric generating facilities with a total capacity greater than 750 megawatts. *See* 40 CFR51.308(e)(ii)(B). Only three power plants in Wyoming met these criteria: Basin Electric's Laramie River Station, PacifiCorp's Jim Bridger, and PacifiCorp's Dave Johnston plants. For consistency, and as a matter of State discretion, Wyoming went above and beyond the requirements by following the five-step process for all BART sources, not solely the three aforementioned large electric generating facilities. EPA should commend Wyoming for taking this approach, not use it as an excuse for invalidating the SIP.

Response: We agree that the BART guidelines are only mandatory under the regional haze regulations for "fossil-fuel fired power plants having a total generating capacity greater than 750 megawatts." 40 CFR 51.308(e)(1)(ii)(B). However, the fact that a state may deviate from the guidelines for other BART sources does not mean that the state has unfettered discretion to act unreasonably or inconsistently with the CAA and our regulations. Where the BART guidelines are not mandatory, a state must still meet the requirements of the CAA and our regulations. In other words, the State must still adopt and apply the *best available* retrofit technology, considering the statutory factors.

Comment: Based on the erroneous claims that the SIP incorrectly analyzed costs, calculated baseline NO_x emissions, and modeled visibility improvement, EPA proposes a FIP for eight

BART sources in Wyoming. For each of these sources, EPA proposes to approve all of the State's BART NO_x analyses, except for the cost of compliance, baseline emissions, and visibility factors. In other words, EPA approves the State's analyses of some BART factors, but not the others.

EPA, however, does not explain how it weighed the five BART factors after substituting its cost of compliance, baseline emissions, and visibility modeling for the State's. For example, for the Laramie River Station units, EPA reiterates its disagreement with the State's analyses and shows how its analyses change those factors. 78 FR 34776. But EPA does not explain how it analyzed those new factor conclusions in relation to the remaining Wyoming BART factors that EPA proposes to approve. For each of the eight BART units, EPA takes the same approach, failing to explain how it balanced the multiple BART factors.

Response: We disagree with this comment. As stated above, EPA came to its conclusions on the State's BART determinations based on a consideration of the five factors on an individual source basis. We considered the visibility benefits and costs of control together by weighing the costs in light of the predicted visibility improvement and the other BART factors.

Comment: There are no threshold minimum acceptable cost effectiveness levels, nor any requirements regarding how much weight a state must give to cost factors versus other factors such as visibility. EPA provides no explanation regarding what it views as a reasonable cost factor, or why or how such a factor should be balanced with visibility factors.

Response: See response above.

Comment: EPA must consider the energy that must be replaced when the emissions controls prescribed for a given unit are not economically justifiable and result in accelerated unit retirements and replacements. This scenario is of particular concern because the EPA has now

proposed SCR controls for PacifiCorp's Naughton Unit 1, Naughton Unit 2 and Dave Johnston Unit 3. Unlike the Wyoming SIP, the EPA's FIP requires controls that are not expected to be justifiable and would result in accelerated unit retirements and replacements, potential natural gas conversions, and the associated costs and socio-economic impacts of removing major coal-fueled generation resources from service in areas of Wyoming that rely heavily on these facilities.

Response: As noted above, the CAA and BART Guidelines do not explicitly require that these impacts be taken into consideration as part of the non-air quality and energy impacts.

Comment: EPA's assertion that Wyoming underestimated the ability of SCR to reduce NO_x was arbitrary. The EPA cited no legal or factual support for its assertion (at 78 FR 34748) that SCR can achieve emission rates of 0.05 lb/MMBtu or lower on an annual basis. EPA approved Colorado's use of a 0.07 lb/MMBtu annual emission rate for SCR at coal-fired power plants because the EPA explained (at 77 FR 76871, 76873) that rate "is within the range of actual emission rates demonstrated at similar facilities in EPA's Clean Air Markets Division (CAMD) emission database." EPA also said in that Colorado action that an emission rate as low as 0.05 lb/MMBtu can be achieved only "in some cases[.]" In its proposed disapproval of Wyoming's SIP, the EPA has not explained why Wyoming's analyses are distinct from Colorado's.

Response: We disagree. In fact, the cost analyses submitted by both PacifiCorp and Basin Electric in comments support EPA's assumption that 0.05 lb/MMBtu is achievable on an annual basis. PacifiCorp's comments include a budgetary price estimate for three units from Babcock & Wilcox indicating an outlet NO_x rate of 0.04 lb/MMBtu.[217] Though Babcock & Wilcox does not

[217] Letter from Babcock & Wilcox Power Generation Group, Inc., to PacifiCorp Energy, page 3, August 19, 2013.

specify the averaging time basis of this rate, because emission rates are lower over longer averaging times, the emission rate would only be lower if not already expressed on an annual basis. Similarly, the report prepared for Basin Electric by Sargent & Lundy indicates an annual emission rate of 0.05 lb/MMBtu for the Laramie River units.[218] Therefore, it does not appear that either Sargent & Lundy or Babcock & Wilcox dispute whether SCR is capable of achieving an annual emission rate of 0.05 lb/MMBtu. In addition, the commenter has not provided any information to substantiate that SCR cannot achieve an *actual annual emission rate* of 0.05 lb/MMBtu.

Further, as noted by other commenters, information in the CAMD database reveals that there a number of coal-fired EGUs retrofitted with SCR which are achieving actual emissions of 0.05 lb/MMbtu or less on an annual basis. It is important to note that the commenter is questioning the annual emission rate achievable with SCR (0.05 lb/MMBtu) that EPA assumed for the purpose of calculating cost effectiveness. By contrast, when establishing a 30-day emission limit for SCR, the annual rate must be adjusted upward to account for: (1) a margin for compliance, (2) a shorter averaging period, and (3) start-up and shutdown emissions. Therefore, EPA agrees that a 30-day rolling average emission limit of 0.07 lb/MMBtu is appropriate for SCR. In fact, we have approved this emission limit for Wyoming sources where the State has required the installation of SCR. However, we continue to find that it was appropriate for EPA to use the anticipated actual annual emission rate, as opposed to the allowable 30-day limit, in calculating cost effectiveness. The approach taken by EPA is consistent with the BART Guidelines: In general, for the existing sources subject-to-BART, you will estimate the

[218] Laramie River Station SNCR and SCR Cost Estimates, prepared for Basin Electric Power Cooperative by Sargent & Lundy, Table 1, page 14, August 26, 2013.

anticipated annual emissions based upon actual emissions from a baseline period. 70 FR 39167. That is, cost effectiveness is more appropriately based on the reduction in annual emissions, not the change in allowable emissions.

Finally, we disagree that we have treated Wyoming in a manner distinct from Colorado with regard to the control effectiveness of SCR. As noted by the commenter, in Colorado we held that SCR can achieve an annual emission rate of 0.05 lb/MMBtu. However, in Colorado we also held that it was unlikely that an analysis performed around this rate would have altered the state's conclusions regarding BART. For units where Colorado did require the installation of SCR (Craig Unit 2, Hayden Units 1 and 2, and Pawnee), Colorado established a 30-day rolling average emission limit of 0.07 to 0.08 lb/MMbtu. These emission limits are commensurate with those established in Wyoming by both EPA and the State for SCR.

4. Visibility Improvement

Comment: The implementation by EPA of its NO_x FIP is an overreach of its authority given the record in this case. In particular, as it relates to the Laramie River Station, EPA arbitrarily requires in its FIP the installation of SCRs to address regional haze. However, the facts reveal that the installation of SCRs is not justified because - even based on EPA's own calculations - the visibility improvement that could be achieved is imperceptible. Nowhere in EPA's proposed rule does it evaluate its FIP as achieving an improvement in visibility at an individual Class I area that meets the standard deciview definition, i.e., a full deciview being equal to the amount of visibility improvement that is detectable by the human eye. In addition, EPA failed in its analysis to consider the predicted change in visibility between control options and whether the incremental improvement for a given control is even perceptible. Conceding these facts, the

imposition of a FIP to achieve an imperceptible improvement in visibility is arbitrary and capricious.

Response: We disagree that the visibility improvements for Laramie River Station or other BART sources are de minimis or too small to just justify the expense of requiring controls. The BART Guidelines are clear that it is not necessary for the visibility improvement of a particular control option to be above the perceptible threshold. 70 FR 39129.

Even though the visibility improvement from an individual source may not be perceptible, it should still be considered in setting BART because the contribution to haze may be significant relative to other source contributions in the Class I area. Thus, we disagree that the degree of improvement should be contingent upon perceptibility. Failing to consider less-than-perceptible contributions to visibility impairment would ignore the CAA's intent to have BART requirements apply to sources that contribute to, as well as cause, such impairment. The same facts apply to the commenter's assertions on incremental visibility improvement.

In addition, we received numerous general comments that controls on sources were not warranted because the visibility improvement was less than the perceptible amount of 1.0 deciview, to which we respond in the same way.

Comment: EPA's reliance on cumulative analysis of visibility improvement is contrary to the CAA. The aggregate approach EPA is employing in its proposed rule has been rejected by the D.C. Circuit. The Court held that an EPA requirement for a group consideration of visibility impacts was not allowed by the CAA. Instead, EPA must consider all five BART factors for each source. As the Court explained, with the cumulative approach, "it is therefore entirely possible that a source may be forced to spend millions of dollars for new technology that will have no appreciable visibility improvement."

Response: We disagree that our consideration of visibility improvement was contrary to the CAA. Here the commenter has conflated two separate issues related to cumulative visibility analyses. In the D.C. Circuit ruling, *American Corn Growers Ass'n* v. *EPA*, 291 F.3d 1 (D.C. Cir. 2002), the issue was related to the cumulative visibility impacts *from multiple sources*. There, the court held that a source may be unduly required to install controls because of the emissions from other sources. By contrast, in the instance related to our proposed rule, the issue is related to the cumulative visibility impact *to multiple Class I areas* from a single source. Therefore, there is no relationship between the approach rejected by the D.C. Circuit Court and that used in our assessment of visibility improvement.

Comment: EPA found that SCR provided only a 0.36 delta deciview incremental visibility improvement for Dave Johnston Unit 3, using EPA modeling, with an incremental cost of $7,163.00. 78 FR 34777-34778. EPA failed to justify in its proposed rule how a 0.36 delta deciview improvement, or approximately one-third that humanly detectible, justifies the tremendous cost of SCR. Likewise, EPA found that installing SNCR at Dave Johnston Unit 4 results in an incremental 0.11 delta deciview improvement. The alleged incremental visibility benefit of installing SNCR at Wyodak is 0.12 delta deciview at an incremental cost of $3,725. 78 FR 34784-85. EPA provides no justification for requiring such tremendous costs for such an inconsequential visibility improvement that likely falls within CALPUFF's margin of error. EPA's modeling approaches are inconsistent because EPA has determined in other states that visibility improvements greater than those used to justify SNCR at Wyodak are too small or inconsequential to justify additional pollution controls. See 77 FR 24794 (0.27 deciview improvement termed "small" and did not justify additional pollution controls in New York); 77 FR 11879, 11891 (0.043 to 0.16 delta deciview improvements considered "very small additional

visibility improvements" that did not justify NO_x controls in Mississippi); 77 FR 18052, 18066 (agreeing with Colorado's determination that "low visibility improvement (under 0.2 delta deciview)" did not justify SCR for Comanche units). Tellingly, the "low visibility improvements" that Colorado found at the Comanche units not to justify post-combustion NO_x controls, as agreed to by EPA, were 0.17 and 0.14 delta deciview. 77 FR 18066. In Montana, where EPA issued a regional haze FIP directly, it found that a 0.18 delta deciview improvement to be a "low visibility improvement" that "did not justify proposing additional controls" for SO_2 on the source. 77 FR 23988, 24012. Here, EPA's actions requiring additional NO_x controls based on little-to-no additional visibility improvement are arbitrary and capricious, especially when EPA did not require additional NO_x controls in other states based on similar visibility improvements. This is particularly true in Montana where EPA had direct responsibility for the regional haze program.

Response: As stated elsewhere in our response to comments, we must consider the five factors for each facility when making a BART determination. Even though one factor (such as visibility improvement) may be similar between two units, it must be weighed in the context of the other BART factors. In addition, as we discuss in other response to comments, in accordance with the BART Guidelines, controls may be warranted even in instances where the visibility benefit is less than perceptible.

We note that, in light of comments submitted during the public comment period, we have revised our BART determinations for the Naughton Units 1 and 2, the Dave Johnston Units 3 and 4, and Wyodak. See sections III.B and V.D for a discussion on our consideration of the BART factors and our BART determination for these units.

5. PM BART Determinations

Comment: We received comments that EPA's BART determinations with respect to PM emissions from Wyoming EGUs are flawed. One commenter pointed out that contrary to the BART guidelines, EPA failed to propose BART limits on condensable PM and total PM ($PM_{2.5}$ + PM_{10}), focusing instead solely on filterable PM. Commenters went on to state that EPA underestimated the control effectiveness of baghouses, which should be able to achieve a limit of 0.010 lb/MMBtu or even lower, and thus EPA overestimated the costs effectiveness for baghouses.

Response: We disagree with both points made in this comment. On the first point, the BART Guidelines do not explicitly require that states establish separate emission limits for condensable PM.[219] However, we do recognize, by merit of the compliance test methods specified for PM (e.g. EPA Method 5B), that the BART emission limits in the Wyoming SIP only pertain to filterable PM.

On the second point, the commenter has not provided any data or information to substantiate that using a lower limit (i.e., 0.010 lb/MMBtu) for baghouses would have changed the PM BART determinations. Given that the cost effectiveness for baghouses was generally

[219] The BART Guidelines do not specify that States must establish a BART limit for both PM_{10} and $PM_{2.5}$. The BART Guidelines provide the following: "You must look at SO_2, NO_x, and direct particulate matter (PM) emissions in determining whether sources cause or contribute to visibility impairment, including both PM_{10} and $PM_{2.5}$." [Appendix Y to Part 51, section III.A.2.] This language in the BART Guidelines was intended to clarify to States that when determining whether a source is subject to BART, the modeling evaluation to determine the source's impact on visibility has to account for both PM_{10} and $PM_{2.5}$ emissions. There are several instances in which we state in both the preamble to the RHR, and in the BART Guidelines that PM_{10} may be used as indicator for $PM_{2.5}$ in determining whether a source is subject to BART. Neither the RHR nor the BART Guidelines specify that states must make separate BART determinations for PM_{10} and $PM_{2.5}$. Therefore, we disagree that we must evaluate separate limits or disapprove the PM BART determination for the Wyoming SIP on the basis that a BART determination for $PM_{2.5}$ was not made.

excessively high, we do not expect that using a lower limit would have changed the BART determination. Using Jim Bridger Unit 1 as an example, an emission limit of 0.015 lb/MMBtu results in an emission reduction of 709 tpy, while using an emission limit of 0.010 lb/MMBtu results in an emission reduction of 829 tpy (calculated in the same manner as in Wyoming's BART determination: 6,000 MMBtu/hr heat input and 7,884 hours of operation). In this example, the cost effectiveness of the new polishing fabric filter was $8,980/ton, and the incremental cost effectiveness was $16,396/ton. Given these costs, we have no reason to conclude that such a modest difference in the reduction (120 tpy) would lead to a meaningful improvement in visibility. This is particularly true since, on a per unit mass basis, PM emissions have a lower visibility impact than SO_2 or NO_x. A similar conclusion can be drawn for other EGUs where baghouses were considered.

6. Incremental Costs and Visibility

Comment: Wyoming and EPA have placed undue weight on incremental costs and incremental benefits. Wyoming and EPA have essentially based their BART and reasonable progress determinations on incremental costs and incremental benefits. (In almost every case, Wyoming stated that the average cost-effectiveness of the proposed BART technologies for NO_x are all reasonable.) However, in discussing average and incremental costs, EPA BART Guidelines explain: "The average cost (total annual cost/total annual emission reductions) for each may be deemed to be reasonable. However, the incremental cost of the additional emission reductions to be achieved may be very great. In such an instance, it may be inappropriate to choose control B, based on its high incremental costs, even though its average cost may be considered reasonable." Although EPA does not explain in its BART Guidelines what it considers "very great" and "high" incremental costs, it goes on to provide an example of how incremental cost is calculated,

and explains: “The incremental cost of Option 1, then, is $20,000 per ton, 11 times the average cost of $1,900 per ton.”

The clear implication of EPA’s advice in the BART Guidelines is that incremental costs become a deciding factor only if they greatly exceed average costs. Instead, EPA has determined that incremental costs only twice the “reasonable” average costs are excessive. In doing so, EPA ignores the established fact that pollution control costs increase exponentially with control efficiency, which means that incremental costs will always exceed average costs.

Response: We disagree with most aspects of this comment, but do agree with the commenter that EPA has not defined what the terms “very great” or “high” mean when pertaining to incremental costs. We do not agree with the commenter that the one of the examples EPA provided in 40 CFR part 51, Appendix Y, should be interpreted to mean that incremental costs only become a deciding factor if they greatly exceed average costs by some magnitude over twice the average costs. In addition, incremental costs are to be considered within the context of the five factors, including average cost effectiveness and visibility improvement. Our BART determinations reflect the statement in the BART Guidelines the commenter referenced in that while average cost effectiveness may be reasonable, the EPA determined that the high incremental costs in some instances made the selection of more stringent controls not to be reasonable, when considered with visibility improvement. We discuss in each instance our evaluation of incremental and average costs and explain our conclusions.

Comment: Incremental visibility improvement is not mentioned in the reasonable progress provisions or BART Guidelines, and EPA cannot create a new criterion for the sole purpose of eliminating a control option that is reasonably cost-effective and would yield a significant visibility improvement. If EPA is going to compare costs and visibility benefits, it must do so in

a transparent and objective manner, and state its criteria for acceptance or rejection of a control strategy. Relatively subjective statements about costs being "high" or visibility improvements "small" are not sufficient to justify the decisions.

Response: We disagree with this comment. The RHR states "When making this determination [BART Step 5 on visibility impacts], you have flexibility in setting absolute thresholds, target levels of improvement, or de minimis levels since the deciview improvement must be weighed among the five factors, and you are free to determine the weight and significance to be assigned to each factor." 70 FR 39170. EPA concludes that in exercising its discretion, a state or EPA may consider the incremental degree of visibility improvement, which is a part of visibility improvement. EPA's consideration of incremental visibility improvement in our proposed action in Wyoming is also consistent with EPA actions in other states (e.g., Kansas (76 FR 80754), Nebraska (77 FR 40150), and Oregon (76 FR 38997)). In comparing control options and selecting one, it is natural to compare the visibility improvement (that is, to compute the incremental visibility improvement) for each option.

Comment: EPA in some cases rejected the best systems of continuous emission reduction as BART based on a subjective judgment that the incremental costs of concededly superior controls are not warranted by the visibility benefits they yield. However, EPA has failed to offer any rationale for these cost-benefit determinations, let alone the increment threshold applied. As a result, EPA's conclusions are at odds with the EPA's own analysis demonstrating that installing the most effective controls will yield needed visibility improvements.

EPA's approach is inconsistent with the purpose of the RHR and the five-factor BART analysis. The CAA identifies the elimination of human-caused visibility impairment in Class I areas as the purpose and required outcome of the haze program. 42 U.S.C. 7491(a)(1). Congress

directed states and the EPA to impose the best system of continuous emission reduction on BART-subject sources, and identifies BART as the feasible, cost-effective technology that produces the most visibility benefits. For NO_x emissions at Wyoming EGUs, EPA's source-specific BART analyses uniformly point to SCR plus combustion controls as the appropriate technology.

To avoid this result, however, EPA puts the technologies that it has already determined are feasible and cost-effective through an incremental benefit filter in which it assesses not just which control technology makes the most visibility improvement, but how much more progress it makes over the second best technology relative to their costs. EPA applies this additional filter without disclosing what the threshold of improvement over the next best technology or the ratio of incremental improvement to incremental cost has to be, instead simply declaring that "the cost effectiveness value [of SCR] is significantly higher than [inferior technology] and there is a comparatively small incremental visibility improvement over the [inferior technology]."

If haze plans only compel installation of controls with lower incremental costs and large incremental benefits (whatever those might be), then it may be impossible to reach the goal of attaining natural conditions in the Class I areas. This is especially true for Wyoming, where there are many large pollutant sources affecting many Class I areas. The level of visibility improvement that can be achieved through reduction of emissions from any one source might always be deemed too small to justify the cost of controls, in which case we will never be able to eliminate that last increment of haze pollution because it is too small to justify. While EPA or states may argue that additional emissions reductions can be achieved in the future, the opportunity to reduce haze-causing emissions in initial SIPs/FIPs by requiring BART, as recognized and directed by Congress in the CAA, is the best chance to make significant progress

on this pervasive pollution problem. EPA's use of the incremental benefit analysis to eliminate the best pollution-reduction systems does not comply with the law.

Response: We do not agree with this comment. As stated above, EPA based its decisions on the BART determinations based on a careful weighing of the five factors, including average and incremental cost effectiveness. Much like average cost effectiveness, EPA has not established a threshold for incremental cost effectiveness as each BART determination is an individual decision based on the five BART factors. In accordance with the BART Guidelines, for each BART-eligible facility, we considered incremental cost effectiveness, and when weighed with the other BART factors, we reasonably concluded that more or less stringent controls were not warranted.

7. Other Comments on BART

Comment: The majority of BART sources were constructed between 1962 and 1977. They have a typical life expectancy of 50-60 years. They likely will be retired before 2064 and replaced with state-of-the-art power generation technology and pollution control equipment. This will be a major factor in achieving the 2064 natural background goal for nitrate when these units are replaced. Thus, there is no need for controls on these sources now.

Response: While the goal of the regional haze program is to achieve natural visibility conditions in all mandatory Class I Federal areas by 2064, the statute explicitly calls for a program of reductions over time, and incremental reasonable progress towards the long-term goal. The requirement for states to implement BART applies during the first planning period ending in 2018 and is the first increment of progress. Furthermore, the remaining useful life of a facility is one of the five factor s considered for BART. Thus, for example, if a facility has made a federally-enforceable commitment to either shut down or change fuels by a date certain, the

shortened useful life of the facility is incorporated into the cost analysis as part of the amortization of total capital costs.

Comment: Wyoming's SIP is silent with respect to BART emissions limits during malfunctions and emergencies. However, EPA proposes a FIP requirement that: "These [BART] emission limitations shall apply at all times, including startups, shutdowns, emergencies, and malfunctions." 77 FR 33061. As EPA has previously noted, EPA's proposed FIP requirement for Wyoming is not required by the RHR: "Kansas' inclusion of the startup, shutdown, and malfunction provisions as exemptions from the BART emission rates are not required elements of the regional haze SIPs to be developed and submitted by States pursuant to section 169 of the CAA." See 76 FR 52604, 52618. EPA has also stated that "EPA's disapproval of the startup, shutdown, and malfunction provisions . . . does not trigger an obligation on the part of EPA to issue a FIP pursuant to section 110(c) of the CAA, 42 U.S.C. 7410(c)." *Id*.

Yet, EPA proposes to impose a FIP for startup, shutdown, emergency, and malfunction emissions for Wyoming sources despite EPA's prior statements that such exemptions do not trigger an EPA obligation to issue a FIP. EPA's proposed action for Wyoming is arbitrary, unauthorized and unlawful.

Wyoming does not agree with EPA's proposal to include emergencies and malfunctions in 40 CFR 52.2636(c)(2). Permitted emission limits should reflect the potential-to-emit (PTE) of a stationary source. The PTE refers to a stationary source's maximum capacity to emit under its physical and operational design. In estimating a source's PTE, Wyoming has consistently only utilized emissions that are anticipated to occur on a continuous or regular basis under the source's physical and operational design. See *United States v. Louisiana-Pacific Corp*., 682 F.

Supp. 1141, 1158 (D. Colo. 1988). Emissions that occur outside of a source's physical and operational design or, are unplanned, are not included in PTE estimates, and are addressed instead in accordance with Wyoming's enforcement discretion. The Wyoming Supreme Court recently upheld Wyoming's approach. See *Sierra Club v. Wyoming Dept. of Envtl. Quality*, 251 P.3d 310, 2011 WY 42 (Wyo. 2011). Therefore, Wyoming requests that EPA withdraw its proposed FIP provision addressing emergencies and malfunctions.

Response: We disagree with this comment. The RHR states that "Section 302(k) of the CAA requires emissions limits such as BART to be met on a continuous basis. Although this provision does not necessarily require the use of continuous emissions monitoring, it is important that sources employ techniques that ensure compliance on a continuous basis." 70 FR 39172. The rule goes on to state that "[m]onitoring requirements generally applicable to sources, including those that are subject to BART, are governed by other regulations." See, e.g., 40 CFR part 64 (compliance assurance monitoring); 40 CFR 70.6(a)(3) (periodic monitoring); 40 CFR 70.6(c)(1) (sufficiency monitoring) (70 FR 39172). Therefore, it is clear that the rule intended for BART emission limits to be met on a continuous basis and did not provide either explicitly or implicitly exceptions for startup, shutdown, or malfunction. Furthermore, it has been EPA's longstanding position that SIP provisions generally cannot contain automatic exemptions for startup, shutdown, and malfunction.[220] With respect to PTE, the comment does not identify how the arguments about PTE are relevant to a BART emissions limit. Finally, regarding claims of inconsistency with the final action for Kansas, commenter quotes from the proposed not the final

[220] See for example, EPA's September 20, 1999, guidance, "State Implementation Plans: Policy Regarding Excess Emissions during Malfunctions, Startup and Shutdown," cited in the next footnote.

agency action. As explained in the final agency action, EPA did not take final action on those portions of the Kansas submittal, the state withdrew them.[221]

Comment: The EPA's proposed FIP states only that subject-to-BART sources must comply within five years of adoption of the FIP. This blanket schedule of compliance for FIP sources is contrary to the CAA. For one thing, by its very language, the EPA's proposed FIP fails to ensure that subject-to- BART sources "procure, install, and operate, as expeditiously as practicable" any

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[221] As EPA Region 7 explained in their final action 76 FR 80754, 80755-6 (Dec. 27, 2011): "As EPA explained in the proposed notice, the Consent Agreements exempted periods of startup and shutdown for both Kansas City Power and Light and Westar Energy from compliance with applicable emission limits, which were not narrowly defined, and exempted periods of malfunction for Westar Energy. EPA proposed to disapprove the exemptions because they are inconsistent with the Clean Air Act and EPA's September 20, 1999, guidance, "State Implementation Plans: Policy Regarding Excess Emissions during Malfunctions, Startup and Shutdown." Steven Herman, Assistant Administrator for Enforcement and Compliance Assurance, and Robert Perciasepe, Assistant Administrator for Air and Radiation, "State Implementation Plans (SIPs): Policy Regarding Excess Emissions During Malfunctions, Startup, and Shutdown," September 20, 1999; and 52 FR (45109 November 24, 1987).

EPA subsequently received a letter from the State dated December 1, 2011, withdrawing the SSM provisions in the Consent Agreements in their entirety from the regional haze SIP. Specifically, the following four provisions were withdrawn from EPA's consideration for approval in the regional haze SIP:

1. All references to, "excluding periods of startup and shutdown" in Paragraph 23 of the Kansas City Power and Light Company regional haze agreement;

2. The reference to, "excluding periods of startup, shutdown and malfunction" in footnote 1 of Appendix A to the Westar Energy, Inc. regional haze agreement;

3. All references to, "excluding periods of startup and shutdown" in Chapter 9.3.1 of the Kansas regional haze SIP;

4. And the sentence, "The Agreements between KDHE and the affected BART sources currently exclude emissions associated with startup, shutdowns, and malfunctions (SSM) in the agreed upon emission limits" in Chapter 9.5 of the Kansas regional haze SIP.

Since the SSM provisions were withdrawn by the State, and are therefore no longer before EPA, neither EPA's proposed disapproval of these exemptions, nor the comments on that proposed disapproval, are relevant to this final action.

additional controls that may represent BART as required by the CAA. See 42 U.S.C. 7491(b)(2)(A) and (g)(4). The EPA only requires that sources comply within five years, but does not actually require sources to comply with BART limits established in the FIP "as expeditiously as practicable." Thus, EPA's proposed FIP fails to implement the statute. Furthermore, simply stating verbatim in the FIP that "sources shall comply with the emission limitations and other requirements of this section within five years of the effective date of this rule" fails to give force and effect to the statutory requirements that compliance occur as "expeditiously as practicable." Here, the CAA is clear that in mandating "expeditious" compliance, FIPs must ensure that subject-to-BART sources comply as soon as possible. In this case, the EPA's proposed FIP simply fails to ensure compliance with BART as soon as possible. It lacks any concrete dates by which subject-to-BART sources must comply, other than to state that sources must comply within the statutory maximum compliance date of five years.

However, the CAA is clear that if a source can comply with BART before five years, it must comply by that earlier date. See 42 U.S.C. 7491(g)(4). Simply deferring to the five-year deadline undermines the Congressional intent behind the "as expeditiously as practicable" provision. It is notable that the EPA actually required "expeditious compliance" for Jim Bridger Units 3 and 4.

Response: We have reviewed the compliance dates for meeting BART limits that are contained in the SIP. Given the magnitude of the retrofits being undertaken, we believe that five years from the effective date of this final rule is as expeditiously as practicable. We note that our compliance dates for Jim Bridger Units 3 and 4 are based on the fact that those are the dates in the State's SIP which we are approving for these two units.

Comment: Compliance with the perceived dictates of the CAA need not be as inflexible as contemplated in the EPA's proposal. By exploring and employing creative solutions, it is possible to reduce emissions to satisfy the CAA while ensuring reasonable value and more cost-effective expenditures for PacifiCorp's ratepayers. Two recent examples of successful creative alternatives that will save ratepayers many millions of dollars include the recent proposals of (1) Public Service of New Mexico for its San Juan Generating Station, and (2) PacifiCorp regarding its Naughton Unit 3 in Wyoming.

Notably, the EPA's revised 2013 proposal for Wyoming implicates ten of PacifiCorp's coal-fueled units. Given the number of affected PacifiCorp generation plants, Wyoming appears to be a particularly fertile ground for encouraging the type of alternative solution that satisfied the CAA with regard to San Juan and Naughton Unit 3. We urge the EPA, in response to these comments, to signal its willingness to consider all feasible compliance options that PacifiCorp may offer (including those that the EPA has no authority to order) to provide the lowest-cost solution for ratepayers in achieving emissions reductions.

Response: We agree with the commenter's points that there is some flexibility under the CAA to meet the requirements of the RHR. As with past actions, EPA is willing to consider alternatives compliance proposals that are put forth.

Comment: Wyoming's regional haze program has been underway for several years. Under EPA's RHR, BART controls were expected to be installed by the end of 2013. Wyoming appropriately and effectively developed and implemented a regional haze program that met the 2013 timeline. As required by the Wyoming SIP, and with the one exception of Naughton Unit 3 which has a deadline of 2014, PacifiCorp has fully implemented Wyoming's BART requirements for its Wyoming BART units. As a result, in 2013 alone, there will be 76,000

fewer tons of visibility impairing pollutants emitted by PacifiCorp BART units than was emitted in 2004.

Had Wyoming waited for EPA's final FIP, none of these reductions would have occurred to date. In other words, the Wyoming SIP required regional haze reductions to begin earlier and extend over a longer period of time than EPA's FIP. It is striking to note that from 2005-2021 the State's regional haze program will have removed 243,000 tons more NO_x from PacifiCorp's Wyoming facilities than EPA's proposed FIP.

In 2022, the EPA's FIP begins providing an annual benefit of 5,100 tons per year. Ironically this benefit only lasts for six years, when the units at which EPA's proposed FIP requires more stringent controls are retired. By 2027, the Wyoming Regional Haze SIP will have removed over 210,000 more tons of NO_x from PacifiCorp's units than the EPA's proposed FIP, with a significantly lower cost (more than $300 million less in capital) and will require significantly lower expenditures in operation and maintenance between 2022 and 2027.

Response: We acknowledge that the emission reductions already achieved by PacifiCorp's Wyoming facilities are substantial. However, the emission reductions already achieved at the PacifiCorp facilities do not release EPA from its obligation under the CAA to review Wyoming's SIP, or to promulgate a FIP where we find that the SIP fails to comply with the CAA or RHR.

We disagree that the SIP will result in greater emission reductions than the FIP. As discussed in section III.B, in response to comments received during the public comment period, we have made several changes to our proposed BART determinations for the PacifiCorp units. Even so, our final rule today continues to achieve greater emission reductions than the Wyoming SIP for the PacifiCorp units. For Wyodak, our BART determination (new LNBs with OFA and SCR) results in an additional 2,496 tons per year when compared to the SIP. For Dave Johnston

Unit 3, though PacifiCorp has the option to shut down the unit in 2027, our BART determination (new LNBs with OFA and SCR) results in an additional 1,597 tons per year when compared to SIP. Clearly, even though we are no longer requiring some of the BART controls which we proposed, the FIP achieves greater emission reductions than the SIP at any point in time. Regardless, the BART determination for any BART source is founded on a consideration of the statutory BART factors, and not a comparison of overall reductions achieved between a federal and state plan.

D. BART Sources

1. Basin Electric Laramie River Station Units 1-3

a. General Comments

Comment: We received numerous comments expressing concern over the economic impact our proposed FIP would have for customers of Basin Electric, and the commenters urged us to approve the State's regional haze SIP. The commenters went on to point out that Basin Electric is a non-profit electric cooperative that must pass costs on directly to consumers. One commenter noted that the projected cost to install SCR for each of the three units at Laramie River will be $200 million for Western Minnesota and Missouri Energy Services members. If that cost is spread over a 10-year period, the cost would be $110 million a year, which relates to an increase in electric rates of 8 percent.

Response: In considering the costs of compliance, the BART Guidelines instruct states and EPA to evaluate several metrics, focusing specifically on average cost-effectiveness and incremental cost-effectiveness, not total capital cost or total annual cost. EPA has found that the average and incremental cost-effectiveness of SCR is reasonable for all three units at Laramie River. While the BART Guidelines suggest that total capital cost and total annual cost, as well as incidental

increases in prices to consumers, can be considered as part of an affordability demonstration, Basin Electric did not provide the necessary detailed information to suggest that installing SCR at Laramie River would be unaffordable, either for the cooperative or its rate payers. Consequently, we believe that our analysis of the costs of control, which focused on cost-effectiveness, was appropriate.

Comment: We received numerous comments that EPA's FIP would result in additional costs of $600-$700 million for the owners of Laramie River Station with no perceptible visibility improvement.

Response: See the response above. We have addressed the issue of perceptible visibility improvement in section V.C.4. As explained in the introductory section and elsewhere, the visibility improvements from controls at Laramie River are significant, even when considered on a unit by unit basis.

b. NO_x BART Determination

Comment: One commenter provided a spreadsheet with cost calculations for each of the affected Laramie River units.

Response: EPA has reviewed the spreadsheet.[222] The major difference in calculations relates to selection of retrofit factor and cost of property taxes and insurance (excluded by commenter). Commenter indicates that all facilities have a retrofit difficulty of 1.0. EPA disagrees and has provided our reasons for retrofit factors in other comments. In addition, for certain units where we have incorporated new cost information submitted by the facility owner's during the comment period, we are no longer applying a retrofit factor. Finally, property taxes and

[222] Wyoming EGU BART and Reasonable Progress Costs – 10/2013.

insurance costs should be included, but only to the extent that they are actually realized. See details in the cost report included in the docket.[223]

Comment: EPA's decision to change its initial NO_x BART proposal for Laramie River Station Units 1-3 from SNCR to instead propose requiring SCR is well-supported by EPA's analysis. When site-specific information is appropriately considered, the costs of SCR at Laramie River Station are even lower than EPA estimated. EPA used a "social interest rate" of 7 percent in its analysis when the plant's owner used an interest rate of only 6 percent; the EPA accepted the owner's claimed costs of new LNBs with OFA (after subtracting disallowed costs), even though other data submitted by the company demonstrated lower costs for these combustion controls; and the EPA's cost estimates assumed unreasonably high auxiliary power costs of $0.06/kilowatt hour ("kWhr"), when even the owner assumed an auxiliary power cost of $0.015/kWhr in its cost-effectiveness analyses. Making the suggested cost changes to the analysis would result in cost effectiveness values ranging from $3,244/ton to $3,532/ton, as opposed to the EPA's values ranging from $3,589/ton to $3,903/ton. The substantial visibility benefits afforded by SCR on Laramie River Units 1-3 also justify a finding that SCR is BART on these units. The costs and visibility improvements are consistent with what other states in their SIP or EPA in a FIP have found reasonable for BART controls.

Response: EPA has addressed each of the issues raised by the commenter in other responses. EPA has provided revised cost estimates based upon input and consideration of all commenters.

Comment: The Sargent & Lundy Evaluation demonstrates that the costs of installing SCR at Laramie River Station are excessive and supports Wyoming's determination that OFA plus LNB

[223] Andover Technology Partners, "Cost of NOx Controls on Wyoming EGUs", October 28, 2013.

constitutes BART. In response to EPA's proposed SIP disapproval and FIP, Basin Electric requested that Sargent & Lundy prepare detailed and site-specific cost estimates for installation and operation of SNCR and SCR at the Laramie River Station. Sargent & Lundy, "SNCR and SCR Cost Estimates, Laramie River Station" (August 26, 2013) (S&L Evaluation). Sargent & Lundy is a leading engineering, design, and consulting firm and a system supplier that has extensive experience with the specification, evaluation, selection, and implementation of emission control technologies and coal-fired power plants, including more than 98 projects for the control of NO_x emissions. S&L Evaluation section 2. Indeed, Sargent & Lundy has participated in the installation of more than 72 SCR systems and 26 SNCR systems. *Id*. The Sargent & Lundy Evaluation follows the BART Guidelines and uses the methodology in the CCM where possible, while addressing site-specific variables that are critical to reaching an accurate cost estimate for these NO_x control technologies at Laramie River Station.

The Sargent & Lundy Evaluation estimates that the total capital costs of SCR would exceed $746 million, while annual costs of an SCR system for the Laramie River units would total more than $86 million. S&L Evaluation, Tables 3, 7. Total capital costs for installing SNCR on all three units, on the other hand, would be approximately $50.6 million with annual costs of approximately $20 million. *Id*. Tables 2, 6. Moreover, the cost effectiveness of SNCR based on the Sargent & Lundy Evaluation would be between $6,967 to $7,013 per ton of NO_x removed. Cost effectiveness values for SCR range from $8,531 per ton of NO_x removed to $9,048 per ton of NO_x removed, with an incremental cost effectiveness compared to SNCR of between $9,157 per ton to $9,862 per ton. *Id*. Table 7. The Sargent & Lundy Evaluation demonstrates that the costs of installing SCR at Laramie River Station are excessive and supports Wyoming's determination that OFA plus LNB constitutes BART.

Response: As noted on page 21 of Exhibit 14 of Basin Electric's comments: "…Cost estimates prepared for Laramie River Station are based on equipment costs and budgetary quotes available from similar projects and Sargent & Lundy's experience with the design and installation of retrofit SNCR and SCR control systems. The Laramie River Station cost estimates are conceptual in nature; thus, Sargent and Lundy did not procure equipment quotes specifically for the Laramie River Station control systems. Rather, equipment costs for the Laramie River Station projects are based on conceptual designs developed for the control systems, preliminary equipment sizing developed for the major pieces of equipment, and recent pricing for similar equipment…"

As noted in EPA's response to other comments, EPA has found a number of deficiencies in Sargent & Lundy's estimates and disagrees with the costs they have arrived at for SCR. Also as described in response to other comments, in light of recently submitted information, EPA has accepted Basin Electric's estimated capital cost of SNCR.

Comment: The Sargent & Lundy Evaluation and resulting cost estimate is far more accurate than the study level estimate contemplated by the CCM and the IPM algorithms relied upon by EPA in its SIP disapproval and FIP. The Sargent & Lundy Evaluation takes into consideration site-specific design and operating parameters and provides a conceptual, or scoping-level, estimate for SNCR and SCR at Laramie River. S&L Evaluation section 4.5.

The BART Guidelines state that "cost estimates should be based on the OAQPS Control Cost Manual, where possible" and in those cases where the CCM addresses the control technology in "sufficient detail for a BART analysis." 70 FR 39166. In all cases, however, "[t]he cost analysis should also take into account any site-specific design or other conditions . . . that affect the cost of a particular BART technology option." *Id*. The CCM describes various

technologies and provides general costing methodology, but EPA acknowledges that the methodology is intended to provide a "rough order of magnitude" estimate of costs that is accurate to within +/- 30%. CCM section 1.2, page 1-4. This rough estimate is appropriate for regulatory development because it can be prepared at a "relatively low cost with minimum data." *Id*. section 2.2, page 2-3 (internal quotations omitted). See also S&L Evaluation at section 4.5. But "EPA does not claim cost estimates for industry at greater than study level accuracy for industrial users" because "the industrial user will necessarily have much more detailed information than the generic cost and sizing information." CCM section 2.2, page 2-4, 2-5.

The BART Guidelines may reference the CCM because it provides a simple and less costly methodology for estimating costs, but neither the Guidelines nor the CCM require use of a less accurate methodology where more accurate methodologies are appropriate. Indeed, the BART Guidelines require consideration of site-specific variables that in some cases, such as with SCR, are not factored into the examples provided by the CCM. 70 FR 39166. Under these circumstances, the Manual "offers the user an opportunity for greater accuracy than that used by regulators" and gives users the discretion to "exercise 'engineering judgment' on those occasions when the procedures need to be modified or disregarded." CCM section 1.2, page 2-4, section 1.3, page 1-7.

The cost estimates prepared by Sargent & Lundy are scoping-level estimates, which required the use of numerous site-specific design parameters that are not included in the general CCM equations and reflect all costs to install the control systems, taking into account site-specific variables and physical constraints. S&L Evaluation section 4.5, Attachments A1, A2. These estimates are far more accurate than EPA's estimates, reinforce Wyoming's BART determination, and demonstrate there is no basis for EPA to disapprove the State's action.

Response: We agree that source-specific costs can be useful in the BART analysis and agree with a number of the cost estimates in the Sargent & Lundy analysis. However, as noted in our response to other comments, EPA found Sargent & Lundy's estimates of SCR capital cost deficient in a number of respects, specifically: 1) Inadequate explanation for the high labor rates that were assumed when compared to published labor rates; 2) High overtime and per diem costs without sufficient explanation; 3) Apparent duplication of costs associated with General Facilities; 4) Inclusion of AFUDC; 5) Apparent duplication of contingencies and other cost adders; and 6) Addition of unnecessary SO_3 mitigation system. All of these contributed to excessively high capital cost. Sargent & Lundy also assumed excessively high cost for replacement catalyst, which contributes to high operating cost.

As described in our responses to other comments, in light of recently submitted information, EPA has accepted Basin Electric's estimated capital cost of SNCR.

Comment: The Sargent & Lundy's estimate for SCR considers critical site-specific variables that are not captured by the CCM. The Sargent & Lundy estimate for SCR is based on an in-depth, detailed study of site-specific costs conducted by a team of engineers with extensive experience in SCR installations. In order to establish SCR control system design parameters and to prepare inputs for the capital cost estimate, Sargent & Lundy engineers performed a site walkdown to identify site constraints for the SCRs and associated plant modifications and reviewed operating conditions at Units 1 through 3 affecting flue gas conditions at the SCR inlet. Sargent & Lundy then developed general arrangement drawings for the SCRs and new ductwork, on which estimations for material quantities were made. Finally, Sargent & Lundy evaluated the existing forced draft (FD) fan buildings to determine whether the existing buildings could support the SCR structures based on the conceptual design.

Sargent & Lundy's evaluation identified important design considerations affecting the SCR cost estimates, many of them directly related to the considerations that EPA acknowledges in the CCM make broad brush cost estimates for SCR nearly impossible. CCM section 2.5.4.2, page 2-28 (installation of SCR can "impose an addition expense to 'shoe-horn' the equipment into the right locations" where "there is generally little room for the reactor to fit in the existing space and additional ductwork, fans, and flue gas heaters may be needed to make the system work properly."). The considerations include, inter alia, congested existing plant configuration, and limited auxiliary power available at the station. S&L Evaluation section 4.3.1.

The site congestion at Laramie River Station substantially complicates installation of SCR systems because the location of the FD fan buildings limits the open area available to drop support columns for the SCR. *Id*. Based on the site walkdown and review of drawings provided by Basin Electric, the conceptual design placed the SCRs directly above the existing FD fan buildings, which will require that the SCR support columns penetrate the FD fan buildings. This, in turn, would require the construction of deep foundations for the SCR support columns in a congested area resulting in challenging and time-consuming efforts to ensure adequate support. *Id*. Another related complicating factor relates to constructability issues. All three units are constructed side-by-side in a row with little space between them, which limits crane placement and would require selection of larger, more expensive cranes during installation. *Id*. Another major design consideration identified by Sargent & Lundy is the need for entirely new auxiliary power equipment for the SCR and replacement induced draft (ID) fans because the existing ID fans currently are running at full capacity. *Id*.

In addition, Sargent & Lundy's Evaluation took into consideration, among other factors, the following site-specific conditions that affect the cost of SCR at Laramie River Station: 1)

Boiler Building Reinforcement. SCR duct work will penetrate the existing boiler building structural columns, thereby requiring that the boiler building structural supports be redesigned and rebuilt and engineered to ensure continued support of the 20-story boiler building. 2) SCR Reactors and Catalyst. The conceptual design calls for two reactors per unit using anhydrous ammonia as the reagent. To achieve required NO_x emission reductions on a consistent basis, three layers of catalyst would be required and the SCRs would need to be designed to hold four layers of catalyst. 3) Ammonia System. The conceptual design located the anhydrous ammonia system in a remote location from the units and, therefore, the cost estimate assumed that all three SCR units would share a single ammonia storage facility. 4) Structural Stiffening. Structural stiffening of the ductwork and equipment downstream of the boiler and upstream of the new ID fans would be required by federal regulation to operate at more negative pressures due to installation of the SCR.

Response: EPA has reviewed the submitted comments, and believes that for each of the items cited, insufficient information was provided to justify why the cost of SCR at Laramie River Station would be so much higher than for other SCRs. Commenter cites the location of the SCR reactor as an issue. This is an issue that is common to every SCR retrofit. Based upon information used by EPA and information submitted by Basin Electric, there is no indication that location of the SCR reactor will be any more difficult than at any other site. In fact, the location is a rather common location. There was no indication that major equipment would need to be relocated. Therefore, in this respect Laramie River does not appear to be any more difficult than a typical SCR retrofit.

Pertaining to site congestion, Laramie River is no more congested than a typical facility that retrofits SCR, and in some respects is less congested. There is greater difficulty in

retrofitting unit 2 (the middle unit), and EPA accounted for that with a higher retrofit difficulty factor. Commenter indicates that the SCR support steel will interfere with equipment at the ground level, specifically, the FD fan buildings, requiring installation of steel and deep foundations in a congested area. SCRs are rarely installed at ground level and are normally installed above other equipment. SCR support steel is therefore commonly installed in this area below the SCR and there typically is other equipment that interferes with this. This is not an unusual situation and is not a reason for SCR cost at Laramie River Station to be higher than a typical retrofit. Side-by-side installation is common, and EPA has accounted for that with a higher retrofit difficulty factor for unit 2.

Most boilers are inside a boiler building and SCRs are always built outside the boiler building, making it always necessary to route ductwork though the boiler building wall or through the roof. Making penetrations for SCR ductwork through the boiler building wall is very common in SCR retrofits, and this is not a reason to justify a higher cost for an SCR retrofit at Laramie River station. SCR reactor 3 plus 1 and in two sections is a common SCR arrangement for a boiler of this size and does not justify a higher than average cost for Laramie River. All SCR systems have ammonia storage facilities and typically try to combine storage for all units at a site together. Ammonia storage is not a major cost item and where the system is located on the site will not make a large difference in overall cost. Pertaining to the need for an additional fan, the cost estimate used by EPA had a specific line item cost for the fan and associated costs for electrical and other modifications. Structural stiffening of ductwork is typically required when an ID fan is added. The cost estimate by EPA included provision for this. Notwithstanding these points, EPA has accepted parts of Basin Electric's cost estimate where those costs are supported. See EPA's response to other comments for more information.

Comment: Sargent & Lundy estimated capital costs based on the conceptual design of SCR installation at Laramie River Station and in-depth itemized studies, not the type of generic cost factors set forth in the CCM. As a result, the Sargent & Lundy Evaluation provides cost estimates that reflect more accurately the actual costs Basin Electric would incur for installation of SCR at Laramie River.

The Sargent & Lundy Evaluation uses an SCR design with itemized budgetary cost estimates for major equipment items and site-specific costs. S&L Evaluation section 4.5, Attachment A2. For example, the estimate includes line-item costs for upgrades, replacements, or installations of the following plant subsystems to support SCR operation at the Laramie River Station: 1) Foundation work to support SCR systems; 2) Economizer ductwork modifications; 3) Larger ID fans will be required on all three units, requiring replacement of the existing ID fans; 4) Existing electrical systems are not capable of handling the new fan loads and SCR control systems and will require significant upgrades; 5) Structural stiffening of the duct work downstream of the air heater and upstream of the new ID fans; 6) The existing Distributed Control System needs to be expanded; 7) Dry sorbent injection control systems will be required on Units 1 and 2 for SO_3 mitigation, resulting from the wet scrubbers installed on those units; and 8) Ammonia unloading area construction, including two storage tanks and tank equipment, as well as ammonia delivery and vaporization equipment.

Because of the site-specific nature of these items, the assumptions in the CCM would not be adequate to account for them, yet these types of system upgrades add substantial cost to the SCR installation.

Sargent & Lundy prepared direct capital cost estimates for each of these systems, including all costs associated with equipment, labor, and freight. S&L Evaluation section 4.5.

As EPA acknowledges, due to the site-specific nature of SCR, detailed vendor quotes are difficult to obtain because they cannot be done in an "off-the-shelf" fashion. CCM section 2.5.4.1, page 2-27. Sargent & Lundy, however, has used example vendor quotes for major pieces of equipment, including ammonia handling system, unity auxiliary transformers, catalyst modules, and sootblowers and sonic horns, and adjusted the quotes as necessary to account for the site-specific factors such as Laramie River Stations' boiler size, flue gas rates, flue gas temperatures, and inlet and outlet NO_x concentrations. S&L Evaluation section 4.4.1; Attachment A2. Sargent & Lundy also provided process equipment cost estimates for manufactured equipment in Attachment E of its Evaluation.

Sargent & Lundy estimated material and commodity costs by multiplying the quantity of the material needed to install the system based on the conceptual design by the unit cost for the commodity, which was estimated using Sargent & Lundy in-house data, vendor catalogs, and industry publications. *Id*. section 4.4.2. The basis for the estimates of materials is set forth in detail in the Sargent & Lundy Evaluation. *Id*. section 4.4.2.1. Labor costs were estimated based on man-hour estimates from industry publications, union craft rates for southeastern Wyoming, and a local labor productivity factor. *Id*. See also *id*. at Attachment F (Example Industry Publications – Commodity Costs and Man-Hour Estimates). Where the conceptual design provided insufficient detail on which to generate an estimated cost, Sargent & Lundy used allowances based on the typical scope of similar projects. *Id*. section 4.4.3.

Sargent & Lundy considered both fixed and variable operating and maintenance costs. S&L Evaluation section 4.5. Variable costs for SCR include costs of anhydrous ammonia and catalyst replacement costs, while fixed costs include property taxes and insurance. *Id*. section 4.5 and Table 5. Sargent & Lundy's analysis did not use the maintenance materials and labor cost in

the CCM of 1.5% of Total Capital Investment because it results in significantly higher than expected maintenance costs than reported by industry. Rather, Sargent & Lundy used a lower maintenance materials and labor cost of 0.25% of Total Capital Investment, which results in a conservative estimate of operating and maintenance costs. *Id*. section 6.1.2.

Indirect capital costs were estimated based on total direct capital costs using the factors set forth in EPA's CCM. S&L Evaluation section 4.4.5. For large projects like SCR, with project durations of between 1.5 years and four years, Sargent & Lundy typically would account for escalation, reflecting the increases in equipment, material, and labor costs that occur during the duration of the project. *Id*. section 4.4.6.1. Sargent & Lundy has taken a conservative approach in its estimate, however, and has calculated estimates in constant 2013 dollars without including escalation, which is consistent with the constant dollar approach discussed in the CCM. *Id.*; CCM section 4.2, page 2-43.

Response: As noted on page 21 of Exhibit 14 of Basin Electric's comments: "…Cost estimates prepared for Laramie River Station are based on equipment costs and budgetary quotes available from similar projects and Sargent & Lundy's experience with the design and installation of retrofit SNCR and SCR control systems. The Laramie River Station cost estimates are conceptual in nature; thus, Sargent and Lundy did not procure equipment quotes specifically for the Laramie River Station control systems. Rather, equipment costs for the Laramie River Station projects are based on conceptual designs developed for the control systems, preliminary equipment sizing developed for the major pieces of equipment, and recent pricing for similar equipment…"

The approach used by Sargent & Lundy is essentially how the cost algorithms for IPM were developed, upon which EPA relied. Both are empirically-based estimates that, as

demonstrated in our response to other comments, use many of the same inputs. However, Sargent & Lundy developed a very detailed cost estimate that includes many line items that would otherwise be included in the Project Contingency or other areas, such as General Facilities, and thereby double-counted these costs.

EPA has addressed comments relative to capital cost estimates in our other responses. EPA has reviewed the assumed variable operating costs and has commented on them in other comments. Regarding fixed operating costs, the IPM algorithm represents information from actual facilities, and is therefore used in EPA's analysis. As far as indirect capital costs, EPA agrees that escalation should not be included because the CCM requires use of the overnight method.

Comment: When site-specific conditions are taken into consideration, the costs of installing SCR at Laramie River Station would total nearly $747 million, with annual costs of $86,074,000. The per unit breakdown of capital costs are set forth in Table 5 and Table 3 of the Sargent & Lundy Evaluation. Direct costs include: equipment, material, labor, spare parts, special tools, consumables, and freight. Total project costs include equipment costs for the SCR, ammonia handling system, and balance-of-plant systems including the ID fan, auxiliary power system, electrical system, and dry sorbent injection control systems on Laramie River Units 1 and 2. See S&L Evaluation section 4. Indirect costs include: general facilities, engineering and home office fees, contingencies, preproduction costs, and initial catalyst fills. See Cost Manual section 2.5.2, pages 2-41 through 2-47; S&L Evaluation section 4.4.5.

In all cases, Sargent & Lundy used methodology that results in a conservative estimate of total costs taking into account the unique, site-specific factors discussed above. The Sargent & Lundy Evaluation explains the effect of these factors on the cost estimate, consistent with the

BART Guidelines and the CCM. S&L Evaluation section 5.2.1; CCM section 4.2, page 2-21. In addition, as acknowledged by EPA's own consultant, SCR capital costs have risen significantly over the past decade. S&L Evaluation section 5.2.1, citing Cichanowicz, Edward J., "Current Capital Cost and Cost-Effectiveness of Power Plant Emissions Control Technologies," (January 2010).

Response: EPA disagrees with commenter and has identified numerous deficiencies in the cost estimate developed by Sargent & Lundy for the Laramie River Station that are discussed in previous responses to comments. Furthermore, the IPM cost algorithm used had already been adjusted to address escalation to 2009 dollars and, per the memo by EPA's contractor for this action, the Chemical Engineering Plant Cost Index (CEPCI)[224] was used to escalate costs after that period. Per the memo for the IPM algorithm: "The data sets were escalated to update the MOG information to 2009 and all of the data was cross referenced with current 2009 projects. The MOG and S&L cost data were updated to reflect the changes in equipment and labor rates. The CEPCI index for power plants was used to escalate the costs. The Handy-Whitman index was also used to escalate the project costs to account for regional effects; the results were compared with the CEPCI index and were within 2% for total project costs."[225]

Comment: The Sargent & Lundy Evaluation considers site-specific data, including operating parameters for the Laramie River Station units and design parameters for SNCR that were developed based on input from Basin Electric and on Sargent & Lundy's extensive experience. S&L Evaluation section 4.1, Table 1. See also *id*. at Attachment A1. Prior to undertaking the

[224] The CEPCI is an industry index that allows for adjustment of plant construction costs from one period to another.

[225] Sargent & Lundy, "IPM Model – Revisions to Cost and Performance for APC Technologies SCR Cost Development Methodology FINAL", August 2010, Project 12301-007, Perrin Quarles Associates, Inc. p 1.

cost estimate, Sargent & Lundy developed a conceptual design taking into consideration site-specific design and operating parameters. S&L Evaluation section 4.2.1. The Evaluation highlights each of these project-specific considerations, which include, among other items: 1) Considerations Related to Use of Urea as the Reagent. The SNCR estimate is based on use of urea as a reagent, which would be delivered by truck and unloaded into fiberglass reinforced plastic storage tanks. The tanks would be cross tied and solution would be transferred using stainless steel piping. Centrifugal pumps would be needed to pump solution to metering modules and variable frequency drives would be used to maintain constant pressure. Finally, distribution modules would be needed to provide diluted urea solution and atomizing air to individual injectors. The design, quantity, type and placement of injectors are critical to SNCR performance. 2) Furnace Modifications. Penetrations in the boiler water wall would be required at injector locations; and to support injector penetrations, water wall tubes would need to be removed and replaced with tubes curved around the location. Also, reinforcement may be necessary to support the injectors.

3) Process and Freeze Protection Tracing System. A freeze protection system would be necessary for outdoor piping and instruments. The system would be designed to accommodate both normal plant operations and extended shutdowns during cold weather. S&L Evaluation section 4.2.2.

The equipment costs were estimated based on SNCR original equipment manufacturers for control systems on similar coal-fired boilers in light of the conceptual design of the control technology. Equipment costs were developed for SNCR metering skids and injectors, compressors, reagent storage tanks, and related ancillary equipment. *Id*. section 4.4.1. Consistent with the SCR cost estimate, material and commodity quantities for structural, mechanical and

electrical items were developed for each subsystem included as part of the SNCR system and provided as inputs to the cost calculation. Id. section 4.4.2.1. Material and commodity pricing was based on in-house data, vendor catalogs, and industry publications. *Id*. Where the conceptual design provided inadequate detail on which to base costs, allowances were used. *Id*. section 4.4.3. Similar to the SCR cost estimate, labor costs were based on local labor rates, with an estimate of man-hours required for installation of each line item in the SNCR estimate. *Id*. section 4.4.4.

Indirect capital costs were based on the CCM, using default factors set forth in Section 4.2, Chapter 1, Table 1.4. *Id*. section 4.4.5. The estimate includes variable and fixed operating and maintenance costs, including costs for urea. *Id*. section 4.5. Sargent & Lundy did not include either escalation or AFUDC in its cost estimate because the installation of SNCR systems are less capital and time intensive and can be done in a shorter period of time than SCR systems. S&L Evaluation section 4.4.6.3.

Based on methodology consistent with the CCM, total site-specific costs for installation of SNCR at Laramie River Station are approximately $50.5 million, with annual costs of $19.75 million. The breakdown of total costs per unit can be found at Table 2 of the Sargent & Lundy Evaluation.

Response: Based upon information provided by Basin Electric in their comments, EPA has accepted Basin Electric's estimated capital cost for SNCR and the estimated chemical utilization.

Comment: The Sargent & Lundy Evaluation supports Wyoming's BART determination. The average effectiveness of both SNCR and SCR are high, and the incremental cost of SCR compared to SNCR is even higher. Sargent & Lundy calculated the cost effectiveness of SNCR and SCR technologies based on emission rates resulting from Laramie Rivers' installation of

LNB and OFA, consistent with the BART Guideline's directive to use baseline emission rates that "represent a realistic depiction of anticipated annual emissions for the source." 70 FR 39167. For comparison purposes, Sargent & Lundy also performed a sensitivity analysis showing the values generated by using the 2001 through 2003 emission rates, which EPA's relied upon in making the BART determination in its proposed FIP. S&L Evaluation section 6.1.3, Tables 11-12. The cost effectiveness of SCR still remains between $5,955 and $6,298 costs per ton of NO_x removed and incremental cost effectiveness from SNCR is above $9,000 per ton of NO_x removed. *Id*. Table 12. These cost effectiveness values remain prohibitive, and reinforce Wyoming's determination that OFA plus LNB constitutes BART at Laramie River and EPA's 2012 rejection of SCR as not cost effective.

The Sargent & Lundy Evaluation further supports Wyoming's BART determination for Laramie River Station by providing a more precise cost estimate for both SCR and SNCR. At significant expense, Basin Electric arranged for an evaluation of the costs of compliance with SCR and SNCR at a level of detail that far exceeds what the CCM requires, but represents the gold standard for estimating the costs of compliance for a control technology. This evaluation demonstrates that the costs to install SCR at Laramie River would reach $750 million, far above what EPA estimates in the proposed SIP disapproval and FIP. In sum, the Sargent & Lundy Evaluation supports Wyoming's BART determination, and its decision not to require SCR, with a detailed consideration of the costs of compliance for Laramie River. Moreover, the Evaluation highlights the fundamental inadequacies in EPA's own cost estimates, on which EPA bases both its decision to disapprove the SIP and the BART determinations in its FIP.

Response: EPA disagrees with commenter and has identified numerous deficiencies in the cost estimate developed by Sargent & Lundy for the Laramie River Station that are discussed in

previous responses to comments. EPA calculated emission reductions from emission rates indicative of pre-BART levels in 2001-2003, prior to addition of combustion controls for BART. The estimated reduction of NOx by SNCR and SCR used baseline levels that were based upon actual emission rates achieved after the addition of those combustion controls.

Comment: The EPA's expert, Andover, used aerial photographs to assess the structural and mechanical changes necessary for installation of the SCR. As witness Ken Snell demonstrated at the July 26, 2013, public hearing, however, an aerial photograph is wholly inadequate to assess site-specific conditions that affect SCR costs. Those relevant site-specific conditions include, among others, the following: 1) Site elevation – Laramie River is situated at 4,750 feet above mean sea level (MSL), a fact which affects the flue gas volume which require a larger SCR reactor, duct work and structural support; 2) Regional labor productivity factor - necessary to account for local workforce characteristics, labor availability, project location, project complexity, local climate and working conditions; 3) Location of conveyor rooms - aerial photo cannot reveal conveyor rooms located in boiler buildings; 4) Location of FD Fan buildings - aerial photo cannot reveal the location of the existing FD fan buildings; 5) Space constraints - aerial photo cannot determine the space constraints between the FD fan buildings and existing ESPs; 6) Ammonia handling - aerial photo cannot provide information about where the ammonia handling system required for an SCR could be located, or where pipe routing could be placed; 7) Ductwork routing - aerial photo does not provide information regarding ductwork routing and SCR tie-ins to the existing economizers and air heaters; and 8) Subsystems ignored - aerial photo does not provide any information regarding plant subsystems such as ID fan capacity, equipment reinforcement, auxiliary power systems, electrical system capacity, or other plant subsystems.

Failure to take into consideration the site-specific, plant-specific characteristics for installation of SCR systems necessarily leads to a significant underestimation of the costs to install such control technology. EPA's expert Andover, using generalized data and an aerial photograph, estimated the total capital investment for installation of an SCR at $330,000,000. However, when actual site conditions are considered - i.e. site elevation, regional productivity factors, site congestion, balance-of-plant subsystem upgrades and other indirect costs - expert Ken Snell estimated the total capital investment at $746,906,000. Failure of EPA's expert to take into consideration the Laramie River Station's specific characteristics and plant configuration omits approximately $460,000,000 in very real costs. To turn a blind eye to site-specific characteristics that have a major impact on costs of installation skews the EPA's cost analysis by more than 100 percent. Basing the Laramie River Station BART determination on EPA's cost estimates would be arbitrary and capricious.

EPA proposes to reject Wyoming's SIP despite a finding that "Wyoming considered all five steps above in its BART determinations" because of alleged "flaws and deficiencies" in the cost assumptions and methodology, including Wyoming's alleged failure to "follow the methods set forth in the EPA Control Cost Manual." 78 FR 34748-34749. To address these alleged deficiencies, EPA hired its own consultant, Andover Technology Partners ("Andover"), to perform an independent cost analysis of installing SNCR and SCR at the Laramie River Station. Andover, Review of Estimated Compliance Costs for Wyoming Electricity Generating Units (EGUs) (Oct. 23, 2012), EPA-R08-OAR-2012-0081, ("Andover Report"); Andover, Review of Estimated Compliance Costs for Wyoming Electricity Generating Units (EGUs) – revision of previous memo (Feb. 7, 2013), EPA-R08-OAR-2012-0086 ("Andover Update"). Ironically, it is the cost methodology relied upon in the Andover Report that deviates from the BART

Guidelines and the CCM, thereby making Andover's analysis inconsistent with EPA's claim that cost estimates should not deviate from the CCM. As a result, EPA's cost estimates are less accurate than the Wyoming cost estimates and the Sargent & Lundy Evaluation and do not form a legally supportable basis on which to base either a SIP disapproval or the promulgation of a FIP.

Sargent & Lundy, at Basin Electric's request, has provided a critique of the Andover Report that highlights the numerous technical irregularities in the cost estimate relied upon by EPA for the proposed disapproval of the Wyoming SIP and the FIP. Sargent & Lundy Laramie River Station Andover Report Comparison (August 26, 2013), Exhibit 16 ("S&L Critique") to commenter 0148. The Sargent & Lundy Critique demonstrates that EPA's reliance on the Andover Report is not in accordance with section 169A of the CAA and the BART Guidelines for three reasons: 1) Andover relied primarily on the IPM for cost methodology, which is not consistent with the BART Guidelines or the CCM methodology and never was intended to be used to develop a site-specific cost estimate. (See section 2.3, EPA Use of the IPM Cost Models.); 2) Andover failed to take into account site-specific conditions and resulting balance of plant systems required for SCR and SNCR and therefore did not comply with the directive in the BART Guidelines that cost estimates "take into account any site-specific design or other conditions . . ." 70 FR 39166.; 3) Andover ignored NO_x reductions achieved to date by existing control equipment, thereby artificially increasing the cost effectiveness of SCR.

If EPA is basing its SIP disapproval on failure to adhere to the methodology set forth in the CCM, EPA's reliance on the cost estimation in the Andover Report is wholly inappropriate and imposes an arbitrary double standard. Not only does the Andover Report rely on methodology that deviates from the CCM, but EPA's approach is inconsistent with the

requirements of the BART Guidelines because it does not adhere to the three-step approach for cost estimation set forth in the Guidelines and fails to appropriately account for "site-specific design or other conditions" that "affect the cost of a particular BART technology option." 70 FR 39166. Reliance on the Andover Report for disapproval of the Wyoming SIP or imposition of a FIP would constitute arbitrary and capricious decision making and would run contrary to the very provisions of law on which EPA proposes to base its decision.

Response: EPA disagrees with commenter and has identified numerous deficiencies in the cost estimate developed by Sargent & Lundy for the Laramie River Station that are discussed in previous responses to comments. EPA has also noted in other responses to comments that, except for elevation, each of the site-specific issues raised by commenter has been addressed, or commenter has not provided adequate information to support their assertion that there are unique costs that are not accounted for in EPA's cost estimate. We disagree with the characterization of the cost development methodology contained in IPM as inconsistent with BART guidelines. As noted in the documentation for IPM's cost development methodology for SCR, the cost estimate methodology is based upon two databases of actual SCR projects.[226] These databases include 2004 and 2006 industry cost estimates prepared for the Midwestern Ozone Group, and a proprietary in-house database maintained by engineering firm Sargent & Lundy. The Midwestern Ozone Group information was cross-referenced with actual 2009 projects, and as explained elsewhere in this document, escalated accordingly. Sargent & Lundy then used the information in these databases to develop the equations described in the cost component taking into account the pre-control NO_x emission level, degree of reduction, coal type, facility size, and numerous other unit-specific factors. While a costly engineering evaluation that included site

[226] http://www.epa.gov/airmarkets/progsregs/epa-ipm/docs/v410/Appendix52A.pdf

visits in addition to our use of satellite imagery might be useful, we disagree that our approach is not sufficiently site specific to satisfy BART guidelines. As noted by EPA in previous responses, EPA's use of satellite imagery enabled us to evaluate each of the major site-specific issues.

Comment: EPA argues that "[w]hen considering the cost effectiveness and visibility improvement of new LNBs plus OFA and SCR, it is within the range of what EPA has found reasonable for BART in other SIP and FIP actions." 78 FR 34776. EPA's cost effectiveness and visibility improvement numbers for Laramie River Station Units 1-3 are within the range of what EPA has found not to be reasonable for BART. The case for rejecting SCR becomes even more compelling when EPA's numbers are corrected to comply with the BART Guidelines, CCM, and EPA guidance, and to reflect site specific conditions. With these comments, Basin Electric is submitting updated and more accurate reports with cost estimates and visibility modeling results based on inputs that are more correct and consistent with EPA's BART Guidelines. Average and incremental cost effectiveness values for SCR at Laramie River Station in these reports are far higher than assumed by EPA, and visibility improvement associated with SCR is far lower than EPA assumed. For EPA to disapprove the State's BART determination for Laramie River Station and proceed with its FIP in light of this new information would be egregiously inconsistent with BART actions it has taken for other sources.

The following discussion explains that even with EPA's cost and visibility values for Laramie River Station, its proposed action at Laramie River Station is inconsistent with actions elsewhere and EPA should withdraw its proposed disapproval.

The comparison to Gerald Gentleman Station (GGS) Units 1-2 is striking. SCR was rejected at GGS despite substantially lower costs and very similar visibility improvement. GGS

is a valid point of comparison despite the fact that Nebraska adopted the Transport Rule as a BART alternative. 77 FR 40159. EPA did not make a final determination as to whether to select SCR as BART for GGS because Nebraska became subject to the Transport Rule and relied on that as a BART alternative. *Id.* However, EPA's proposed rule discusses the costs and benefits of SCR. 77 FR 12770, 12779 (March 2, 2012). In its proposed rule, EPA agrees with Nebraska's decision to reject SCR at an average cost effectiveness of $2,297/ton and an incremental cost effectiveness of $5,445/ton (both as calculated by Nebraska). The projections of visibility improvement were the same in the proposal and the final rule, i.e. 0.62 delta deciview for each of GGS Units 1 and 2. The proposed rule states that "EPA agrees that the State's NO_x BART determination for GGS is reasonable." 77 FR 12779. EPA never retracted that conclusion.

The difference between EPA's pending proposals for Wyodak Unit 1 and Laramie River Station Units 1-3 are equally striking. The average and incremental cost effectiveness is virtually the same for these units. So are the baseline and incremental visibility improvement figures. Yet EPA proposes to require LNB, OFA and SNCR at Wyodak Unit 1, as opposed to LNB, OFA and SCR at each Laramie River Station unit. 78 FR 34785. EPA bases these differing outcomes on the fact that SCR at Wyodak Unit 1 would achieve a cumulative visibility improvement of 1.16 deciviews, whereas SCR at Laramie River Station Units 1-3 would reportedly achieve cumulative visibility improvements of 2.12, 1.97, and 2.29. *Id.* Cumulative visibility improvement at multiple Class I areas is not a valid criterion for use in BART determinations. Disregarding the invalid cumulative criterion, EPA inconsistently eliminated SCR as BART at Wyodak based on cost and visibility values very similar to EPA's cost and visibility values for Laramie River Station.

Also noteworthy is EPA's decision to reject SCR as BART at Healy Unit 1 because of its

$5,300/ton cost effectiveness, 0.786 deciview visibility improvement from the LNB/OFA baseline, and 0.17 deciview incremental improvement compared to SNCR. EPA recalculated the costs after publishing its proposed rule to account for various potential useful life scenarios. The $5,300/ton figure shown here is for a 30 year life. For a 20 year useful life, SCR would cost $5,900/ton. EPA concluded that these costs are "not justified" given the visibility improvement (which was not recalculated after proposal).

A comparison of the costs and visibility impacts of installing and operating SCR at Laramie River Station Units 1-3 to the costs and visibility impacts of SCR at the facilities listed above quickly shows that SCR must be rejected as BART. EPA has made no attempt to explain why it proposes to disapprove the State's BART for Laramie River Station and proposes SCR instead, when it has eliminated SCR at other facilities based on similar information. To the extent the information at the other facilities is a little different than at Laramie River, EPA has not and cannot show that the difference is significant or a reason to treat the facilities differently.

Response: We disagree with the commenter's assertion that our proposed action for Laramie River Station, as it relates to the consideration of SCR as BART, was inconsistent with our proposed action for other BART sources in Wyoming or with EPA actions in other States.

Regarding NO_x BART for Gerald Gentlemen Station in Nebraska, we note that our proposed approval of the State's NO_x BART determination, as described by the commenter, does not reflect final agency action. In our final rulemaking for Nebraska, where the State is subject to the Transport Rule and FIP for NO_x, we provided the following:

> Given the emission reductions provided by the NO_x emission limits associated with Nebraska's NO_x BART determination of LNB and OFA for GGS Units 1 and 2, which strengthen the Nebraska SIP, in conjunction with the existing Transport Rule FIP which

> already applies to Nebraska and has been determined to provide greater reasonable progress than BART, in today's action, EPA is finalizing its proposed approval of Nebraska's SIP as satisfying the requirements of the Regional Haze Rule with respect to BART for NOX, *and therefore do not inquire further here as to whether the cost effectiveness of SCR is low enough and the associated deciview improvement significant enough to reasonably determine that SCR is BART for GGS Units 1 and 2.*[227]

Therefore, because the Transport Rule removed the need for EPA to consider SCR for Gerald Gentlemen Station any further, there is no factual basis to determine whether our consideration of SCR in Wyoming differs from that in Nebraska. In simpler terms, the commenter has erred by drawing a comparison with a BART determination that was never finalized.

We also disagree that our proposed NO_x BART determinations for Laramie River Station were inconsistent with that for Healy Unit 1 in Alaska. There, the cost effectiveness of SCR, using a 20 year lifetime comparable to that used for Laramie River Station, was found to be $5,900/ton.[228] This cost effectiveness is greater than that for any of the Wyoming units for which EPA proposed SCR as BART, or for which EPA is finalizing SCR as BART today. The cost effectiveness of SCR (with combustion controls) for Laramie River Station units estimated by EPA in our proposed rule ranged from $3,589/ton to $3,903/ton[229] – at least 34% less than at Healy Unit 1. While we have revised these costs effectiveness estimates for today's rule, they remain well below the $5,900/ton cost effectiveness that EPA calculated for Healy Unit 1.

Finally, while the costs and visibility improvement (at one Class I area) for the Laramie River units and Wyodak described in our proposed rule may have been similar, we disagree that

[227] 77 FR 40159 (emphasis added).
[228] 78 FR 10548.
[229] 78 FR 34775-34776.

the cumulative visibility benefit was not a valid criterion for use in BART determinations. Refer to the modeling section above where we address our consideration of cumulative visibility benefits.

We have addressed the updated cost estimates and visibility modeling submitted by Basin Electric during the public comment period in other response to comments.

Comment: SCR should be rejected for Laramie River Station Units 1-3 because of its high cost per deciview of visibility improvement. EPA did not report the $/deciview for Laramie River Station, but dividing the annualized costs by the visibility improvement (from the pre-LNB/OFA baseline) reveals that SCR would cost between $23.0 million and $27.8 million per deciview of improvement in the Class I area with the greatest visibility improvement. These figures are very similar to the $/deciview numbers seen at Martin Drake, Colstrip, Corette, and GGS, and substantially higher than the $10.8 million and $20 million figures reported for Lakeland Electric and JEA Northside. The Laramie River figures are also well above the $14 million to $18 million per deciview range that has frequently been seen as cost effective. EPA has not considered or justified SCR at Laramie River in light of its high cost per deciview.

Not only has EPA proposed to mandate SCR for Laramie River at $/deciview levels where SCR has previously been rejected, EPA has frequently refused to apply the $/deciview metric in accordance with the BART Guidelines. The Guidelines expressly allow states to evaluate control technologies based on "cost-effectiveness measures (such as $/deciview)," 70 FR 39170, but EPA has generally opposed reliance on such a standard by the states. While acknowledging that the dollar per deciview is "an additional cost effectiveness metric that can be employed along with $/ton for use in a BART evaluation," EPA has not used $/deciview because it is "unnecessary," it "complicates the BART analysis," and it is "difficult to judge." 77 FR

57871. In other rulemakings, EPA has stated that "[w]e do not generally recommend the use of this metric as it can be complicated to use and the results can be difficult to assess." 77 FR 76871, 76873 (Dec. 31, 2012). EPA also has objected to the $/deciview metric because it claims that metric is based on the impacts of a single day. 77 FR 57871.

EPA's reasons for refusing to consider the $/deciview metric are frivolous. Even if the $/deciview metric is complicated or difficult to use, that does not distinguish it from any other aspect of the BART determination process. EPA's concern that the $/deciview metric is based on a single day holds no water. EPA sometimes bases the visibility improvement (delta deciview) of potential control technologies on the "maximum 98th percentile impact," meaning the 98th percentile day with the highest deciview improvement during the relevant period, and proposes to do so in its analysis of Laramie River. 78 FR 34775. Indeed, it is that day's deciview improvement which is used to calculate $/deciview. The $/deciview metric has the virtue of directly comparing cost to visibility improvement. It would constrain EPA's current use of a nebulous sliding scale where the agency gives itself the latitude to point to any one of several variables as justification for overriding the State's choice of BART or for making its own.

Response: We disagree that our reasons for not considering the $/deciview metric are frivolous. We maintain that, for the reasons discussed in other regional haze actions, as cited by the commenter, the $/deciview metric is problematic and does not offer any better basis for making BART determinations than those used by EPA here – cost effectiveness, incremental cost effectiveness, and visibility improvement. Moreover, the BART Guidelines do not require EPA or the states to conduct a $/deciview analysis when evaluating the visibility improvement factor. Instead, the BART Guidelines allow flexibility in this area, stating that: "You have flexibility to

assess visibility improvements due to BART controls by one or more methods. You may consider the frequency, magnitude, and duration components of impairment." 70 FR 39170. While the BART Guidelines suggest cost per deciview as a possible parameter for consideration, its use is entirely discretionary. There are numerous examples of BART analyses conducted by states and EPA that have not calculated this metric.

Comment: The Laramie River Station began commercial operation in July, 1980, with a permitted limit for NO_x emissions of 0.71 lb/MMBtu. However, Laramie River was able to significantly outperform its permitted limits, achieving an average emission rate that was much lower, approximately 0.45 lb//MMBtu. In 1996 and 1997, Laramie River replaced burner nozzles on all three units and again reduced its NO_x emission rates, to an average of about 0.27 lb/MMBtu. Now, pursuant to Wyoming's BART permit, Laramie River is required to further reduce its NO_x emissions to a limit of 0.21 lb/MMBtu and 14,474 tons/year in 2014, and reduce emissions even further by the end of 2017, to 12,773 tons/year (equivalent to 0.158 lb/MMBtu). By 2017, the Wyoming regional haze SIP will have required the station to reduce its NO_x emission rate by 65% from the NO_x rate emitted when the units were originally started up. This demonstrates that the State has achieved very substantial NO_x emission reductions without undue and wasteful expense.

To put the reductions already achieved in perspective, the combination of past reductions and future required reductions results in total NO_x reductions at Laramie River of 0.29 lb/MMBtu (from 0.45 lb/MMBtu to 0.158 lb/MMBtu). This has been done and will be done at a significant but reasonable cost. In contrast, EPA proposes to require the expenditure of nearly $750 million dollars to reduce NO_x emissions further, from 0.158 1b/MMBtu to 0.05 lb/MMBtu, a reduction of only 0.11 lb/MMBtu, less than half of what has already been accomplished.

Response: We disagree with this comment. The RHR and BART Guidelines instruct states to calculate the cost-effectiveness and visibility improvement associated with the various control options against a realistic emissions baseline. For the purposes of BART, most states, including Wyoming, used a baseline period of 2000-2004, which corresponds to the five-year period that followed the promulgation of the RHR. Setting a baseline that predates the promulgation of the RHR, as the commenter suggests, would be inappropriate because it would allow emission reductions that were achieved as the result of compliance with other CAA programs to be attributed instead to BART. Thus, any reductions achieved at Laramie River between 1980 and 1997 cannot be credited to the source owner, but must be incorporated into the baseline, as both the State and EPA properly did in this case. In regards to reductions achieved at Laramie River that have been or will be achieved due to compliance with the State's BART determination, these reductions will also occur under EPA's FIP. Consequently, a more accurate way of comparing the State's regional haze SIP to EPA's FIP is to subtract the ultimate emission rate achieved by each plan from the baseline. Using the commenter's emission rates, the State's regional haze SIP would reduce emissions at Laramie River by 0.112 lb/MMbtu from the baseline, while EPA's FIP will reduce emissions by 0.22 lb/MMbtu. For a more detailed discussion of baseline emissions and the flaws in the commenters' logic, see our response to similar comments on the consideration of existing controls in use at a source.

Comment: The costs of installation of the SCRs at Laramie River Station impose an economic impact that is unjustified by the facts of this case. The regulation of regional haze is focused on improving visibility, not public health. Yet, the improvement in visibility that EPA suggests will be created by installation of SCRs, as opposed to the Wyoming SIP's LNBs/OFA, does not carry with it a significant improvement in visibility. By EPA's own calculations, installation of SCRs

will result in only a 0.79 deciview visibility improvement at the most impacted Class I area, Badlands National Park, and those calculations substantially overstate the visibility improvement that would actually be achieved. By its very definition, this small incremental improvement in visibility is not even perceptible by the human eye.

Response: We disagree with this comment. As stated in section IV.C.5 above, even though the visibility improvement from an individual source may not be perceptible, it should still be considered in setting BART because the contribution to haze may be significant relative to other source contributions in the Class I area. Thus, we disagree that the degree of improvement should be contingent upon perceptibility. Failing to consider less-than-perceptible contributions to visibility impairment would ignore the CAA's intent to have BART requirements apply to sources that contribute to, as well as cause, such impairment.[230]

Comment: EPA asserts that Wyoming's alleged "deviations" from the BART Guidelines and CCM form adequate grounds for rejection of its SIP - yet the BART determinations included in EPA's proposed FIP eschew the very standards to which it holds the State. EPA's estimate of the "cost of compliance" for installation of SCR and SNCR at Laramie River Station is grounded in an outside consultant's report that expressly dismisses the recommendations of EPA's own CCM in favor of a methodology that is inconsistent with the directives of the BART Guidelines and fails to account for critical site-specific factors that affect the cost of these technologies at Laramie River. The resulting cost estimates are not representative of the costs that Basin Electric

[230] The preamble to the BART Guidelines state, "[e]ven though the visibility improvement from an individual source may not be perceptible, it should still be considered in setting BART because the contribution to haze may be significant relative to other source contributions in the Class I area. Thus, we disagree that the degree of improvement should be contingent upon perceptibility. Failing to consider less-than-perceptible contributions to visibility impairment would ignore the CAA's intent to have BART requirements apply to sources that contribute to, as well as cause, such impairment" (70 FR 39104, 39129, July 6, 2005).

would incur for the installation of SCR and SNCR and do not form a legally supportable basis on which to promulgate a FIP. To finalize a FIP based on the cost effectiveness estimates in the Andover Report would constitute arbitrary and capricious decision making and would run contrary to the same provisions of law on which EPA bases its disapproval of Wyoming's SIP.

The Andover Report uses a high-level model that was never intended to be used to estimate site-specific costs. But neither Andover nor EPA offers any explanation of why reliance on the IPM model is more appropriate than either the CCM recommendations or a site-specific scoping level study such as the Sargent & Lundy Evaluation. Indeed, EPA's preamble notes that the cost estimate relied primarily on the IPM model, but then simply parrots the conclusions of the Andover Report without further analysis or discussion. Although EPA has the discretion to rely on a model of its choice, EPA's reliance on the IPM model to estimate costs requires both an explanation of the assumptions made and a defense of this particular methodology - particularly because EPA has proposed disapproval of Wyoming's SIP for failure to adhere strictly to the CCM methodology. *See Appalachian Power*, 249 F.3d at 1053. EPA has failed to "make plain its course of inquiry, its analysis and its reasoning" and therefore promulgation of a FIP based on the Andover Report would be arbitrary and capricious. O*lenhouse*, 42 F.3d at 1575.

EPA's BART determinations relied upon methodology that does not comply with the BART Guidelines. Specifically, Andover did not adhere to the three-step process in the BART Guidelines for estimating the "costs of compliance" because the analysis set forth in the report did not adequately define the emission units being controlled, failed to identify site-specific design parameters that affect cost and performance of the controls, and used the IPM model to

develop cost estimates that are neither technically defensible nor representative of the costs of SCR and SNCR systems at Laramie River.

First, Andover's use of the IPM model - which requires only four inputs - is so general that it failed to adequately define the operating parameters of Laramie River Station Units 1 through 3. Second, both the IPM model and Andover's manipulation of the cost algorithms ignored numerous site-specific variables that would have a substantial effect on the costs incurred by Basin Electric. These variables include, among other items, failure to account for the elevation of Laramie River and the complexities of SCR at the facility. Finally, Andover used out-of-date and inaccurate emissions from Laramie River Units 1 through 3 on which to base its cost effectiveness analysis. These emissions estimates did not take into consideration the reductions that result from the installation of OFA and LNB at these units, which have reduced the baseline NO_x emissions to 0.19 lb/MMBtu. As a result of these inadequacies, the Andover Report makes inaccurate cost estimates that are not representative of the costs that Basin Electric would incur for installation of either SNCR or SCR. By relying on the Andover Report, EPA has "complete[ly] failed to consider the criteria that should inform" its BART determination, and a court would accord EPA's BART determination no deference and would determine that it is arbitrary, capricious, an abuse of discretion and not in accordance with the law. *Nat. Resources Defense Council*, 725 F.2d at 771; *see also Appalachian Power*, 249 F.3d at 1052; *Sierra Club v. Costle*, 657 F.3d at 333.

Response: Each of the commenter's claims have been addressed above in other responses and elsewhere in this document. In these responses we have substantiated that the cost methodology employed by EPA, including use of the IPM-based cost algorithms, is consistent with the BART Guidelines and CCM. Moreover, we modified our cost estimates in response to site-specific

information provided by Basin Electric during the comment period. Therefore, we reject the commenter's assertions that 1) we have dismissed the recommendations of the CCM in favor of a methodology that is inconsistent with the directives of the BART Guidelines, and 2) failed to account for critical site-specific factors.

We have addressed the commenter's concern regarding whether our cost-effectiveness analysis reflects the relatively lower emissions achieved with recent combustion control updates (OFA and LNB) in section V.A.12 above.

Comment: Wyoming concluded that SCR would lower the NO_x emission rate of Laramie River Units 1-3 to 0.07 lbs/MMBtu on a 30-day rolling average basis and used the 0.07 lbs/MMBtu controlled NO_x rate to estimate costs. 78 FR 34748; *WDEQ Revised NO_x BART Impact Analysis* AP-6047A (January 3, 2011) ("2011 Revised BART Analysis") at 3, Table 2-2, *docket cite* EPAR08-OAR-2012-0026-0003.

The State's administrative record supports its selection of 0.07 lb/MMbtu on a 30-day rolling average as an appropriate post-SCR NO_x emissions rate. Wyoming first presented this emissions rate in its BART Application Analysis AP-6047. Wyoming BART Analysis at 8, Table 2. Wyoming explained its rationale in its December 31, 2009 response to comments on BART Permit AP-6047. *Available at* EPA-R08-OAR-2012-0026-0058, Exh. 3.

Wyoming then provided a table comparing SCR control efficiencies at seven similar coal fired EGUs. The NO_x emission rate selected by Wyoming is squarely within the range of control efficiencies identified by the State's search. Of note are the NO_x emission rates for the Iatan Station (0.08 lb/MMbtu, 30-day average), Big Cajun II Power Plant (0.07 lb/MMBtu annual average), and OPPD – Nebraska City Station (0.07 lb/MMbtu, 30- day average). *Id.* Wyoming's explanation and supporting data negate any contention that the State violated the CAA or acted

unreasonably when it chose to evaluate SCR using a NO_x control efficiency of 0.07 lb/MMbtu on a 30-day rolling average basis.

EPA contends that whereas Wyoming assumed that adding SCR controls at Laramie River would achieve a control effectiveness of 0.07 lb/MMBtu, "EPA has determined that on an annual basis SCR can achieve emission rates of 0.05 lb/MMBtu or lower." 78 FR 34748. EPA provides no explanation and cites nothing to support how it "determined" this to be the case. It doesn't associate the 0.05 lb/MMBtu with any specific facility or unit - it just makes this blanket assertion.

Nor can EPA assert that Wyoming's 0.07 lb/MMBtu assumed control level conflicts with the CAA or the BART Guidelines. Nothing in the Guidelines dictates what SCR can achieve, and EPA cites no provision of the Guidelines to support its claim. In fact, EPA's blanket claim that 0.05 lb/MMBtu must always be used itself conflicts with the Guidelines, which make clear that BART is a site-specific determination, not a blanket finding. The notion that EPA can apply an across-the-board value and thereby deprive the State of its ability to exercise discretion on an individual case basis is contrary to the holding in *American Corn Growers*, 291 F.3d at 7-10.

The lack of support for EPA's claim that the 0.07 lb/MMBtu is a "flaw" is reinforced by EPA's own acceptance of this value in BART analyses by other States. For example, in Colorado, commenters on EPA's proposed approval of the State's regional haze SIP, including BART determinations, argued that the State was wrong in assuming that at Tri-State's Craig Station Units 1 and 2, SCR would achieve only a 0.07 lb/MMBtu NO_x emission rate on an annual basis; however, EPA did not disapprove Colorado's BART determinations for this reason or find that this was an error. EPA's response to the comments stated that it agreed that "SCR in some cases can achieve annual NO_x emission rates as low as 0.05 lb/MMBtu" but that the "annual

emission rate assumed by Colorado, 0.07 lb/MMBtu, is within the range of actual emission rates demonstrated at similar facilities in EPA's Clean Air Markets Division (CAMD) emission database." 77 FR 76871, 76873. Similarly, although commenters argued that SCR at Alaska's Healy Unit 1 could achieve a NO_x emission rate of 0.035 lb/MMBtu, EPA evaluated using a rate of 0.07 lb/MMBtu to evaluate SCR. 78 FR 10546, 10548. EPA evaluated SCR using an emission rate of 0.06 lb/MMBtu for Nevada's Reid Gardner Generating Station. 77 FR 21896, 21903 (calling this a "mid-range option").

Also, EPA accepted an even higher post-SCR NO_x emission rate of 0.10 lb/MMBtu for Jeffrey Energy Center Units 1 and 2. Kansas SIP Approval, 76 FR 80754, 80756. This emission rate was "within the range of effectiveness that the State believed to be reasonable as a retrofit control on older tangential-fired units." *Id.* EPA deferred to Kansas, noting that "EPA believes the State's decision to choose a control efficiency within the middle of the range for the purpose of estimating cost is a reasonable approach and is acceptable according to the BART Guidelines." *Id.* If it was not error and not unreasonable or arbitrary for Colorado and Kansas to use 0.07 or 0.10 lb/MMBtu, it cannot be error, or unreasonable, or arbitrary, for Wyoming to use the same or lower value.

Response: We have addressed the control effectiveness of SCR above in section V.C.3 above. Again, we agree that it was appropriate for Wyoming to set the 30-day rolling average emission limit for SCR installations at 0.07 lb/MMBtu. And again, EPA's use of an actual annual emission rate of 0.05 lb/MMBtu for cost calculation purposes is supported by information supplied by control equipment consultants or vendors and submitted along with comments from PacifiCorp and Basin Electric.

We also note that the commenter has compared the 30-day allowable rates established at certain facilities to the annual emission rate used by EPA to calculate cost effectiveness. These values are not directly comparable. This is because: 1) the former is on a 30-day basis, while the latter is on an annual basis, and 2) the former is an allowable emission limit, while the latter is an actual emission rate.

The remaining comments have been addressed elsewhere in this document.

Comment: For the same reasons that SNCR is not a relevant basis for disapproving Wyoming's BART for Laramie River Station, the price of urea is likewise not relevant. The price of urea relates only to SNCR technology, not to SCR. As noted above, SNCR is not a relevant factor to support EPA's rejection of the State's NO_x BART for Laramie River Station because neither the State's SIP nor EPA's proposed FIP chooses SNCR as BART. SNCR has been taken off the table by EPA, so the attempt to base its BART disapproval on SNCR issues is specious. EPA cannot reasonably base its disapproval on the State's alleged failure to properly consider the cost of a technology that EPA itself rejects.

Response: We disagree. The BART selection process requires a comparison between all technically feasible control options, not the evaluation of individual control technologies in isolation. While the BART Guidelines do not specify the order in which control options must be evaluated (e.g., beginning with the most stringent or beginning with least stringent control), they do specify that the CAA factors must be considered for all options: "In the final guidelines, we have decided that States should retain the discretion to evaluate control options in whatever order they choose, so long as the State explains its analysis of the CAA factors." 70 FR 39130. The only exceptions are "... if you find that a BART source has controls already in place which are the most stringent controls available …", or "….if a source commits to a BART determination

that consists of the most stringent controls available …" 70 FR 39165. In these situations, it is not necessary to complete an analysis of all five BART factors. Therefore, because neither of these criteria was met, the State was required to perform an analysis of all five BART factors for all technically feasible control options. And if, as EPA has established in other responses, the analysis of one of those options, such as SNCR, was flawed, then the State could not sensibly identify the best available option among all of the control options considered. Therefore, regardless of whether the State or Wyoming rejected SNCR as BART, it is mistaken for the commenter to suggest that the analysis of SNCR was somehow immaterial in the selection of BART.

It is particularly important that the costs of SNCR be properly estimated in relation to the calculation of incremental cost effectiveness. (The incremental cost of effectiveness should be calculated in addition to the average cost effectiveness. 70 FR 39167). The cost of SNCR affects the incremental cost effectiveness between SCR and SNCR, as well as incremental cost effectiveness between SNCR and combustion controls. If the cost of SNCR is incorrect, the incremental cost effectiveness between control options will also be incorrect. This underscores the point that, if the underlying assumptions were flawed, the State could not have reasonably chosen between competing control options.

We have addressed the price of urea in a separate response.

Comment: EPA is proposing that the FIP NO_x BART emission limit for Basin Electric Laramie River Unit 1, Unit 2, and Unit 3 is 0.07 lb/mmBtu (30-day rolling average). While we are generally pleased with EPA's proposal, we note that EPA's analysis is based on only 74% NO_x control by the SCRs, and still results in each EGU contributing 0.5 deciview to visibility impairment at Badlands National Park.

Based on an evaluation of the rolling 30-boiler operating day average NO_x emission rates from Laramie River Units 1-3 with emissions data available in EPA's CAMD database, a NO_x limit of 0.07 lb/MMBtu on a rolling 30-boiler operating day basis would only require Laramie River Units 1-3 to achieve 61-70 percent NO_x removal across the SCR systems. A 0.05 lb/MMBtu NO_x emission limit applicable on a rolling 30-boiler operating day average basis would only require 73-79 percent NO_x removal across the SCR, which is readily achievable.

Response: We have addressed the control effectiveness of SCR above in section V.C.3 above.

Comment: Moreover, the Sargent & Lundy evaluation demonstrates, based on a detailed scoping-level cost analysis, that SCR will cost approximately $9,000 per ton of NO_x removed, further demonstrating the arbitrariness of EPA's proposed disapproval of the State's NO_x BART determination for Laramie River Station. Sargent & Lundy Evaluation, Table 7.

Response: We disagree that SCR will cost $9,000/ton as indicated by the commenter. We have incorporated certain costs claimed by Sargent & Lundy in their evaluation, but not others. We have addressed the Sargent & Lundy cost analysis, including our rationale for not accepting certain costs, in detail in other responses. Our revised cost analysis of SCR plus combustion controls, indicates that the cost effectiveness for the three units is between $4,375/ton and $4,461/ton.

Comment: EPA should have used 30-day average emission limits in the cost effectiveness analysis, rather than expected/actual emission rates, to be consistent with how EPA and states have done other BART cost effectiveness calculations.

Response: We disagree. As we have stated in other responses, our use of the anticipated actual annual emission rate is consistent with the BART Guidelines. As we previously noted, cost

effectiveness is more appropriately based on the reduction in annual emissions, not the change in allowable emissions.

Comment: We received a comment that EPA's consultant did not take into account site-specific data for Laramie River Station.

Response: We have addressed this issue in a separate response. As noted there, we have incorporated many of the costs suggested by Basin Electric's consultant, Sargent and Lundy, in our revised costs supporting this final action.

Comment: Wyoming has underestimated the cost of SNCR. Wyoming estimated LNB+OFA+SNCR would cost $2,056-$2,109/ton. EPA calculated the incremental costs of SCR versus LNB+OFA+SNCR, its preferred control option, and estimated incremental costs of $7,054-$7,242/ton. We are concerned that Wyoming underestimated the cost of SNCR, which biases its emphasis on incremental costs against SCR. We calculated the costs of SNCR using the CCM (with the reagent correction used by EPA for Montana), and heat inputs and emission estimates from CAMD data for 2001-2003. Based upon application of the CCM, we estimate SNCR cost-effectiveness at $2,358-$2,536/ton, which is $300-$400/ton higher than Wyoming's estimates.

Response: We agree that Wyoming has underestimated the cost of SNCR for the Laramie River Station units. In order to address deficiencies in Wyoming's SNCR cost estimates for the Laramie River Station units identified by commenters, such as the control effectiveness of SNCR, we have conducted a revised cost analysis.

Comment: Wyoming has underestimated the ability of SCR to reduce emissions. In estimating the annual cost-effectiveness of the LNB+OFA+SCR option, Wyoming assumed 0.07 lb/MMBtu, which represents 74% control efficiency on an annual average basis, as opposed to

the generally-accepted 90%. Wyoming has not provided any documentation or justification to support the higher emission rates used in its analyses. In other recent BART actions, EPA has determined that SCR can achieve 0.05 lb/MMBtu on an annual basis. Such an underestimate at Laramie River Station biases the cost-benefit analysis against SCR and is inconsistent with other EPA analyses.

Response: The commenter has incorrectly assumed that a 90% control efficiency can be achieved in all SCR applications regardless of the input NO_x emission rate or other parameters. In addition, we note that the emission rate analyzed by Wyoming, 0.07 lb/MMBtu, was on a 30-day rolling average basis, not an annual basis. Regardless, we agree that SCR can in most cases achieve a performance rate of 0.05 lb/MMBtu on an annual basis. (See the section IV.C.4 of this document for more information regarding the control effectiveness of SCR). We have revised the SCR costs for the Laramie River Station units accordingly.

Comment: The final state BART determination sets NO_x emission limits of 0.21 lb/MMBtu, 30-day average, and related lb/hour and tons/year limits. However, EPA does not analyze these limits and find they are unreasonable. It analyzes instead a NO_x emission limit of 0.23 lb/MMBtu, which is not the actual final BART limit but rather an initial limit in the BART permit that was appealed and was changed in the settlement of that appeal and incorporated in the final SIP. Therefore, EPA's disapproval pertains to a BART limit that is different than the actual BART limit. Using the wrong BART limit is arbitrary and unreasonable.

Response: In our revised cost and visibility analyses for the Laramie River Station BART units, we have addressed the issue described by the commenter. However, we have not analyzed the 0.21 lb/MMBtu limit directly as it is assessed on a 30-day rolling average basis. Instead, as described above, we have used the actual annual emission rate of 0.19 lb/MMBtu demonstrated

since the installation of new LNBs and OFA. Our approach is consistent with the BART Guidelines which state: "…you will estimate the anticipated annual emissions based upon actual emissions from a baseline period." 70 FR 39167.

Comment: The purpose of the regional haze program is to improve visibility in Class I areas. The amount of emission reductions by itself, without any connection to visibility improvement, is irrelevant because without some connection to visibility improvement we cannot judge the significance of such reductions in light of the "overarching purpose of the regional haze program" to protect visibility in Class I areas. Since EPA acknowledges that SNCR would not improve visibility by a perceptible amount, the amount of NO_x emission reductions standing alone does not further the purpose of the program.

Response: We disagree that the visibility improvements for Laramie River Station are de minimis or too small to justify the expense of requiring controls. The BART Guidelines are clear that it is not necessary for the visibility improvement of a particular control option to be above the perceptible threshold: "Even though the visibility improvement from an individual source may not be perceptible, it should still be considered in setting BART because the contribution to haze may be significant relative to other source contributions in the Class I area. Thus, we disagree that the degree of improvement should be contingent upon perceptibility. Failing to consider less-than-perceptible contributions to visibility impairment would ignore the CAA's intent to have BART requirements apply to sources that contribute to, as well as cause, such impairment." 70 FR 39129.

EPA followed the BART Guidelines in determining what BART was for each unit, taking into account the five factors, including visibility improvement and the cost effectiveness of controls (which includes an assessment of the dollars per ton removed).

2. Jim Bridger Units 1-4

a. NO_x BART Determination

Comment: In estimating the annual cost-effectiveness of the LNB/SOFA+SCR option, Wyoming assumed 0.07 lb/MMBtu on an annual average basis. Based on the 0.026 lb/MMBtu NO_x emission rate predicted for the LNB/SOFA option, and the 0.20 lb/MMBtu annual emission rates demonstrated by all four Bridger units, outlet emissions at 0.07 lb/MMBtu represent only a 65%-73% SCR control efficiency as opposed to the generally-accepted 90%. Wyoming has not provided any documentation or justification to support the higher emission rates used in its analyses. In other recent BART actions, EPA has determined that SCR can achieve 0.05 lb/MMBtu on an annual basis. Such an underestimate at Bridger biases the cost-benefit analysis against SCR and is inconsistent with other EPA analyses.

Response: The commenter has incorrectly assumed that a 90% control efficiency can be achieved in all SCR applications regardless of the input NO_x emission rate or other parameters. In addition, we note that the emission rate analyzed by Wyoming, 0.07 lb/MMBtu, was on a 30-day rolling average basis, not an annual basis. Nonetheless, we agree that SCR can, in most cases, achieve a performance rate of 0.05 lb/MMBtu on an annual basis.

Comment: Based on an evaluation of the rolling 30-boiler operating day average NO_x emission rates from Jim Bridger Units 1-4 over the period of January 1, 2011 through March 31, 2013 with emissions data available in EPA's CAMD, a NO_x limit of 0.07 lb/MMBtu on a rolling 30-boiler operating day basis would only require Jim Bridger Units 1-4 to achieve 66-68 percent NO_x removal across the SCR systems. The commenter asserted that a 0.05 lb/MMBtu NO_x emission limit applicable on a rolling 30-boiler operating day average basis would only require

75-77 percent NO_x removal across the SCR, which the commenter believes is readily achievable. (The commenter's arguments regarding the achievable level of NO_x control with SCR are summarized elsewhere in this document.)

Response: We have addressed the control effectiveness of SCR above in section V.C.3 above.

Comment: EPA's reliance on selected "affordability" language in its BART Guidelines does not support EPA's decision to exempt all Jim Bridger from SCR BART requirements. First, Congress established five factors - no more - that EPA must consider when making source-by-source BART determinations. 42 U.S.C. 7491(g). Applying those five factors alone, EPA determined that SCR was BART for all four Bridger Units. 78 FR 34756. By considering the "affordability" of BART controls across PacifiCorp's entire fleet, EPA has arbitrarily relied on factors which Congress has not intended it to consider. *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co*., 463 U.S. 29, 43 (1983f); *Pac. Coast Fed'n of Fishermen's Ass'ns, Inc. v. Nat'l Marine Fisheries Serv*., 265 F.3d 1028, 1034 (9th Cir. 2001); see also *North Carolina v. Envtl. Prot. Agency*, 531F.3d 896, 906 (D.C. Cir. 2008) (standard of review is the same under the APA and the CAA, 42 U.S.C. 7607).

Response: We disagree with the commenter that when considering the five factors alone, SCR is BART on all the Jim Bridger units. As discussed in section III.B.6 above, when considering the five factors, we find it unreasonable to require SCR as BART on these two units and instead we are approving the State's LTS for (all four or Units 1 and 2) the Jim Bridger units. We are not relying on the affordability analysis in making this final determination.

Comment: 40 CFR part 51, Appendix Y, section IV.E.3 makes clear that the affordability analysis should be limited to the economic impact of the BART unit at issue - not to a utility's fleet-wide BART obligations as a whole. EPA's application of this language to PacifiCorp's

BART obligations at other power plants is improper. In addition, the BART Guidelines establish a very narrow test for applying the affordability language, which is whether requiring installation of the control technology would "have a severe impact on plant operations." 40 CFR pt. 51, app. Y, section IV.E.3. In such circumstances, the BART Guidelines suggest that EPA prepare "an economic analysis that demonstrates, in sufficient detail for public review, the specific economic effects, parameters, and reasoning." EPA has not prepared an economic analysis demonstrating the specific economic, parameters, and reasoning for its decision to exempt the Jim Bridger facility from further BART controls. Instead, EPA simply concludes that "it would be unreasonable to require any further retrofits at this source within five years of our final action" based on PacifiCorp's BART obligations at other facilities. 78 FR 34756. Further, PacifiCorp has not presented evidence that installation of SCR at each Bridger unit within the first regional haze planning period would cause any noticeable economic impact, let alone "severe" impact, such a shutdown of one or all of the units.

Response: As discussed in more detail in a response to another comment below, we agree that PacifiCorp has not provided sufficient evidence to show that the installation of SCR at the Jim Bridger units within five years after our final action would cause a severe economic impact. We are basing our decision to not require SCR for BART based on our weighing of the five factors.

Comment: The BART Guidelines also suggest that if the agency grants an affordability exemption from the best level of control, it must then select a "slightly lesser degree of control." 40 CFR pt. 51, app. Y, section IV.E.3. EPA's proposal does not require any additional level of control under BART. Instead, EPA's 2013 re-proposal selects the pre-existing LNB/OFA as BART for each unit. EPA's choice of LNB/OFA as BART does not even represent the "second

best" control technology for eliminating NO_x related visibility impairment - which would be SNCR. 78 FR 34756 (Table 13).

Response: As stated above, we are not basing our BART determination for Jim Bridger Units 1 and 2 on an affordability argument.

Comment: The BART Guidelines "affordability" language recommends that states (or EPA) consider "whether other competing plants in the same industry have been required to install BART controls if this information is available." 40 CFR pt. 51, app. Y, section IV.E.3. This provision suggests that SCR requirements should be applied consistently among competing utility companies. EPA's exemption of PacifiCorp from SCR obligations at the Jim Bridger units is inconsistent with its actions at other competing utility companies with large coal fleets, to which EPA has not offered "affordability" exemptions from SCR requirements. For example, EPA has required Salt River Project, a competing utility, to install SCR on numerous coal-plant units in its fleet, including Coronado and Navajo (Arizona), Craig and Hayden (Colorado) and Four Corners (New Mexico). Each of EPA's BART determinations for these plants requires installation of SCR as BART within the mandated five-year implementation deadline.

EPA's 2013 re-proposal for Jim Bridger exempts the plant from both the SCR requirement and the five-year implementation deadline, potentially giving PacifiCorp an advantage over the competing utilities. Thus, EPA's 2013 re-proposal rule is not only inconsistent with its own BART Guidelines, it is competitively unfair.

Response: We agree that other utility companies have had to install SCR within the five year BART window and that evidence provided by PacifiCorp does not support delaying controls on Jim Bridger Units 1 and 2 until 2022 and 2021, respectively. Nonetheless, as stated earlier, we

are no longer basing our BART determination for Jim Bridger Units 1 and 2 on an affordability argument.

Comment: We are very familiar with the "affordability" provisions of the BART Guidelines and have dealt with this issue in Arizona (Apache power plant) and Washington (Alcoa's Intalco primary aluminum smelter). In both of those cases, the company requesting the affordability exemption from BART provided extensive documentation (much of it confidential) to EPA and the FLMs to support its request. It was only after a thorough review by EPA that the affordability exemptions were approved. In this case, it appears that the only information presented by PacifiCorp to support its request is its "assertions" dated July 12, 2012. We believe that a more rigorous analysis is necessary in order for EPA, FLMs, and the public to be assured that the additional time being proposed by EPA is necessary and appropriate. For example, an important part of such an analysis would be the "installation schedule" that PacifiCorp has designed in order to minimize the number of units that are out of service system-wide for installation of emissions controls at any one time. Currently, the only schedule available in the docket is the July 2012 letter from PacifiCorp to EPA in which PacifiCorp simply reiterates the dates proposed for its "Installation Requirements."

Response: As stated in other responses to comments, we agree that the information provided by PacifiCorp was not sufficient to support the delay of SCR controls on Jim Bridger Units 1 and 2, but we are not relying on that information in our BART determination.

Comment: EPA's proposal for Jim Bridger Units 1 and 2 is a "do nothing" BART determination. Although the Agency claims that it is proposing to approve the State's proposal to require the use of LNBs for Units 1 and 2 and for both units to meet an emission rate of 0.28 lb/MMBtu over a 30-day rolling period, this emission rate is actually higher than what Units 1 and 2 are currently

emitting and worse, does not reflect the presumptive BART limits set forth in 40 CFR part 51, Appendix Y. Most significantly, it defies the statutory intent of Congress in establishing the regional haze program under the CAA.

According to EPA's CAMD website, both Units 1 and 2 already consistently achieve 30-day rolling average NO_x emissions lower than 0.20 lb/MMBtu. The data illustrates that Jim Bridger Units 1 and 2 consistently achieve NO_x emission rates below 0.20 lb/MMBtu on a monthly basis and have done so since 2010. To this end, the definition of BART explicitly states that it must represent a "reduction" in each pollutant that causes or contributes to visibility impairment. See 40 CFR 51.301 (setting forth definition of BART).

Furthermore, although a state must take into account the five factors set forth under 42 U.S.C. 7491(g)(2), nothing in the CAA or the EPA's regulations implementing the regional haze program suggest or remotely imply that a state could allow emission increases as BART. Accordingly, EPA must, at a minimum, disapprove of Wyoming's NO_x BART determinations for Jim Bridger Units 1 and 2 and adopt a FIP that establishes BART limits that are consistent with the CAA and that represent actual emission reductions.

Response: We disagree with the commenter that BART is an emission limit of 0.07 lb/MMBtu at Jim Bridger Units 1 and 2 within five years of our final action. As discussed previously, based on our weighing of the five factors, we do not find it reasonable to require SCR for BART on Jim Bridger Units 1 and 2 and instead we are approving the State's LTS for these units.

Comment: The need to promulgate a FIP is underscored by the EPA's own BART guidelines. According to those guidelines, tangentially fired boilers burning subbituminous coal, such as Jim Bridger Units 1 and 2, are presumed to be able to cost-effectively meet a NO_x emission rate of 0.15 lb/MMBtu on a 30-day rolling average basis. See 40 CFR part 51, Appendix Y, Table 1.

EPA's claim that it would not be cost-effective to meet an emission rate below 0.28 lb/MMBtu as BART for Units 1 and 2 is therefore undercut by the Agency's own extensive analysis and conclusion that a 0.15 lb/MMBtu rate is presumed to be appropriate. Tellingly, the EPA nowhere in its proposed rule analyzes or addresses why a 0.28 lb/MMBtu rate is appropriate in light of the Agency's own presumptive BART limits for NO_x emissions from tangentially-fired boilers burning subbituminous coal.

Response: We disagree with the commenter's assertion that our approval of non-presumptive BART emission limits for Jim Bridger Units 1 and 2 is flawed. In the BART Guidelines EPA explained that:

> For coal-fired EGUs greater than 200 MW located at greater than 750 MW power plants and operating without post-combustion controls (i.e. SCR or SNCR), we have provided presumptive NOX limits, differentiated by boiler design and type of coal burned. You may determine that an alternative control level is appropriate based on a careful consideration of the statutory factors. For coal-fired EGUs greater than 200 MW located at power plants 750 MW or less in size and operating without post-combustion controls, you should likewise presume that these same levels are cost-effective. You should require such utility boilers to meet the following NO_x emission limits, unless you determine that an alternative control level is justified based on consideration of the statutory factors.[231]

Therefore, the presumptive emission limits in the BART Guidelines are rebuttable, and the five statutory factors enumerated in the BART Guidelines provide the mechanism for establishing different requirements. Specifically, as explained in the preamble to the BART Guidelines:

[231] 40 CFR Part 51, Appendix Y, section IV.E.5.

If, upon examination of an individual EGU, a State determines that a different emission limit is appropriate based upon its analysis of the five factors, then the State may apply a more or less stringent limit.[232]

Thus, the establishment of presumptive BART emission limits does not preclude states or EPA from setting limits that differ from those presumptions, even where the control technology is the same as that associated with the presumptive limits (in this case, combustion controls). The five-factor analysis performed by Wyoming demonstrates that, because of the nature of the coal fired at these units, the presumptive limit of 0.15 lb/MMBtu is not attainable. Wyoming supported this conclusion with information from an established vendor of combustion controls.[233] We concur with those conclusions and find that Wyoming's BART emission limits for Jim Bridger Units 1 and 2 were established in a manner consistent with the BART Guidelines.

Comment: EPA's proposal is fundamentally flawed because it makes a mockery of the CAA. Despite acknowledging that BART should be the installation of SCR and compliance with a 0.07 lb/MMBtu emission rate for Units 1 and 2, the EPA determined that, when considering the cost of such controls, they would not be reasonable. Certainly, the CAA allows the EPA to consider the "cost of compliance" in setting BART (42 U.S.C. 7491(g)(2)), but the CAA does not allow the EPA to completely avoid requiring BART based on cost considerations. Here, EPA's proposal to approve Wyoming's SIP with regards to BART for Jim Bridger Units 1 and 2 amounts to a proposal to require nothing (if not a proposal to allow an increase in emissions). In essence, EPA's proposal amounts to a determination that BART is not required for Jim Bridger

[232] 70 FR 39132.
[233] Wyoming Department of Environmental Quality Air Quality Division, BART Application Analysis AP-6040, May 28, 2009, pages 7-9.

Units 1 and 2, even though Congress clearly stated that these coal-fired EGUs are subject-to-BART. Although Congress allowed the EPA to consider costs in establishing BART, the EPA cannot use costs as a reason to completely forego requiring BART. Put another way, the EPA cannot defeat Congress' intent to require BART by cobbling together an interpretation of the CAA that effectively nullifies the regional haze BART requirements under the Act.

Response: We disagree with the commenter. As discussed elsewhere, we are basing on approval of the State's SIP on a weighing of the five BART factors, including costs and visibility improvement.

Comment: EPA's proposal for Jim Bridger Units 1 and 2 "does not meet a test for being 'better than BART'… [because] [t]he accelerated installation of BART at Bridger Units 3 and 4 does not offset the increased emissions from delaying SCR installation at Bridger Units 1 and 2 beyond the normal five-year BART window." To date, EPA has failed to make any demonstration that its 2013 Proposal would "achieve greater reasonable progress than would be achieved through the installation and operation of BART." 40 CFR 51.308(2)(i). Moreover, EPA's proposal also fails to comply with the "better than BART" regulatory requirement mandating that "all necessary emission reductions take place during the period of the first LTS for regional haze" which concludes at the end of 2017. *Id.* section 51.308(b), (e)(2)(iii). Accordingly, EPA's proposal has not satisfied the regulatory requirements for a "better than BART" alternative.

Response: We agree that EPA's proposal does not meet a test for being better than BART but have not suggested such a concept in our proposed or final rulemaking actions.

Comment: EPA's proposed action on the Wyoming 308 regional haze SIP requested comments on whether to require installation of BART controls on Jim Bridger Units 1 and 2 by 2021-2022

rather than within the legally required five-year timeframe mandated by the regional haze regulations. 77 FR 33054. EPA is taking comment on the alternative timeline for SCR installation in response to PacifiCorp's claim that "the schedule for installation of emission control devices envisioned in [EPA's BART proposal] would be excessively costly and would pose service interruption risks for electrical energy customers over a large part of the region." Recent admissions by a PacifiCorp official in a separate Wyoming Public Service Commission proceeding undermines PacifiCorp's arguments. PacifiCorp argued to the Wyoming Public Service Commission that procurement and installation of multiple SCRs creates both a cost and time savings, not an increase at Jim Bridger Units 3 and 4. This fact is also true for installation of SCRs at Jim Bridger Units 1 and 2. This PacifiCorp admission is further proof that EPA should not permit PacifiCorp to delay installation of SCRs at Jim Bridger Units 1 and 2 and instead must require compliance within five years as is required by the BART regulations.

Response: We have responded to this comment in other responses.

Comment: EPA is taking comment on the alternative timeline for SCR installation in response to PacifiCorp's claim that the schedule for installation of emission control devices envisioned in EPA's BART proposal would be excessively costly and would pose service interruption risks for electrical energy customers over a large part of the region. EPA acknowledges that BART for all the units at Jim Bridger is SCR when the units are considered individually based on the five factors. However, EPA suggests that a different BART determination under the alternative approach is lawful if the five factors are considered across all the units in the PacifiCorp system. Not so. BART is a source-by-source determination.

Response: We have responded to this comment in other responses.

Comment: Considerations of PacifiCorp's fleet size and cumulative costs are outside the five-factor analysis for BART. Furthermore, PacifiCorp's concern about the feasibility of installing

BART controls over its large fleet is unfounded. With proper planning, there is no reason to expect excessive costs or service interruption due to BART requirements. Indeed, PacifiCorp's large number of EGUs would appear to give PacifiCorp the unique ability to avoid service disruptions by maintaining adequate capacity from operating units while other units are offline. Further, other utilities have installed SCR systems on multiple units within very short periods of time.

PacifiCorp's ability to install SCR on multiple units is also not constrained by the availability of SCR systems. In response to questioning of whether PacifiCorp has had any difficulties procuring or installing SCR systems, particularly an SCR for its Naughton Unit 3 facility, PacifiCorp stated it had received four proposals from SCR system suppliers and as such did not experience notable difficulties procuring and obtaining the SCR system. EPA should not modify its BART proposal for Jim Bridger Units 1 and 2 based on PacifiCorp's unsupported claims of hardship.

Response: We have responded to this comment in other responses.

Comment: The EPA's re-proposed Wyoming haze plan reiterates EPA's prior finding that BART is SCR for each Jim Bridger unit considered individually (78 FR 34756). Based on the EPA's five-factor NO_x BART analyses for Jim Bridger Units 1-4, the EPA *must* find that SCR is BART to meet a NO_x emission rate of 0.05 lb/MMBtu on all four units.

The EPA's cost-effectiveness analyses identified costs for SCR on all four Bridger Units that are within the range that EPA has identified as reasonable for other units, including in this same proposal. 78 FR 34754-57 (SCR cost-effectiveness of $2,393/ton on Jim Bridger Unit 1, $3,015/ton on Unit 2, $2,961/ton on Unit 3, and $2,492/ton on Unit 4) as compared with, e.g., 78 FR 34776 (finding cost-effectiveness of $3,600/ton to $3,900/ton for SCR on Laramie River

Units 1-3 to be "within the range of what EPA has found reasonable for BART in other SIP and FIP actions"). However, the EPA's estimate of costs is significantly inflated, and the true costs are even lower than EPA found because the EPA used unjustified "retrofit factors," interest rate, and auxiliary power costs. The recalculation of costs using what the commenter believes are corrected inputs resulted in significantly lower SCR costs of $1,801 to $1,959/ton at all four Bridger units. On this basis, SCR is extremely cost effective on these units. SCR on these units would afford substantial visibility benefits. The EPA has no basis in the BART factors, including the important factors of compliance costs and visibility improvement, to reject SCR as BART on Bridger Units 1-4.

Response: As discussed elsewhere, we have responded to the commenter's points about how costs are calculated for the BART units. Regardless, we determined that SCR was not reasonable for BART based on our weighing of the five factors.

Comment: The EPA's 1st Proposal from its June 2012 Proposal/2013 Proposal in the Alternative, which would approve Wyoming's NO_x emission limits and SCR compliance timeframes for Jim Bridger Units 3 and 4 and would require Jim Bridger Units 1 and 2 to install SCR within five years of EPA's final action on the Wyoming regional haze plan, would result in lower NO_x emissions on an annual basis than any of EPA's other NO_x proposals at the Jim Bridger Power Plant. This schedule also likely reflects the most economical installation of SCR at all four of the Jim Bridger units because the engineering for SCR installation, including the design of the construction phase, can all be done during the same time frame, the construction equipment can remain on-site for the duration of the installations, and much of the installation work can be done simultaneously, which will save on labor and construction equipment.

There are numerous examples of installations of multiple SCRs at numerous units at the same power plant site over short timeframes, including: 1) W.A. Parish Units 5-8 (SCRs installed over 2003-2004); 2) All four units of the Big Bend power plant (SCRs installed during 2007-2010); 3) Units 1-5 of the Clifty Creek power plant (SCRs installed 2002 -2003); 4) Winyah Units 1-4 (SCRs installed in 2005); 5) Over the period of 2001-2006, TVA has installed SCRs at 18 units at four power plants. On this basis, the number and timing of SCR installations required at PacifiCorp plants as a result of NO_x BART determinations can be accomplished, as it has been done before.

Response: As stated above, we find that PacifiCorp has not presented sufficient evidence that the economic effects of installation of SCR on Jim Bridger Units 1 and 2 within five years would affect the viability of continued plant operations, but based on weighing of the five factors, we find that it is not reasonable to require SCR for BART.

Comment: We agree with EPA that Wyoming's proposal to require installation of SCR in 2021 and 2022 as part of Wyoming's LTS does not satisfy the CAA or its implementing regulations. Having determined that SCR plus LNBs/SOFA is the best system of continuous emission control, is cost effective, and will result in significant visibility improvement, EPA is required to find that the controls are BART. 40 CFR 51.308(e)(i)(2)(A). Under the RHR, BART must be installed "as expeditiously as practicable, but in no event later than five years after approval of the implementation plan revision." 40 CFR 51.308(e)(iv). Thus, EPA lacks discretion to approve Wyoming's proposal to require PacifiCorp to install BART technology beyond the five-year time frame.

Response: See responses above.

Comment: PacifiCorp submitted comments in support of delaying controls on Jim Bridger Units 1 and 2 until 2022 and 2021 respectively. (EPA issued a Notice of Data Availability pertaining to this information on July 24, 2012. 77 FR 43205). The main points raised in their comments are as follows:[234]

- Because of the size and multi-state nature of its generation fleet, PacifiCorp and its customers are unreasonably impacted by the RHR. PacifiCorp provides regulated electric service to more than 1.7 million customers in California, Idaho, Oregon, Utah, Washington and Wyoming with a net system capacity of 10,597 megawatts. PacifiCorp operates 75 generating units across the western U.S. PacifiCorp owns and operates 19 coal-fueled generating units in Utah and Wyoming, and owns 100% of Cholla Unit 4, a coal-fueled generating unit in Arizona. In addition, PacifiCorp has an ownership interest in Craig Units 1 and 2 and Hayden Units 1 and 2 in Colorado.
- As evidenced by the emission reduction projects which PacifiCorp has already installed in accordance with the Utah and Wyoming regional haze SIPs, PacifiCorp is not opposed to making emission reductions that are cost effective for its customers and that achieve environmental benefits, as required by law. PacifiCorp has undertaken projects to comply with the Utah and Wyoming SIPs at a cost of approximately $1.3 billion (PacifiCorp's share of $1.4 billion of total project costs) between 2005 and 2011. Those projects, in conjunction with projects completed through 2012, have reduced emissions of SO_2 by approximately 58% and emissions of NO_x by approximately 46%.
- Just as modeled visibility improvements associated with PacifiCorp's emission reduction projects do not stop artificially at a state border, EPA's analysis of the impacts of its

[234] See July 12, 2012 comments from PacifiCorp in the docket.

proposed FIP for a large, multi-state system like PacifiCorp's should not be limited to only those facilities and customers located within Wyoming's borders. EPA's actions impacting large, multi-state systems in one state must also consider the cumulative impacts of all of its actions in all other states that affect the same system.

- Given the number of facilities operated by PacifiCorp and the facilities in which the company has an ownership interest in and is required to pay costs for the installation of regional haze-related controls, accelerated and additional controls under the proposed FIP result in approximately $500 million of additional capital expenditures plus an incremental annual cost of $16-24 million to operate those controls in the next five years. In addition, an EPA proposal for stringent control requirements in Utah (i.e., SCR) within five years would add approximately $750 million in capital expenditures, plus approximately $7 million to $9 million annually in operating costs and approximately $4 million annually for catalyst replacement projects. All of these costs will be put on the backs of PacifiCorp and its customers in an extremely short-time frame.
- In addition to the regional haze requirements, PacifiCorp's coal-fueled generating fleet, including the BART-eligible units, must accommodate controls for compliance with the Mercury and Air Toxics Standards (MATS) during the same timeframe. While the scrubbers and baghouses already installed at many of the PacifiCorp facilities pursuant to the Utah and Wyoming regional haze SIPs position the company well to comply with the acid gas and non-mercury metals limits under the MATS requirements, additional work will be necessary to comply with the mercury emission limits by April 2015.
- PacifiCorp's customers cannot absorb increasing environmental costs. To accommodate, among other cost increases, the costs of the environmental controls already installed on

PacifiCorp's coal-fueled generating facilities, PacifiCorp has filed with its utility regulatory authorities annual cases to increase customer rates. PacifiCorp's customers have consistently participated in these cases to express concerns regarding increases in electric rates. While EPA may view its proposal to accelerate the installation of controls and require additional controls at PacifiCorp's facilities as just another utility complaining to avoid the consequences of large investments in controls, EPA's proposal has a very real impact on customers.

- As a regulated utility, PacifiCorp has a legal obligation to supply reliable electric service at reasonable rates as set by state utility commissions; it also has a legal requirement to supply its customers as much electricity as they want, when they want it. While the installation of emissions controls on multiple units in a short period of time creates substantial challenges from a project management perspective, these challenges are exacerbated by increased risk factors that jeopardize PacifiCorp's ability to meet its underlying utility obligations and challenge the reliability of the system.
- When considered independently from other environmental requirements, the retrofits required under either regional haze compliance scenario are not anticipated to impose undue stress on the national supply chain for specialized labor, materials, and equipment. However, analyses of compliance with the MATS have raised concerns that requiring much of the U.S. coal fleet to retrofit or retire in a three to five year-time frame (partially overlapping the compliance time period under the regional haze program) will challenge the equipment construction industry.
- Wyoming and EPA are legally required to consider the economic and system impacts on PacifiCorp and its customers. As EPA's BART Guidelines explain: "There may be unusual

circumstances that justify taking into consideration the . . . economic effects of requiring the use of a given control technology. These effects would include effects on product prices. . .Where these effects are judged to have a severe impact on plant operations you may consider them in the selection process, but you may wish to provide an economic analysis that demonstrates, in sufficient detail, for public review, the specific economic effects, parameters, and reasoning." 70 FR 39171. Given the large number of BART impacted units owned by PacifiCorp in different states, these unusual circumstances justify Wyoming's BART actions on PacifiCorp's facilities and PacifiCorp's customers.

Response: PacifiCorp argues that springtime scheduling of the unit outages and outage extensions needed for "tie-in" of retrofitted controls could challenge system reliability in certain years – in PacifiCorp's forecast, power demand plus reserves would temporarily exceed available supply. EPA believes that this forecast is unrealistic because PacifiCorp constrains itself almost entirely to use of its own generation supplies (ignoring other available generators in its region) and limits its assessment to springtime-only outages in its system-wide outage planning examples. PacifiCorp indicates that spring outages are economically preferred due to the historical availability of cheap hydro replacement power and the typically higher alternative costs of purchased replacement power at other times. However, PacifiCorp provides no information on the availability or net cost of replacement power to meet demand, nor does PacifiCorp identify any alternative retrofit outage schedules. This is a significant omission because alternative retrofit outage schedules that avoid reliability issues through non-coincident temporary uses of purchased power, even if such temporary power purchases may cost more than power typically provided by the facilities experiencing an outage, might have a very small levelized net retail cost impact when applied to customers system-wide. In short, PacifiCorp ties

its own hands in its provided analysis, ignoring proven and cost-effective strategies for maintaining electric reliability to allow facility upgrades in a timely fashion.

EPA notes that PacifiCorp overstates the purported regulatory burden on its generating resources by claiming that the company "has not yet identified a viable control suite that will allow it to comply with the [Mercury and Air Toxics Standards, or MATS] provisions at the Carbon plant in Utah. As a result, while not finally determined, it is anticipated that Carbon Units 1 and 2 will be required to be shut down in the 2015 timeframe, resulting in the loss of 172 megawatts of generation from PacifiCorp's system." Such an assumption is unfounded and ignores the EPA's clear explanation in the final MATS that under the CAA, state permitting authorities can also grant sources an additional year as needed for technology installation. EPA expects this option to be broadly available. EPA is also providing a pathway for reliability critical units to obtain a schedule with up to an additional year to achieve compliance. This pathway is described in a separate enforcement policy document.[235] As a result, the comment does not identify any specific conflict between MATS compliance planning at the Carbon facility and regional haze compliance planning at the Jim Bridger units at issue in this rule.

In developing their argument, PacifiCorp borrows a "WetFGDeq" concept that EPA used in its nation-wide analysis of the feasibility of retrofitting all controls that might be needed for timely compliance with MATS. PacifiCorp uses EPA's nationally applicable WetFGDeq concept to compare annual WetFGDeq MW amounts of the limited site-specific retrofit activity that PacifiCorp has actually conducted during the past two decades, and might conduct in the

[235] Memorandum from Cynthia Giles, Assistant Administrator of the Office of Enforcement and Compliance Assurance, "The Environmental Protection Agency's Enforcement Response Policy for Use of Clean Air Act Section 113(a) Administrative Orders in Relation to Electric Reliability and the Mercury and Air Toxics Standard" (Dec. 16, 2011).

future under the SIP, to the annual amount that they might have to conduct in the future under the proposed FIP. Based on this comparison, PacifiCorp states the following (see page 20 of 23; also see Figure 8 of PacifiCorp's July 12, 2012 comments): "The differences between the SIP Scenario and the Aggressive BART Scenario are fairly substantial on an equivalent Wet FGD basis. In the SIP Scenario, only one year exceeds the 2010-2011 levels of retrofit investment (of about 225 MW/year), while retrofits placed in service in 2017 (675 MW) substantially exceed the previous historic maximum of 475 MW by 200 MW and two years are above the 2010-2011 level. The control installation requirements under the EPA Aggressive BART Scenario would result in more work, less time, and increased costs."

EPA does not disagree that the proposed FIP may entail more PacifiCorp project management and construction effort (in one year, 2017) than the SIP would require, or than PacifiCorp has actually experienced as an individual company in the past. However, EPA does not consider the relatively small absolute amounts of the differences (200-300 MW) to be a serious obstacle for any large utility, given a bevy of retrofit experience of this magnitude by like companies in the past, on similar schedules.

Comment: In making any BART determinations on a large, multi-jurisdictional system such as PacifiCorp's, the regulating agency must consider the broad scope of the impacts of its decisions on customers and generating system reliability as a whole. Wyoming considered these factors in developing its regional haze SIP: "The Division believes that the size of PacifiCorp's fleet of coal-fired units presents unique challenges when reviewing costs, timing of installations, customer needs, and state regulatory commission requirements. Information has been supplied by PacifiCorp elaborating on additional factors to be considered in PacifiCorp's BART

determination (see *PacifiCorp's Emissions Reductions Plan* in Chapter 6 of the Wyoming technical support document)."

Wyoming's consideration of these factors was appropriate. While PacifiCorp agrees with EPA's proposed conclusions regarding the reasonableness and timing of installation of controls at Jim Bridger Units 1 and 2, EPA's focus on affordability impermissibly fails to consider the unusual circumstances and broader impacts of its action on PacifiCorp's other BART Units. EPA's selection of SCR controls at Naughton Units 1 and 2 and at Dave Johnson Unit 3 will affect the viability of continued unit operations. Installation of SCR controls at these three units, particularly given the cost of controls and their remaining useful life, create such "unusual circumstances" that justify taking into consideration the conditions of the plant and the economic effects of requiring the use of a given control technology.

The timing and reasonableness of the eight SCR and two SNCR and LNBs required in EPA's proposed action must be considered in the context of the additional controls required at PacifiCorp's units in Arizona (Cholla Unit 4 with SCR required by 2017) and its share of units in Colorado (Hayden Unit 1 with SCR in 2015, Hayden Unit 2 with SCR in 2016, Craig Unit 1 with SNCR in 2017 and Craig Unit 2 with SCR required in 2016) and the potential for additional controls required at four of PacifiCorp's BART-eligible units in Utah within five years after final action. EPA's failure to consider the "unusual circumstances" contemplated under its Appendix Y Guidance means the agency acted in a manner that is arbitrary and capricious in its overall assessment (or lack thereof) of the effects of its actions on PacifiCorp's generation fleet.

Response: See our response to the comment above.

Comment: Pursuant to 40 CFR 51.308(e), the State included provisions in its 309(g) regional haze SIP to address BART. When evaluating each permit application, the State determined

BART for each source by evaluating visibility control options presented in the applications using the methodology prescribed in 40 CFR part 51, Appendix Y.

The use of the BART guidelines contained in Appendix Y is only required for sources located at EGUs with a total capacity greater than 750 MW, which for Wyoming were Basin Electric's Laramie River Station and PacifiCorp's Jim Bridger and Dave Johnston plants. However, for consistency, the State chose to follow the guidelines for all BART sources, including those located at the trona facilities. By using the guidelines of Appendix Y for all sources, the State established a consistent framework for performing BART evaluations. Finally, when selecting the "best alternative," the State considered additional impacts to both the plant and the State. Appendix Y affords the determining authority discretion to consider additional impacts. See 70 FR at 39171.

The State's BART analysis not only considered all statutory factors, but also considered the significant impact on energy costs to PacifiCorp's Wyoming rate payers if the controls, including SCR, were required to be installed in the BART timeframe of five years after SIP approval. While the State did not have the resources to perform a highly technical and complex analysis to quantify the potential cost impact of requiring installation of SCR controls on all of PacifiCorp's Wyoming fleet, additional information was provided by PacifiCorp for public review.

In addition to identifying costs in terms of capital expenditures, the State also considered the logistical challenges unique to PacifiCorp. The State is not aware of any other company faced with as many potential add-on control installations as PacifiCorp. Additionally, the State noted potential reliability issues related to the extended downtimes needed for the installation of SCR systems on multiple units within the BART timeframe. The impact of taking

down large units, like Jim Bridger Units 1-4, each rated at a nominal 530 MW, for extended outages increases the possibility of power shortages, not to mention increased power cost if PacifiCorp must purchase additional power at spot market prices to meet demand.

Response: The commenter raises many of the same points that PacifiCorp raised in its July 12, 2012 comments on our third proposal in the alternative, and we have responded to the commenters points in our response above. EPA does not find the arguments for delaying controls put forth by PacifiCorp or the commenter to be compelling.

Comment: In making any BART determinations on a large, multi-jurisdictional system such as PacifiCorp's, the regulating agency must consider the broad scope of the impacts of its decisions on customers and generating system reliability as a whole. Wyoming considered these factors in developing its regional haze SIP: "The State believes that the size of PacifiCorp's fleet of coal-fired units presents unique challenges when reviewing costs, timing of installations, customer needs, and state regulatory commission requirements." Information has been supplied by PacifiCorp elaborating on additional factors to be considered in PacifiCorp's BART determination (see *PacifiCorp's Emissions Reductions Plan* in Chapter 6 of the Wyoming Technical Support Document). Wyoming's consideration of these factors was appropriate. EPA's rejection of these factors was not appropriate.

Given the large number of BART impacted units owned by PacifiCorp in different states, these "unusual circumstances" justify Wyoming and EPA considering the impact of EPA's BART decision-making in the western U.S. on PacifiCorp and its customers.

Response: We have responded to the commenter's points in our responses above. As stated, EPA does not find the arguments for delaying controls put forth by the State or PacifiCorp to be compelling.

Comment: Congress has defined "best available retrofit technology" as "an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under this chapter… ." 42 U.S.C. 7479(3). Congress also narrowly defined which sources would be exempt from BART. Section 169A(c) of the CAA exempt fossil fuel power plants exceeding 750 megawatts only if the "owner or operator of any such plant demonstrates to the satisfaction of the Administrator that such power plant is located at such a distance from all areas…that such power plant does not or will not, by itself or in combination with other sources, emit any air pollutant which may reasonably be anticipated to cause or contribute to significant impairment of visibility in any such area." *Id.* at section 7491(c)(2). Any such exemption must be agreed to by the FLMs. *Id*. at section 7491(c)(3). PacifiCorp has not submitted evidence demonstrating that the Jim Bridger coal plant - with a net generating capacity of 2,120 megawatts, 78 FR 34753 - will not cause or contribute to significant visibility impairment in any Class I area. To the contrary, EPA's own visibility modeling shows that Bridger has significant visibility impacts at numerous Class 1 areas. 78 FR 34754-34758. As such, EPA may not exempt the Jim Bridger plant from BART.

Response: We agree with the commenter that PacifiCorp has not submitted any evidence that the Jim Bridger plant is located at such a distance from all Class I areas that the plant will not, by itself or in combination with other sources, emit any air pollutant which may reasonably be anticipated to cause or contribute to significant impairment of visibility in any such area.

Comment: EPA should require installation of SCR at each Jin Bridger unit within the five-year regulatory deadline because this approach offers the greatest visibility improvement.

Response: See responses above.

Comment: EPA proposes that Wyoming's determination of NO_x BART for Jim Bridger units

1 and 2 as new LNB plus OFA is reasonable and that it would be unreasonable of the EPA to require any further retrofits at these units within five years of EPA's final action. 78 FR 34756. The State supports EPA's proposed approval of NO_x BART as LNB plus OFA for Jim Bridger Units 1 and 2. EPA also proposes to approve the State's LTS of NO_x control for Jim Bridger Units 1 and 2 as the SCR-based emission rate of 0.07 lb/MMBtu with compliance dates of December 31, 2021, for Unit 2 and December 31, 2022, for Unit 1.

Based on facts PacifiCorp raised concerning the additional requirements in the proposed FIP for Wyoming, the finalized FIP for Arizona, and the possibility of additional requirements in a future FIP or SIP for Utah, the additional time allowed PacifiCorp to install controls under the State's LTS on Jim Bridger Units 1 and 2 is warranted under the affordability provisions in the BART Guidelines. 40 C.F .R. pt. 50, App. Y, section IV(E)(3); *see also* 78 FR 34756. Wyoming therefore supports EPA's proposed approval.

Response: We disagree with the points raised by the commenter in the second paragraph and have addressed their points in previous responses to comments. Nonetheless, we are approving the State's SIP for Jim Bridger Units 1 and 2.

Comment: Wyoming strongly urges EPA to stand by its proposed approval of Wyoming's SIP requiring Jim Bridger Unit 1 to meet the 0.07 lb/MMBtu emission rate prior to December 31, 2021 and Unit 2 to meet the 0.07 lb/MMBtu emission rate prior to December 31, 2022. However, Wyoming encourages EPA to approve Wyoming's LTS for Jim Bridger Units 1 and 2 as submitted, rather than approve only the SCR portion, in order to preserve future flexibility for ensuring adequate emission controls.

Response: We agree with this comment to the extent that the regulatory requirements we are adopting for monitoring, recordkeeping, and reporting only require that Jim Bridger Units 1 and

2 meet an emission limit of 0.07 lb/MMBtu on a 30-day rolling average. Our regulatory language does not require PacifiCorp to install SCR to meet these limits. EPA is approving Wyoming's LTS for Jim Bridger Units 1 and 2 as submitted.

Comment: EPA acted arbitrarily by not evaluating SNCR for the Jim Bridger units. EPA's proposed regional haze FIP is defective because EPA did not follow the BART Guidelines when conducting a five-factor analysis for potential BART NO_x controls. As the BART Guidelines explain, states (and EPA when it substitutes itself for the state) must evaluate "the control effectiveness of all the technically feasible control alternatives …." Here, EPA failed to do so by not analyzing SNCR for the Jim Bridger plant. In fact, EPA admits it did not conduct a full BART analysis for SNCR for the Jim Bridger units: "Because of our examination of the factors lead us to propose SCR as reasonable for BART, we have eliminated SNCR for further consideration."

Response: We disagree with this comment. Our proposed rulemaking notice clearly shows that we considered SNCR in our analysis (see Table 9 and Table 11 of the proposed rulemaking action).

Comment: One commenter stated that our proposed rule creates unnecessary regulatory uncertainty by saying we propose to approve the State's compliance deadlines for Jim Bridger Units 1 and 2, but then go on to say we are seeking comment on a 2017 compliance deadline. They go on to say that EPA must state unequivocally that they approve of the State's existing compliance deadlines for Jim Bridger Units 1 and 2.

Response: We have responded to this comment in previous responses.

Comment: We received numerous general comments in favor of our proposed approval of the State's SIP for the Jim Bridger Units 1-4.

Response: See responses to other comments above.

Comment: PacifiCorp supports EPA's proposed action to afford "considerable deference" to the Wyoming SIP with respect to what controls are reasonable and when they should be implemented at Jim Bridger Units 1 and 2, and that it would be unreasonable to require any further retrofits at this source within five years of EPA's final action. This is especially true given the extremely limited visibility improvement that would be achieved if SCRs were installed within the BART time period at Jim Bridger Units 1 and 2.

Further, PacifiCorp does not believe EPA, having reached the conclusion that it would be unreasonable to require further retrofits at Jim Bridger within five years, can reverse its decision simply by inviting comment on an alternative proposal without further consideration of the broader impacts of forcing more aggressive controls within a five-year period.

Response: We have responded to this comment in previous responses.

Comment: We received numerous comments that an earlier compliance deadline for the installation of SCR at Jim Bridger Units 1 and 2 would be a significant burden and would be costly to PacifiCorp consumers.

Response: We have responded to this comment in other responses to comments.

Comment: We agree with EPA that SCR represents BART for all four Bridger units, but recommend a lower 30-day rolling average emission limit (e.g. 0.06 lb/MMBtu) to reflect the true capabilities of SCR.

Response: We have addressed the control effectiveness of SCR above in section V.C.3.

Comment: We received comments that BART for NO_x emissions at Jim Bridger Units 1-4 must be based on SCR and LNBs/SOFA, which represents the best system of continuous emissions reduction and that commenters agree with EPA's proposal to require this technology as BART.

Commenters went on to state that EPA must revise its BART-based NO_x emission limit for Units 1-4 from 0.07 lb/MMBtu to no higher than 0.05 lb/MMBtu, which the selected technology can easily achieve.

Response: We have addressed the control effectiveness of SCR above in section V.C.3.

b. PM BART Determination

Comment: The fabric filter option discussed by Wyoming represents PacifiCorp's estimate that application of a Compact Hybrid Particulate Collector unit in addition to using flue gas conditioning with the existing electrostatic precipitators can reduce emissions an additional 50% resulting in a PM10 emission rate of 0.015 lb/MMBtu. Considering that EPA Region 9 proposed that the Desert Rock power plant meet 0.010 lb/MMBtu, we believe that the Compact Hybrid Particulate Collector option could achieve the same limit.

Response: See our response to a similar comment in section IV.C.6 of this rulemaking.

Comment: Neither Wyoming nor EPA completed the five-step BART process for PM_{10} emissions. EPA asserted that: "The State did not provide visibility improvement modeling for fabric filters, but EPA is proposing to conclude this is reasonable based on the high cost effectiveness of fabric filters at each of the units. In addition, we anticipate that the visibility improvement that would result from lowering the limit from 0.03 lb/MMBtu to 0.015 lb/MMBtu would be insignificant based on the State's analysis."

We have several concerns with these conclusions: 1) EPA cannot simply abort the five-step process once it has determined a technology to be technically feasible; 2) EPA has overlooked the environmental impact of SO_3 emissions that may be released as a result of PacifiCorp's FGC BART proposal; 3) Wyoming has underestimated the effectiveness of the fabric filter option; and 4) Wyoming's fabric filter costs are overestimated. For example, the

cost estimates used by Wyoming contained escalation, extra contingencies, and AFUDC, which are not allowed by the CCM and have been rejected by EPA in other analyses. The total for these improper costs exceeds $7 million per fabric filter.

Even taken at face value, the cost/ton deemed "high" by EPA for Units 2 and 3 are similar to or lower than cost/ton values accepted as reasonable (for NO_x) by states and by EPA in other analyses. EPA should complete a proper five-step PM_{10} BART analysis by re-evaluating the Compact Hybrid option on the basis of its ability to achieve a lower limit (e.g., 0.010 lb/MMBtu), evaluating costs in accordance with the BART Guidelines, comparing its cost-effectiveness to other baghouse installations to properly assess the "reasonableness" of its cost, and determining the degree of visibility improvement that would result from a lower PM_{10} limit.

Response: See our response to a similar comment in section IV.C.6 of this rulemaking.

3. Dave Johnston Units 3 and 4

a. **NO_x BART Determination**

Comment: Wyoming has underestimated the ability of SCR to reduce emissions. In estimating the annual cost-effectiveness of the LNB+OFA+SCR option, Wyoming assumed 0.07 lb/MMBtu on an annual average basis. Based on the 0.28 lb/MMBtu NO_x emission rate predicted for the LNB+OFA option, and the 0.23 lb/MMBtu annual emission rates demonstrated by Johnston Unit 3 in 2011, outlet emissions at 0.07 lb/MMBtu represent only a 70% - 75% SCR control efficiency as opposed to the generally-accepted 90%. Based on the 0.15 lb/MMBtu NO_x emission rate predicted for the LNB+OFA option, outlet emissions at 0.07 lb/MMBtu represent only a 53% SCR control efficiency on Unit 4. Wyoming has not provided any documentation or justification to support the higher emission rates used in its analyses. In other recent BART actions, EPA has determined that SCR can achieve 0.05 lb/MMBtu on an annual basis. Such an

underestimate at Johnston biases the cost-benefit analysis against SCR and is inconsistent with other EPA analyses.

Response: The commenter has incorrectly assumed that a 90% control efficiency can be achieved in all SCR applications regardless of the input NO_x emission rate or other parameters. In addition, we note that the emission rate analyzed by Wyoming, 0.07 lb/MMBtu, was on a 30-day rolling average basis, not an annual basis. Regardless, we agree that SCR can in most cases achieve a performance rate of 0.05 lb/MMBtu on an annual basis. (See section IV.C.4 of this rulemaking for more information on the control effectiveness of SCR). We have revised the SCR costs for Dave Johnston Units 3 and 4 accordingly.

Comment: Wyoming has overestimated the cost of SCR. A survey of industry SCR cost data (conducted for the Utility Air Regulatory Group) and EPA IPM estimates show that typical SCR costs for units the size of the Johnston units would be $180 - $300/kW. Wyoming's cost estimates for SCR on Units 3 and 4 are $488 and $436/kW, respectively, which exceed real-world industry costs ($50 - $300/kW) and industry estimates, leading us to believe that capital and annual costs are overestimated.

Response: See our response regarding the cost of SCR in section IV.C.5 of this rulemaking.

Comment: Neither PacifiCorp nor Wyoming provided justification or documentation for their cost estimates. We were not provided with any vendor estimates or bids, and PacifiCorp and Wyoming did not use the CCM. For example, the cost estimates used by Wyoming contained AFUDC, which is not allowed by the CCM and has been rejected by EPA in other analyses. The total for these improper costs exceeds $13 million.

Response: In order to address the cost analysis deficiencies noted by the commenter, EPA has performed revised cost analyses for Dave Johnston Units 3 and 4. In our revised cost analyses,

we have followed the structure of the CCM, though we have used the IPM cost models to estimate direct capital costs and O&M costs.

Comment: Dave Johnston Unit 4 could very likely achieve a NO_x rate as low as 0.03 lb/MMBtu, which reflects 80% NO_x control across the SCR. A lower NO_x emission limit would increase the cost of the total system, but the cost effectiveness of the system is actually improved because of the greater NO_x removal. The cost effectiveness of SCR plus LNBs/OFA at Dave Johnston Unit 4 to meet a 0.03 lb/MMBtu NO_x rate would be $1,803/ton of NO_x removed. EPA should require Dave Johnston Unit 4 to install SCR plus LNBs/OFA to meet a NO_x rate of 0.03 lb/MMBtu or, at worst, no higher than 0.05 lb/MMBtu.

Response: We have addressed the control effectiveness of SCR above in section V.C.3. Again, we have not selected LNBs with OFA and SCR for Dave Johnston Unit 4 due to the high incremental cost effectiveness, when considered within the context of the five factors.

Comment: EPA's use of undefined incremental cost effectiveness versus incremental visibility benefit threshold is arbitrary in concept and in its application. It is arbitrary in concept because EPA has not provided any reasoned basis for its approach let alone disclosed the threshold it applies. It is arbitrary in application, because in the case of Dave Johnston Unit 4, the visibility benefits of SCR do justify its cost, as EPA has found for other units.

Response: We disagree. We have made our determination based on a weighing of the five factors. One of the factors to be considered is cost-effectiveness, both average and incremental. For Dave Johnston Unit 4, we have determined that the incremental costs, when considered with the other BART factors, does not make the selection of SCR reasonable.

Comment: The EPA failed to support its conclusion that SNCR, rather than SCR, is BART for Dave Johnston Unit 4. The EPA's sole basis for rejecting SCR as BART for Dave Johnston Unit

4 was the incremental cost effectiveness of the control, which EPA estimated to be $11,951, but the EPA has not supported this line-drawing with reference to the statutory BART factors or purpose of the regional haze program. Without providing objective standards or rationale to support its determination, the EPA's judgment that the incremental cost effectiveness of SCR on Dave Johnston Unit 4 is too high appears arbitrary.

The EPA's analysis of incremental cost effectiveness for Dave Johnston Unit 4 also cannot drive the Agency's BART determination because EPA overestimated the cost of SCR for Unit 4. The EPA found the average cost effectiveness of SCR to be reasonable for the unit, but the costs are even lower than the EPA assumed because the EPA used unjustified "retrofit factors," interest rate, and auxiliary power costs.

Response: As stated in our response above, we have made our determination based on a weighing of the five factors. One of the factors to be considered is cost- effectiveness, both average and incremental. For Dave Johnston Unit 4, we have determined that the incremental costs, when considered with the other BART factors, does not make the selection of SCR reasonable.

In addition, we have revised the costs of SCR for Dave Johnston Unit 3 in support of our final rulemaking. The revised costs are no longer based on a retrofit factor, but instead are based on a budgetary price from an equipment vendor submitted by PacifiCorp during the comment period. We feel that use of the vendor data for SCR provides a more accurate capital cost than when using a retrofit factor. For reasons described in separate responses, we continue to find that use of the social discount rate of 7% is appropriate for regulatory applications such as BART determinations. We have corrected the auxiliary power costs to reflect busbar, and not market

price of power; however this has a small affect on overall costs. Our cost methodology and assumptions are described in detail in the cost report that can be found in the docket.

Comment: SCR on Dave Johnston Unit 4 would likely result in even greater NO_x emission reductions than EPA assumed, further undermining the Agency's exclusive reliance on incremental cost effectiveness to reject SCR as BART. An emission rate lower than 0.05 lb/MMBtu on a 30-day average is achievable for Dave Johnston Unit 4 because this unit operates combustion controls that independently control NO_x emissions to a 30-day average of 0.13 lb/MMBtu (compared with the 0.22 lb/MMBtu NO_x-emission rate achieved at Unit 3). At this emission level, SCR would only need to remove 66.4 percent of NO_x emissions to achieve an emission rate of 0.05 lb/MMBtu, while SCR is capable of achieving NO_x reductions of 90 percent. The EPA should have evaluated the cost-effectiveness of SCR on Dave Johnston Unit 4 based on even greater NO_x emissions reductions that are readily achievable.

Response: We disagree. First, the commenter has incorrectly assumed that a 90 percent reduction in NO_x is achievable with SCR regardless of inlet rate or other parameters. In most cases, SCRs are designed for a performance emission rate, such as in lb/MMBtu, and not the anticipated percent reduction. In the case of Dave Johnston Unit 4, the low emissions currently being achieved with combustion controls are not an indication that the SCR would achieve greater reductions than estimated by EPA. In fact the exact opposite is true: the lower the inlet rate to the SCR, the less NO_x that will be removed as there are simply fewer tons to remove. Finally, we note that we have revised our cost calculations to support the determinations in today's final rule. In our revised analysis, we calculate that the incremental cost effectiveness of SCR is $13,312/ton, as opposed to $11,951/ton. This reinforces our conclusion that SCR is not

appropriate for Dave Johnston Unit 4. Our cost methodology and assumptions are described in detail in the cost report that can be found in the docket.

b. Alternative Control Technology Proposal

Comment: Dave Johnston Unit 3 was retrofitted with LNB and separated OFA in the spring of 2010, and Unit 4 was retrofitted with the same technology in early 2009. EPA recognizes that Unit 3 has a current annual NO_x emission rate of about 0.22 lb/MMBtu, and Unit 4 has a rate of about 0.14 lb/MMBtu. The potential additional NO_x controls that may be added to these units include SNCR and SCR. Should an alternate control technology be considered by EPA for Dave Johnston Unit 3, SNCR is preferable to SCR for Dave Johnston Unit 3 when considering all currently available information and the current emissions performance of the unit.

Even though the cost of SNCR is unacceptably high for Unit 3 (approximately $5,500 per ton NO_x removed), it is still far less than the tremendously expensive cost of SCR ($15,769 per ton NO_x removed for Unit 3), particularly when taking into account the incrementally small modeled visibility improvement between the technologies.

Response: As described in section III.B of this document, we have re-evaluated the cost of compliance for Dave Johnston unit 3 to reflect a shorter remaining useful life (9 years as opposed to 20 years) because PacifiCorp has volunteered to install SNCR and retire the unit in 2027 in lieu of installing SCR under our proposed rule. As we explain there, our revised BART analysis shows that neither SNCR nor SCR is reasonable over this shorter remaining useful life. However, our analysis continues to support a conclusion that SCR is warranted if the costs of compliance are calculated over a 20-year remaining useful life. Therefore, we have also included an to give PacifiCorp the option to meet a 0.07 lb/MMBtu emission limit (assumes installation of SCR) within five years of today's action instead of shutting down the unit..

Comment: With respect to Dave Johnston Unit 4, EPA has concluded that SNCR is BART for that unit. As such, PacifiCorp has only provided updated SNCR information for Unit 4, considering all currently available information and the current emissions performance of the unit. The cost of SNCR for Unit 4 is unacceptably high and not cost effective (approximately $12,000 per ton NO_x removed). The alternate control technology for Dave Johnston Unit 4 would be LNB/OFA, as is currently installed today.

Response: We disagree with the cost effectiveness estimates provided by the commenter. Nonetheless, as described above, in consideration of comments received during the public comment period, we have re-evaluated our cost of compliance estimates for Dave Johnston Unit 4. Our revised costs, when taken along with the remaining BART factors, no longer show that SNCR is warranted for Dave Johnston Unit 4. Therefore, we agree that BART for Dave Johnston Unit 4 is the currently installed combustion controls (LNB/OFA).

4. Naughton Units 1-3

a. NO_x BART Determination

Comment: The EPA proposes to accept Wyoming's SIP proposal to identify SCR as BART on Naughton Unit 3 and to require SCR to reduce NO_x emissions from Naughton Unit 1 and 2. The EPA properly recognized that the costs of SCR on Naughton Units 1-3 are reasonable. However, the EPA's estimate of costs is significantly inflated, and the true costs are even lower than EPA found because the EPA used unjustified "retrofit factors," interest rate, and auxiliary power costs. The recalculation of costs using what the commenter believes are corrected inputs resulted in significantly lower SCR costs of $1,501 to $1,788/ton at all three Naughton units. On this basis, SCR is very cost effective on these units and at the low end of the cost threshold when scanning NO_x reduction costs elsewhere. SCR also is justified by the visibility benefits it would

afford, which additionally supports EPA's findings that SCR reflects BART for Naughton Units 1-3.

Response: EPA believes that the retrofit factors used in cost estimates were reasonable and has described in detail the reasoning for the retrofit factors in other responses. EPA also discussed the reasoning for the assumed interest rate in responses to other comments. EPA has revised its cost estimates and has made changes where EPA believed that input from commenters justified changes.

Comment: EPA should evaluate the feasibility and cost-effectiveness of further NO_x reductions that could be achieved by a more-efficient SCR. EPA is proposing that the FIP NO_x BART emission limit for Naughton Unit 1, Unit 2, and Unit 3 is 0.07 lb/MMBtu (30-day rolling average). While we are generally pleased with EPA's proposal, we note that EPA's analysis is based on only 76% NO_x control by the SCRs on Units 1 and 2, and 85% control by the SCR on Unit 3. This still results in Unit 2 contributing 0.5 deciviews and Unit 3 contributing 0.9 deciviews to visibility impairment at Badlands National Park.

Response: We have addressed the control effectiveness of SCR above in section V.C.3 above.

Comment: A NO_x limit of 0.07 lb/MMBtu on a rolling 30-boiler operating day basis would only require Naughton Units 1 and 2 to achieve 71 percent NO_x removal and Naughton Unit 3 to achieve 80 percent NO_x removal across the SCR system based on an evaluation of available CAMD emissions data. A 0.05 lb/MMBtu NO_x emission limit applicable on a rolling 30-boiler operating day average basis would require 79 percent NO_x removal across the SCR at Naughton Units 1 and 2 and 85.7 percent NO_x removal at Naughton Unit 3, which is achievable.

Response: We have addressed the control effectiveness of SCR above in section V.C.3 above.

Comment: We received comments that Wyoming has underestimated the ability of SCR to reduce emissions. Commenters stated that in estimating the annual cost-effectiveness of the LNB+OFA+SCR option, Wyoming assumed 0.07 lb/MMBtu on an annual average basis. Based on the 0.026 - 0.37 lb/MMBtu NO_x emission rate predicted for the combustion control option, outlet emissions at 0.07 lb/MMBtu represent only 73% - 81% SCR control efficiency as opposed to the generally accepted 90%. Commenters went on to point out that in other recent BART actions, EPA has determined that SCR can achieve 0.05 lb/MMBtu on an annual basis.

Response: The commenters have incorrectly assumed that a 90% control efficiency can be achieved in all SCR applications regardless of the input NO_x emission rate or other parameters. In addition, we note that the emission rate analyzed by Wyoming, 0.07 lb/MMBtu, was on a 30-day rolling average basis, not an annual basis. Regardless, we agree that SCR can in most cases achieve a performance rate of 0.05 lb/MMBtu on an annual basis. (See section IV.C.4 of this rulemaking for more information regarding the control effectiveness of SCR). We have revised the SCR costs for the Naughton units accordingly.

Comment: A survey of industry SCR cost data (conducted for the Utility Air Regulatory Group) and IPM estimates show that typical SCR costs for units the size of the Naughton units would be $280 - $330/kW. Wyoming's cost estimates for SCR are $412 - $531/kW, which exceed real world industry costs ($50 - $300/kW) and industry estimates, leading us to believe that capital and annual costs are overestimated.

Response: See our response regarding the cost of SCR in the section V.B.2 of this rulemaking.

Comment: Neither PacifiCorp nor Wyoming provided justification or documentation for their cost estimates. We were not provided with any vendor estimates or bids, and PacifiCorp and Wyoming did not use the CCM. For example, the cost estimates used by Wyoming contained

AFUDC which is not allowed by the CCM and has been rejected by EPA in other analyses. The total for these improper costs exceeds $17 million.

Response: In our revised SCR cost analysis for the Naughton units, we followed the framework of the CCM (although we derived direct capital costs and O&M costs using the more recent approach found in the IPM cost models). For example, we did not allow for owner's costs and AFUDC. Therefore, we have addressed the concerns raised by the commenter.

b. Alternative Control Technology Proposal

Comment: EPA requested additional information on the conversion of Naughton Unit 3 from a coal fired unit to a natural gas fired unit. 78 FR 34760. EPA must evaluate PacifiCorp's fuel conversion in accordance with Appendix Y as a "better-than-BART" alternative and not as a BART control technology option because EPA had made clear in its BART Guidance that "it is not [EPA's] intent to direct States to switch fuel forms, *e.g.* from coal to gas," as part of the BART analysis. 70 FR 39104, 39164. PacifiCorp voluntarily submitted its permit application to convert Naughton Unit 3 to natural gas, the State issued a federally enforceable permit requiring such conversion. Compliance with the permit is therefore not voluntary.

The permitted NO_x performance level of Naughton Unit 3 after conversion to natural gas is 0.08 lb/MMBtu based on a 30-day rolling average and not 0.10 lb/MMBtu based on a 30-day rolling average as stated in PacifiCorp's permit application. Additionally, the permitted NO_x mass emission rate is 250 lb/hr based on a 30-day rolling average, which is protective of visibility and lower than the BART-determined NO_x rate of 259 lb/hr based on the same averaging period. Finally, annual NO_x emissions will be reduced from the BART level of 1,134 tons to 519 tons.

Response: We tentatively agree that the conversion of Naughton Unit 3 to natural gas is better-than-BART for that individual unit, however, the State has not provided a SIP for EPA's action on this option. EPA does not have the authority to approve the conversion without a SIP submittal, and is, therefore, approving the State's BART determination for SCR at Naughton Unit 3 without making a final determination on whether the conversion is better-than-BART for that unit. In lieu of our approval of the State's BART determination for Naughton Unit 3, EPA is committed to take expedited action on a future SIP revision for Naughton Unit 3 reflecting the conversion if the State submits such a revision. That action would constitute our final determination on the conversion.

Comment: Rather than install the control equipment required by the Wyoming SIP, PacifiCorp will convert the unit to fire natural gas by the end of 2017. A construction permit allowing the conversion has been issued by Wyoming, and PacifiCorp is moving ahead with a request for Wyoming to modify the Wyoming SIP to accommodate this change. The construction permit issued by Wyoming requires Naughton Unit 3 to cease burning coal by December 31, 2017 and to be retrofitted to natural gas as its fuel source by June 30, 2018. PacifiCorp requests that EPA's final FIP include this compliance alternative for Naughton Unit 3.

Response: See our response above.

Comment: The Conservation Organizations support the Naughton Unit 3 conversion to natural gas within the first five-year regional haze planning period as a better-than-BART alternative to installation of SCR on Unit 3. We recognize that a gas conversion will virtually eliminate SO_2 emissions as well as greatly reduce NO_x and PM emissions resulting in significant visibility benefits.

However, to the extent that EPA is considering whether the Naughton Unit 3 is better than BART as proposed for all three Naughton Units (i.e., whether the conversion may be approved "instead of … BART as proposed" for Naughton Units 1 and 2, 78 FR 34783), the Conservation Organizations object. The Conservation Organizations conducted visibility modeling to determine whether PacifiCorp's proposed natural gas conversion at Unit 3 (with LNB and OFA at Units 1 and 2) would result in greater visibility improvement than would EPA's re-proposed BART alternative of SCR at all three Naughton Units. The analysis shows that EPA's re-proposed SCR BART determination consistently results in greater visibility improvement over the gas conversion scenario. Thus, the conversion of Naughton Unit 3 to gas with LNB/OFA on Units 1 and 2 does not satisfy the "better-than-BART" standards of the regional haze regulations. Whether or not PacifiCorp converts Naughton Unit 3 to natural gas, EPA must require the installation of SCR to meet an emission limit of 0.05 lb/MMBtu to satisfy BART for Naughton Units 1 and 2.

Response: We acknowledge the support for a natural gas conversion as a better-than-BART alternative for Naughton Unit 3. If the State submits a SIP revision reflecting the conversion, we will take expedited action on it. As discussed elsewhere, we are approving the State's SIP submittal for all Naughton Units based on our consideration of the five BART factors. The remainder of the comment is therefore not relevant.

5. Wyodak

Comment: Wyoming has underestimated the ability of SCR to reduce emissions. In estimating the annual cost-effectiveness of the LNB+OFA+SCR option, Wyoming estimated 0.07 lb/MMBtu on an annual average basis. Based on the 0.18 lb/MMBtu NO_x emission rate predicted for the LNB+OFA option, outlet emissions at 0.07 lb/MMBtu represent only a 61%

SCR control efficiency as opposed to the generally-accepted 90%. Wyoming has not provided any documentation or justification to support the higher emission rates used in its analyses. In other recent BART actions, EPA has determined that SCR can achieve 0.05 lb/MMBtu on an annual basis. Such an underestimate at Wyodak biases the cost-benefit analysis against SCR and is inconsistent with other EPA analyses.

Response: The commenter has incorrectly assumed that a 90% control efficiency can be achieved in all SCR applications regardless of the input NO_x emission rate or other parameters. In addition, we note that the emission rate analyzed by Wyoming, 0.07 lb/MMBtu, was on a 30-day rolling average basis, not an annual basis. Regardless, we agree that SCR can in most cases achieve a performance rate of 0.05 lb/MMBtu on an annual basis. (See section IV.C.4 of this rulemaking for more information regarding the control effectiveness of SCR). We have revised the SCR costs for Wyodak accordingly.

Comment: A survey of industry SCR cost data and EPA IPM estimates show that typical SCR costs for units the size of Wyodak would be $180 - $280/kW. Wyoming's cost estimates for SCR are $474/kW, which exceed real-world industry costs ($50 - $300/kW) and industry estimates, leading us to believe that capital and annual costs are overestimated.

Response: See our response regarding the cost of SCR in section IV.C.5 of this rulemaking.

Comment: Neither PacifiCorp nor Wyoming provided justification or documentation for their cost estimates. We were not provided with any vendor estimates or bids, and PacifiCorp and Wyoming did not use the CCM. For example, the cost estimates used by Wyoming contained AFUDC, which is not allowed by the CCM and has been rejected by EPA in other analyses. The total for these improper costs exceeds $8 million.

Response: In our revised SCR cost analysis for Wyodak, we followed the framework of the CCM (although we derived direct capital costs and O&M costs using the more recent approach found in the IPM cost models). For example, we did not allow for owner's costs and AFUDC. Therefore, we have addressed the concerns raised by the commenter.

Comment: The addition of SCR at Wyodak should be required because it is consistent with the other BART determinations EPA has made. EPA is proposing that the FIP NO_x BART is new LNBs with OFA plus SNCR at an emission limit of 0.17 lb/MMBtu. EPA proposes to eliminate new LNBs with advanced OFA plus SCR. The cumulative cost effectiveness of adding SCR to Wyodak is equivalent to EPA's accepted values at Laramie River Unit 2. Based upon cost and visibility improvement, we believe that SCR is BART for Wyodak. As EPA stated in its notice, "cost-effectiveness and visibility improvement are within the range of other EPA FIP actions." Even though cumulative visibility improvement is relatively low, so are SCR costs.

A NO_x limit of 0.07 lb/MMBtu on a rolling 30-boiler operating day basis would only require Wyodak to achieve 67 percent NO_x removal across the SCR system based on an evaluation of available CAMD emissions data. A 0.05 lb/MMBtu NO_x emission limit applicable on a rolling 30-boiler operating day average basis would require 76 percent NO_x removal across the SCR, which the commenter believes is achievable.

Response: As a result of other comments we have received, we are finalizing a NOx BART determination of new LNBs with OFA plus SCR for Wyodak. We agree with the portion of this comment that states this is consistent with other EPA BART determinations. We disagree with the remainder of the comment. As we have discussed in other responses, we are not required, nor have we chosen to, use the $/deciview metric, let alone the same on a cumulative basis, when assessing BART.

We have addressed the control effectiveness of SCR above in section V.C.3.

Comment: For Wyodak, EPA is proposing that the FIP NO_x BART is new LNBs with OFA plus SNCR at an emission limit of 0.17 lb/MMBtu. EPA proposes to eliminate new LNBs with advanced OFA plus SCR because: "Although the cost-effectiveness and visibility improvement are within the range of other EPA FIP actions, we find that the cumulative visibility improvement of 1.16 deciviews for new LNBs with OFA plus SCR is low compared to the cumulative visibility benefits that will be achieved by requiring SCR at Dave Johnston Unit 3 (2.92 deciview), Laramie River Unit 1 (2.12 deciview), Laramie River Unit 2 (1.97 deciview), Laramie River Unit 3 (2.29 deciview), Naughton Unit 1 (3.54 deciview), and Naughton Unit 2 (4.18 deciview)."

Because the cumulative visibility improvement from EPA's proposed control strategy is barely half of the visibility improvement that EPA rejected as "low," then visibility improvement cannot be the only factor relied upon by EPA in making its BART determination. We can only conclude that EPA is somehow relating visibility improvement to another factor. For example, after correcting for the unsupported 1.3 retrofit factor at this relatively simple, single-EGU facility, the cost-effectiveness of adding SCR is $16 million/deciview at Wind Cave National Park, and $10 million/cumulative deciview. By comparison, based upon EPA estimates, addition of SCR to Laramie River Unit 3 results in $28 million/deciview at the most-impacted Class I area, and addition of SCR to Laramie River Unit 2 yields $10 million/cumulative deciview. The cumulative cost effectiveness of adding SCR to Wyodak is equivalent to EPA's accepted values at Laramie River Unit 2.

Response: We disagree with the suggested use of the $/deciview metric. As we have discussed in other responses, we are not required, nor have we chosen to, use the $/deciview metric, let

alone the same on a cumulative basis, when assessing BART. Even if we had, the commenter's position is predicated on their assertion that EPA inappropriately applied a retrofit factor for SCR at Wyodak. As we have discussed in other responses, we disagree that it was inappropriate to apply a retrofit factor of 1.3. However, as explained below, we agree that we should not have relied on the basis stated in our proposal to reject SCR. For Wyodak, we find that the visibility improvements at two Class I areas, when weighed with the other BART factors, makes SCR reasonable as BART.

Comment: Based upon cost and visibility improvement, we believe that SCR is BART for Wyodak. Under the EPA proposal, Wyodak would still contribute over 0.7 deciview impairment at Wind Cave National Park (and exceed 0.5 deciviews at Badlands National Park). With the addition of SCR, impairment would drop to less than 0.5 deciviews at all Class I areas. As EPA stated in its proposal, "cost-effectiveness and visibility improvement are within the range of other EPA FIP actions." Even though cumulative visibility improvement is relatively low, so are SCR costs. Addition of SCR at Wyodak should be required because it is consistent with the other BART determinations EPA has made here.

Response: After further consideration, we agree that it was inappropriate for EPA to reject SCR as BART for Wyodak based on the rationale that Wyodak's emissions affect fewer Class I areas than Wyoming's other BART-eligible sources. Where consideration of the five factors demonstrates that a control is reasonable in light of the visibility improvement that will occur at the most impacted Class I area, as was the case here for Wyodak and Wind Cave, the fact that additional Class I areas will also experience visibility improvement can only bolster the case for that control's selection, not undermine it. In other words, the fact that Wyodak's emissions affect two Class I areas instead of six or seven is irrelevant if the improvement at just one Class I

area is sufficient to warrant a control's selection as BART. Consequently, we have reassessed the five factors for Wyodak and now conclude, even after taking into account our revised cost estimates and visibility modeling, that LNB/OFA + SCR is NO_X BART for Wyodak Unit 1.

Comment: SCR with an emission limit of 0.05 lb/MMBtu should be required as NO_x BART for Wyodak, rather than an SNCR-based limit of 0.17 lb/MMBtu as EPA proposes. EPA properly recognized that the cost-effectiveness and incremental cost-effectiveness of SCR to reduce Wyodak's NO_x emissions are reasonable, but nonetheless proposed to reject SCR on the basis of purportedly insufficient cumulative visibility benefits. EPA's proposed determination is improper, because EPA has failed to justify why incremental visibility benefits over the large number of Class I Areas impacted by Wyodak's NO_x emissions should not be required to achieve reasonable progress toward the national visibility goal, particularly in light of the fact that none of the Wyoming Class I areas affected by Wyodak's NO_x emissions are projected to achieve the Uniform Rate of Progress (URP) in 2018. Moreover, while EPA evaluated the impacts of Wyodak's NO_x emissions only at Wind Cave and Badlands National Parks, our supplemental modeling shows that SCR to control Wyodak's NO_x emissions will nearly eliminate the plant's perceptible visibility impacts at 18 Class I areas. EPA's visibility justification for rejecting SCR as BART was improper because Congress has directed EPA to require BART "for the purpose of eliminating or reducing any [visibility] impairment" caused by the source. 42 U.S.C. 7491(b)(2)(A). Installing SCR at Wyodak would resolve this impairment.

Response: See our response to the previous comment. While we do not agree with the commenter's assertion that Wyodak's emissions have perceptible visibility impacts at 18 Class I areas or that the URP is relevant for purposes of a BART determination, we do agree that our decision to eliminate SCR based on cumulative visibility improvement was improper.

Comment: EPA properly recognized that the cost-effectiveness and incremental cost-effectiveness of SCR to reduce Wyodak's NO_x emissions are reasonable, but nonetheless proposed to reject SCR on the basis of purportedly insufficient cumulative visibility benefits. EPA's estimate of costs is significantly inflated, and the true costs are lower than EPA found because the EPA used unjustified "retrofit factors," interest rate, and auxiliary power costs. On these bases, the EPA should require SCR at Wyodak as BART.

Response: See our previous two responses.

6. Trona Mines

a. FMC Westvaco and General Chemical Green River

Comment: EPA should reconsider whether SCR plus combustion controls is BART for the FMC Westvaco Units NS-1A and NS-1B. At $3,493/ton, as presented by EPA, SCR may be a cost-effective option. Furthermore, EPA should evaluate whether the cost of SCR for FMC Westvaco Units NS-1A and NS-1B were calculated correctly.

Response: Although EPA has not re-evaluated the cost of SCR at the FMC Westvaco Units, we note the relatively low visibility improvement from SCR for each unit (0.24 deciviews). Because of the low visibility improvement from SCR, we do not find that a reconsideration of costs would necessarily have led EPA or the State to a different conclusion regarding the selection of SCR.

Comment: At a minimum, EPA must require SNCR and LNB + SOFA as BART for NO_x at the Westvaco plant. EPA determined that this enhanced technology could achieve a 0.21 lb/MMBtu NO_x emissions rate. This would result in a 70% reduction in NO_x emissions from current levels, rather than just a 50% reduction that would result from the 0.35 lb/MMBtu emission rate currently proposed. Requiring SNCR would lead to NO_x emissions reductions of 1,903 tpy.

SNCR in addition to LNB + SOFA is highly cost effective at $673/ton. This is well within the range of BART costs that EPA has found reasonable for SNCR at other facilities, including facilities in Wyoming. For example, EPA proposes to reject Wyoming's NO_x BART proposal for Wyodak Unit 1, and instead to require LNB + OFA + SNCR as BART, finding the technology cost effective at $958/ton, a higher cost than the same technology at the Westvaco boilers.

Response: We disagree with this comment. First, SNCR at each of the units would achieve a 0.19 deciview improvement, with an incremental visibility improvement of 0.06 deciviews. The cost effectiveness for LNBs compared to LNBs with SNCR is more than double ($304/ton compared to $673/ton). Based on this information, we find it reasonable for the State not to determine SNCR is BART for these units based on a consideration of the five factors, including the visibility improvement.

Comment: Requiring SNCR at the FMC Westvaco plant would improve visibility at affected Class I areas. EPA states that Wyoming's visibility modeling for this facility demonstrated a 0.19 deciview improvement at the Bridger Wilderness Area from the installation of SNCR on each boiler. In fact, Wyoming's modeling demonstrated a 0.198 deciview visibility improvement for the maximum 98th percentile impact at Bridger Wilderness Area. The combined visibility improvement due to SNCR at both Westvaco boilers is nearly 0.4 deciviews at the Bridger Wilderness Area alone. EPA found it appropriate to consider the combined visibility impact of pollution controls on multiple units at a single facility in determining that BART is SNCR for Units 1 and 2 of the Colstrip facility in Montana and should likewise consider the combined visibility impact of SNCR on the two Westvaco boilers.

Response: We have addressed a similar comment above in section V.B of this rulemaking. We recognize that there may be some efficiencies in installing SNCR on two units (e.g., a common

reagent supply system), but expect that this would provide only a modest reduction in annual costs. We do not find that the combined benefit for the two FMC Westvaco boilers, 0.4 deciviews, is a basis for requiring SNCR.

Comment: Wyoming's modeling also showed that SNCR could virtually eliminate the visibility impairment at the Bridger Wilderness Area caused by the FMC Westvaco Units NS-1A and NS-1B, reducing the number of days of noticeable visibility impairment caused by each boiler from eleven to just one. Visibility in the Bridger Wilderness Area is presently diminished by 4.6 deciviews from natural conditions and, under EPA's proposed action, it will not achieve natural conditions until 2165. A 0.4 deciview visibility improvement at the Bridger Wilderness Area is particularly significant in light of new sources of haze-causing pollution from the oil and gas industry that will affect this area. NO_x emissions from Wyoming oil and gas development are expected to more than double in the current regional haze planning period, from 14,725 tpy in 2002 to 34,142 tpy in 2018, yet EPA does not propose any NO_x emissions reductions from this sector. Accordingly, it is imperative for Wyoming and EPA to reduce NO_x emissions from every other source to the greatest extent possible, including by requiring SNCR to be installed at the FMC Westvaco Units NS-1A and NS-1B.

Response: We disagree with this comment. BART is a source-by-source analysis taking into consideration the five factors. The BART Guidelines and RHR do not require states or EPA to take into consideration the state being able to achieve the URP for a Class I area in its determination of BART for individual BART units.[236]

[236] In determining the measures necessary to make reasonable progress and in selecting RPGs for mandatory Class I areas within Wyoming, the State took into account the following four factors into consideration: costs of compliance; time necessary for compliance; energy and non-air quality environmental impacts of compliance; and remaining useful life of any potentially

Comment: Wyoming's modeling, upon which EPA relied, excluded all Class I areas beyond 300 km from the Westvaco facility. However, there is no demonstration that Class I areas further afield are not impacted by the Westvaco facility. As a comparison, EPA recently approved the South Dakota regional haze SIP which includes BART limits for the Big Stone facility, for which the nearest Class I area is over 400 km away.

Response: We explained in response to another comment the reasons why we did not evaluate visibility impairment at Class I areas at distances greater than 300 km. Regarding the South Dakota regional haze SIP, there are no Class I areas within 300 km of the Big Stone Facility. Therefore, it was reasonable for the state to evaluate visibility impacts at the nearest Class I area even though the distance was greater than 300 km. We note that the BART rule provides some flexibility to the states in the approach used to evaluate visibility impairment. The fact that South Dakota chose to evaluate visibility impacts at a distance greater than 300 km does not impose a similar requirement on other states.

Comment: Considering just the two Class I areas modeled, the installation and operation of SNCR would result in a cumulative maximum 98th percentile visibility improvement of 0.304 deciviews from each unit, or 0.608 from both units combined. This cumulative visibility improvement at two Class I areas is significant and amply justifies SNCR, at a minimum, as BART.

Response: In the proposed rule, we did focus on the visibility benefits at the most impacted Class I area. We considered the visibility benefits at the other Class I areas, but did not consider

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affected sources. CAA section 169A(g)(1) and 40 CFR 51.308(d)(1)(i)(A). 40 CFR 51.308(d)(1)(ii) allows for a slower rate of improvement in visibility than the URP, as long as it is demonstrated that based on these four factors, it is not reasonable to achieve the URP and that the selected RPG is reasonable. CAA section 169A(g)(1) and 40 CFR 51.308(d)(1)(i)(A).

the benefits sufficient to warrant a change in our determination as to the appropriate level of control.

Comment: Although the cost effectiveness and visibility improvements due to SNCR and LNB + SOFA standing alone justify a determination that this combination of technologies is BART, EPA apparently agreed with Wyoming that the incremental costs of requiring SNCR were not justified by the resulting visibility improvement. EPA's consideration of incremental cost effectiveness and visibility benefit is arbitrary given the lack of any objective criteria and in any event, must not be viewed in a vacuum.

Response: We disagree with this comment. As stated above, we find it reasonable, based on a consideration of the five factors, including the low visibility improvement, for the State to find that SNCR and LNBs was not reasonable for BART.

Comment: Although the State and EPA determined that addition of combustion controls is BART for the three BART boilers at these two facilities, it is unclear how they arrived at these conclusions. The visibility improvement from EPA's proposed controls for the trona plants are less than the visibility improvement that EPA rejected as "low" in the EGU BART analyses, so it appears that EPA is using different criteria for these facilities or relating visibility improvement to another factor, which we assume to be some combination of cost and visibility improvement. (Otherwise, one would always choose the control strategy with the greatest visibility improvement.)

However, it appears that EPA did not evaluate the cost analyses presented by the companies and the State, so we are concerned that the cost analyses for these two trona plants may suffer for the same problems that we pointed out to EPA before regarding the EGUs. For example, although Boiler D at Green River is the same size as the FMC boilers: 1) FMC

evaluated addition of new combustion controls in combination with SNCR or SCR, Green River did not. 2) The capital cost of adding SNCR at Green River Boiler D is more than four times FMC. 3) EPA presented cost-effectiveness of SNCR as $3,176/ton at Green River Boiler D. The actual cost-effectiveness, based on EPA's annual cost and emission reduction, is $1,637/ton. 4) FMC assumed that SCR could reduce NO_x by 31% to 0.10 lb/MMBtu, Green River assumed 80% NO_x reduction to 0.14 lb/MMBtu. (EPA typically assumes that SCR can achieve 0.05 lb//MMBtu on an annual basis.) 5) SCR capital cost is $43 million at FMC, $19 million for Green River Boiler D. 6) EPA presented cost-effectiveness of SCR as $3,510/ton at Green River Boiler D. The actual cost-effectiveness, based on EPA's annual cost and emission reduction, is $2,339/ton.

It is apparent that EPA must have been considering the costs of controls, but, in view of the substantial discrepancies noted above, those costs are questionable. In view of these discrepancies, we question how EPA rejected the more-effective control technologies (SNCR and SCR) that produce greater visibility improvements for the proposed controls.

Response: We disagree with this comment. Even if the cost of SNCR and SCR were reduced, we find that the visibility improvement (Boiler C – 0.08 deciviews for SNCR and 0.14 deciviews for SCR; Boiler D – 0.12 deciviews for SNCR and 0.17 deciviews for SCR) would not warrant the selection of post-combustion controls for BART.

b. FMC Granger Trona Mine

Comment: EPA proposes to approve Wyoming's determination that the FMC Granger trona mine, while BART-eligible, is not subject-to-BART. The basis for EPA's proposed approval is that the visibility impact of this facility at the Bridger Wilderness Class I area would be 0.39 deciviews, and EPA proposes to "agree with Wyoming that 0.5 deciviews is a reasonable

threshold for determining whether its BART-eligible sources are subject-to-BART." EPA should reconsider its determination that the Granger facility is not subject-to-BART. In making the subject-to-BART determination at least three considerations must be incorporated pursuant to EPA's BART guidelines: Whether the source causes or contributes to visibility impairment in a Class I area, the number of emissions sources affecting a Class I area, and the magnitude of the individual source impacts. Wyoming determined that the Granger plant was not subject-to-BART because its visibility impairment level at the Bridger Wilderness was predicted to be 0.39 deciviews - below the 0.5 deciview threshold. Wyoming's determination was flawed however because it apparently did not consider the other factors essential to a subject-to-BART determination, i.e., the number of emissions sources affecting the Class I area and the magnitude of the individual sources' impacts.

There are a large number of pollution sources affecting visibility in the Bridger Wilderness Area, including significant impacts from thousands of operating oil and gas wells that are not BART-eligible. This fact highlights the need for maximum feasible emissions from each source contributing to impairment at the Bridger Wilderness Area, particularly sources like the FMC Granger trona mine, which is eligible for BART controls.

Response: We disagree with this comment. Wyoming used a contribution threshold of 0.5 deciviews for determining which sources are subject-to-BART. By using a contribution threshold of 0.5 deciviews, Wyoming exempted seven of the fourteen BART-eligible sources in the State from further review under the BART requirements. Based on the modeling results, the State determined that P4 Production, FMC Granger, and OCI Wyoming had an impact of .07 deciviews, 0.39 deciview, and 0.07 deciview, respectively, at Bridger Wilderness. Black Hills Neil Simpson 1, Sinclair Casper Refinery, and Sinclair - Sinclair Refinery have an impact of 0.27

deciview, 0.06 deciview, and 0.12 deciview, respectively, at Wind Cave. Dyno-Nobel had an impact of 0.22 deciview at Rocky Mountain National Park. These sources' modeled visibility impacts fell below the State's threshold of 0.5 deciview and were determined not to be subject-to-BART. Given the relatively limited impact on visibility from these seven sources, we continue to agree with Wyoming that 0.5 deciviews is a reasonable threshold for determining whether its BART-eligible sources are subject-to-BART. In addition, the commenter points to the impacts from oil and gas at Class I areas. The BART Guidelines do not require states to consider the impacts from sources other than BART-eligible sources when defining the threshold for determining what sources are subject-to-BART. While the Guidelines first say that, in setting a contribution threshold, states should consider the number of "emissions sources" affecting the Class I area at issue, the Guidelines then go on to clarify that states may use a lower contribution threshold based on the location of a large number of "BART-eligible" sources within the State that are proximate to the Class I area at issue.

E. Reasonable Progress

1. RPGs

Comment: 40 CFR 51.308(d)(1) of the RHR requires states to establish goals (in deciviews) that provide for reasonable progress towards achieving natural visibility conditions for each Class I area of the state. These are goals, not standards. Goals are typically understood as levels aimed for but not necessarily met. Early on in the process, EPA considered setting "presumptive targets" but eliminated them before the final rule. EPA also says that the RPGs established by the state are not directly enforceable. In spite of this, EPA has proposed to FIP the Wyoming RPGs.

EPA does not specifically define the word "goal," but the RHR does describe what must be considered when the goals are set. Wyoming has set six reasonable progress goals and every one of them met that criteria. EPA does not even argue with this basic fact. When setting the goals, the state must do a reasonable progress analysis. The State of Wyoming complied with this requirement as well.

Response: EPA disagrees with this comment. Wyoming's selected RPGs do not meet the requirements of the RHR. In establishing RPGs, Wyoming must make two demonstrations. First, the State must demonstrate how the four statutory reasonable factors, as applied to potentially affected sources, were taken into consideration in selecting the goals. 40 CFR 51.308(d)(1)(i). In addition, if Wyoming establishes an RPG that provides for a slower rate of improvement than the URP, the State must demonstrate, based on the four statutory reasonable progress factors, that achieving the URP is not reasonable and that the selected RPG is reasonable. 40 CFR 51.308(d)(1)(ii). In determining whether the selected RPGs in fact provide for reasonable progress towards natural visibility conditions, EPA must evaluate these two demonstrations. 40 CFR 51.308(d)(iii).

EPA's interpretation of the statute and the RHR is that BART sources should also be identified as anthropogenic sources of visibility impairment for purposes of developing the long-term strategy. 40 CFR 51.308(d)(3)(iv). Correspondingly, BART sources should be considered "potentially affected sources" and evaluated for controls using the reasonable progress factors. See 40 CFR 51.308(d)(1)(i)(A). However, due to the similarity of the reasonable progress and BART factors, it is reasonable for states to rely on their BART determinations to fulfill the requirements of 51.308(d)(1)(i)(A) and 51.308(d)(1)(ii) (if applicable), in other words to demonstrate that the reasonable progress factors were reasonably considered for those sources

for the first planning period. This interpretation is consistent with guidance EPA has issued for states regarding meeting reasonable progress requirements.[237] However, the Wyoming submittal states that the reasonable progress "four factor analysis … is a method for evaluating potential control strategies for facilities that are not eligible for Best Available Retrofit Technology (BART) or better-than-BART programs." Wyo. 309(g) Submittal at 115. Thus, the Wyoming submittal on its face fails to meet the requirements of the statute and the RHR. To the extent that Wyoming can be said to have relied on its BART determinations to establish that the State reasonably considered the reasonable progress factors for those sources, that reliance fails for those sources for which we are disapproving the BART determinations. In addition, as the State's RPGs fall short of the URP, the State failed to adequately demonstrate, based on the four statutory reasonable progress factors, that achieving the URP was not reasonable and that, that the selected RPG is reasonable. Given our evaluation of these demonstrations, we have determined that the selected RPGs do not provide for reasonable progress towards natural visibility conditions.

In addition, although we are not disapproving the State's ultimate determination to not impose controls on non-BART sources, we note that (as explained in more detail below) the State unreasonably relied on impermissible factors to reach those determinations. Thus, the State failed to demonstrate that it was reasonable, based on consideration of the statutory reasonable progress factors, to not meet the URP. In other words, although we are approving the State's decision as part of its long-term strategy to not impose controls on the non-BART sources the State listed, we are still disapproving the State's RPGs.

[237] US EPA, Office of Air Quality Planning and Standards, Guidance for Setting Reasonable Progress Goals Under the Regional Haze Program (June 1, 2007).

Because the State failed to meet the requirements of 51.308(d)(1)(i) and (ii) when the State selected its RPGs as part of the State's Regional Haze SIP, EPA is obligated to promulgate a regional haze FIP to meet those requirements. That the RPGs are named "goals," not standards, and are not directly enforceable is irrelevant to this obligation.

Comment: Wyoming explained to EPA that Wyoming could not compel these reasonable progress sources to put on controls without a State rule, and that rule would have to include a visibility impact analysis. Wyoming was willing to commit to developing such a rule in the next planning period, but it did not have the time or resources left to complete that task and get the SIP submitted to the EPA for the first planning period. Wyoming's administrative rulemaking process requires about nine months to a year to develop and finalize rules. Wyoming believes that it has taken an important first step in the process, and it appears to be more than many other states were making.

Wyoming also believes that it made more sense to develop a comprehensive State reasonable progress rule that could be used for the next SIPs to address regional haze. That rule would take extra time that EPA was not willing to give the State. EPA told the State repeatedly that "The Regional Haze Rule does not allow for commitments to potentially implement strategies at some later date that are identified under reasonable progress." The State is still dumbfounded by this kind of response for a rule that goes out to 2064, especially where EPA itself has recognized the one-step-at-a-time doctrine.

Response: EPA disagrees with this comment. While we understand the State's position on its limits on its authority, time, and resources, EPA first promulgated the reasonable progress requirements under the RHR on July 1, 1999, and we issued our guidance on setting RPGs in September 2007. Wyoming submitted its Regional Haze SIP on January 12, 2011. Wyoming

does not explain why the State did not have an adequate amount of time to develop a regional haze SIP that meets the requirements for reasonable progress.

In any case, the State's limits on its authority, time, and resources are not permissible factors for EPA to take into account when assessing the State's Regional Haze SIP. Instead, we must assess whether it meets the requirements of the RHR, and in particular the requirements for reasonable progress towards natural visibility conditions. We note that we are approving certain portions of Wyoming's Regional Haze SIP with respect to reasonable progress requirements.

To the extent that the notion of "one-step-at-a-time" is relevant in this context, as explained elsewhere, Wyoming's Regional Haze SIP fails to adequately make the very first step towards natural visibility conditions: achieving reasonable progress during the first planning period. A commitment to completing that first step in a future planning period cannot substitute for actually completing the first step within schedule. Wyoming cites no authority to the contrary; conditional approval under CAA section 110(k)(4) does not apply as Wyoming has made no commitment to adopt specific enforceable measures within one year to remedy the deficiencies. Again, whatever the constraints imposed on the State by time, resources, and authority, those constraints cannot be taken into account in assessing whether the State has met the requirements for the first planning period. In this case, Wyoming has not met those requirements with respect to reasonable progress.

Comment: States are required, when setting RPGs, to determine the rate of progress needed to attain natural visibility conditions by 2064. The State did that and included it in the SIP. EPA's RHR also requires that if the rate is slower than the rate established by drawing a straight line between baseline visibility and natural conditions, that it must be explained why. The data

clearly show that the primary reason that the State will not reach natural conditions by 2064 is that smoke from wildfires controls the slope of the line.

Response: EPA disagrees with this comment, which understates the requirements of the RHR for setting RPGs. We agree that Wyoming did appropriately determine the URP needed to attain natural visibility conditions by 2064 and we are approving that determination. However, when a state selects an RPG that provides for a slower rate of improvement in visibility than the URP, it is not the case that all the state must do is "explain why." Instead, the state must demonstrate, based on the statutory reasonable progress factors as applied to potentially affected sources, that the URP is not reasonable and that the selected RPG is reasonable. 40 CFR 51.308(d)(1)(ii). Under the RHR, 40 CFR 51.308(d)(1)(iii), and under section 110 of the Act (as discussed elsewhere) we are required to evaluate the state's demonstration.

As discussed elsewhere, the State did not reasonably consider the statutory reasonable progress factors for potentially affected sources. As a result, the State also failed to adequately demonstrate, based on the four statutory reasonable progress factors as applied to potentially affected sources, that achieving the URP was not reasonable and that the selected RPG is reasonable. We therefore are disapproving Wyoming's selected RPGs.

With respect to the comment's reference to wildfires, we provide a detailed response to comments relating to wildfires and natural conditions in the modeling section of this response to comments.

Comment: EPA cannot remove the reasonable progress goals for the State. Wyoming followed the process outlined in the RHR. EPA is not following the RHR by proposing a control requirement for a specific source to replace six RPGs for an entire state. The RHR does not

allow for the substitution of RPGs with control strategies. EPA's proposed disapproval is contrary to law.

Response: EPA disagrees with this comment. As discussed above, we are disapproving the State's selected RPGs because they do not meet the requirements of the RHR. In addition, the commenter is mistaken in stating that EPA is "replacing" RPGs with control requirements for a specific source. This statement conflates two separate but related requirements of the RHR. First, states must set RPGs in accordance with 40 CFR 51.308(d)(1). Second, states must submit a LTS, including enforceable emissions limitations, compliance schedules, and other measures as necessary to achieve the RPGs. 40 CFR 51.308(d)(3).

We are disapproving Wyoming's RPGs because they do not meet the requirements of 51.308(d)(1), as detailed above. Separately, we proposed to disapprove Wyoming's determination to not impose enforceable emissions limitations at Dave Johnston Units 1 and 2. Thus, we did not propose to "replace" the RPGs with control requirements; instead, we proposed to provide both. However, as explained elsewhere, on the basis of the cost and visibility information that EPA developed, we are now approving Wyoming's determination (although not the State's rationale) to not impose enforceable emissions limitations at Dave Johnston Units 1 and 2. We nonetheless continue to disagree with the comment.

Comment: There is no way Wyoming can control the impacts from wildfire smoke on visibility. Therefore, it will be a very long time, 126 to 161 years, before controlling manmade sources can ever overcome the smoke impacts, and that is assuming that smoke impacts never increase. The length of time for other western states is even longer, and EPA has approved those SIPs. Wyoming included this explanation along with identifying other sources that impact visibility, but EPA disagreed with the Wyoming assessment, saying not all reasonable controls were

implemented during the first planning period. Specifically, EPA disagreed with Wyoming's determination to not impose controls on Dave Johnston Units 1 and 2. Because Wyoming did not impose controls on Dave Johnston Units 1 and 2, EPA has proposed to disapprove Wyoming's RPGs.

Wyoming believes that EPA's reasoning for disapproving the State's RPGs is flawed and arbitrary. First, the State set goals based on regional modeling projections done for the entire western U.S. To the best of our knowledge, that is the same process that every other state in the western U.S. used and many of them now have approved RPGs in spite of the fact that it will take hundreds of years in all of the western Class I areas to reach "natural conditions." In North Dakota, for example, it will take between 156 and 232 years to reach natural conditions at affected Class I areas. It would be impossible to set deciview goals without regional modeling, unless the State wanted to wildly guess at it.

Response: EPA disagrees with this comment. We are not disapproving Wyoming's RPGs solely on the basis that they fall short of achieving the URP. Instead, as explained above, we are disapproving them on the basis that the State has failed to demonstrate that the four statutory reasonable progress factors were appropriately considered. The State has also failed to demonstrate, again based on the four statutory reasonable progress factors, that achieving the URP is unreasonable and that the State's selected RPGs are reasonable. The comment's reference to wildfires is beside the point, as the existence of wildfires does not relieve the State of all responsibility to reasonably consider the statutory reasonable progress factors for potentially affected sources. We elsewhere provide a detailed response to comments relating to wildfires and natural conditions in the modeling section of this response to comments.

Comment: While EPA "anticipates" that controls at Dave Johnston Units 1 and 2 would result in measurable visibility improvement in regional modeling demonstrations, and that "anticipation," not modeling, therefore justifies dispensing with Wyoming's RPGs, Wyoming does not. When the WRAP modeled all of the emission reductions from the entire western U.S. (including Wyoming emission reductions for all of the pollutants) for this first planning period, Wyoming saw an improvement of 0.6 deciviews at the Yellowstone site, and a 0.5 deciview improvement at the North Absaroka and Bridger sites on the worst days. The numbers are even smaller or zero for the best days. These improvements from much larger emission reductions for multiple pollutants are almost imperceptible. Therefore, it is highly unlikely that emission reductions for NO_x from two units would make enough difference to show up as an "improvement" in regional scale modeling, and thereby justify setting different RPGs.

Response: We disagree with the approach suggested in this comment. Below, we discuss the use of CALPUFF (instead of the regional scale modeling the comment suggests) to determine visibility improvement from controls on Dave Johnston Units 1 and 2. We also respond to comments regarding regional scale modeling in section V.B.

Comment: The EPA proposes to impose reasonable progress controls on Dave Johnston Units 1 and 2, more stringent NO_x BART controls on Dave Johnston Unit 3, Jim Bridger Units 1 and 2, Wyodak Unit 1, and Laramie Units 1, 2, and 3. These EPA proposed controls are more stringent than what was assumed by the WRAP in modeling Wyoming's RPGs. Wyoming established its RPGs based on the regional modeling projections completed in the WRAP process. In proposing these reasonable progress controls, EPA is also proposing RPGs that are consistent with the controls, thereby rejecting Wyoming's proposed RPGs.

In rejecting Wyoming's RPGs and imposing its own, EPA did not re-run the WRAP model; instead, the agency essentially guessed "that the additional controls would result in an increase in visibility improvement during the 20% worst days," thereby warranting the more stringent controls at these units.

EPA's proposal to reject Wyoming's RPGs is not warranted. First, the mere assumption that additional controls will result in greater visibility improvement cannot reasonably be supported without modeling data. EPA admits that it ran no modeling that would support its best guess that visibility would improve with the installation of more stringent controls. Second, EPA's proposal to place controls on the Dave Johnston Units 1 and 2 is flawed. The Dave Johnston Units 1 and 2 are not BART-eligible units. When Wyoming considered the WRAP model data, it concluded that putting controls on the Dave Johnston Units 1 and 2 would not result in an improvement in visibility. Without any improvement in visibility coming from placing controls on these non-BART units, Wyoming reasonably concluded that there was no reason to change its RPGs.

Response: We disagree with this comment. WRAP performed regional photochemical modeling using both the CMAQ and CAMx air quality models to evaluate progress toward attaining visibility goals using all projected emission changes from all source categories throughout the United States. WRAP did not perform regional photochemical modeling to evaluate the visibility impacts of individual BART sources. While WRAP did make assumptions regarding the level of emissions control that would be adopted by BART sources, no state or EPA region has re-run the WRAP's regional photochemical models to assess individual BART source contributions to visibility impairment. Instead, the BART sources, the states, and EPA have used the CALPUFF model to evaluate contributions to visibility impairment from individual BART

sources. As discussed earlier in this rulemaking and the docket for this final action, EPA modeled visibility impairment from individual sources in making its determination of BART and reasonable progress controls. Thus, the comment is inaccurate in stating that EPA ran no modeling to assess whether controls on Dave Johnston Units 1 and 2 would improve visibility. With respect to the assertion that Wyoming considered the WRAP model data and decided that the data showed controls on Dave Johnston Units 1 and 2 would not improve visibility, the Wyoming SIP submittal does not reflect that. In evaluating the reasonable progress factors for Dave Johnston Units 1 and 2 (which was selected by the State as a potentially affected source) the SIP submittal states: "LNB or LNB w/OFA seem to be the most reasonable choice[s] for the Dave Johnston Electric Generating Station boilers BW41 and BW42 based on the four factor analysis. The implementation of new control technologies on the two boilers are discussed in further detail in Chapter 8 (Section 8.3.4), Long-Term Strategy." Nonetheless, in section 8.3.4, the SIP stated: "The Air Quality Administrator cannot, per Wyoming Statute 35-11-202, establish emission control requirements except through State rule or regulation. Furthermore, the Wyoming statute requires the Administrator to consider the character and degree of injury of the emissions involved. In this case, visibility modeling would be required to assess the degree of injury caused by the emissions. Modeling is not available at this time to determine impacts from emission reduction." As we explain elsewhere, these are not permissible reasons to ignore the four statutory reasonable progress factors. Nonetheless, our revised visibility modeling leads us to the conclusion that it was not unreasonable for the State to not impose controls on Dave Johnston Units 1 and 2, even though the State's basis for doing so was inadequate.

Comment: Wyoming's adoption of an alternative SO_2 program, even if it were valid, does not relieve Wyoming of its obligation to develop and implement a LTS that includes measures necessary to reduce visibility-impairing emissions of SO_2, PM, and NO_x to achieve RPGs for

non-Colorado Plateau Class I areas. Accordingly, EPA must determine whether Wyoming's RPGs for its non-Colorado Plateau Class I areas are adequate.

Response: We agree that Wyoming must develop a LTS to address reasonable progress for non-Colorado Plateau Class I areas. As our proposed notice indicates, we proposed to disapprove the State's RPGs. We also proposed to implement additional controls under reasonable progress. We are completing the action to disapprove the State's RPG's today, and as explained elsewhere in this section, we are not finalizing requirements for additional controls under reasonable progress.

Comment: With the exception of the controls required on Naughton Unit 3, PacifiCorp has installed all of the BART controls required by the Wyoming BART permits and the regional haze SIP. These controls were installed from 2005 through 2012. The actual monitored visibility impairment demonstrates that Wyoming has made significant progress in reducing nitrate concentrations and further demonstrates that the RPGs are on track through the 2008-2017 planning period. EPA's FIP is not "necessary" to meet RPGs for nitrates in these Class I areas. As a result, EPA should withdraw its FIP.

Response: EPA disagrees with this comment. As explained above, the State was required to assess the four statutory reasonable progress factors for potentially affected sources and reasonably determine potential controls, and we are required to evaluate the State's determination. The State did not demonstrate reasonable progress for those determinations that we are disapproving. As a result, we must disapprove the State's RPGs and promulgate a FIP for them. We also note that the comment does not explain the relationship between the State's RPGs and changes in monitored visibility impairment as the result of installed controls, as the State's RPGs were not remodeled to reflect the controls selected by the State.

Comment: Any discussion of the appropriate NO_x control levels required under the RHR should include an assessment of the existing visibility levels to understand what pollutants are driving visibility impairment in Wyoming. Measured visibility impairment at Wyoming's IMPROVE monitoring stations shows that the contribution from nitrates, which are visibility impairing pollutants that result from NO_x emissions, play a lesser role in visibility impairment in Wyoming than particulate organic mass or sulfates. The latest available IMPROVE data (2000-2009) from the WRAP Technical Support System reveals the following about the two Class I areas that were most closely examined for impacts from Wyoming BART sources: 1) Currently, the air in those Class I areas is very clear, with overall visibility among the best in the entire country; 2) When visibility is not good, i.e., when you can't see across the vista, it is likely because of smoke from wildfires; 3) The contribution to visibility impairment from nitrate particles, which are as a result of emissions of NO_x, is small.

The State believes it has made a good case that fire contributes more to visibility impairment than nitrates at Class I areas most affected by Wyoming sources. The State has made great progress in reducing the manmade contribution to visibility impairment from power plants, even when the manmade contribution has much less impact to visibility impairment than other components. EPA's proposed disapproval and FIP are not supported by a record that demonstrates small visibility improvements predicted by a CALPUFF model replete with uncertainty when the actual, measured levels of nitrates at Class I areas affected by those sources is so small. Wyoming's SIP is adequately supported because Wyoming considered these and other factors in arriving at the selected levels of NO_x controls for Wyoming sources and the schedule for the installation of those controls.

Response: We disagree with this comment. Regardless of the considerations presented in the comment, the State was required, at a minimum, to evaluate the four statutory reasonable progress factors for potentially affected sources and to reasonably determine controls, and we are required to evaluate the State's determination. In evaluating the factors for Dave Johnston Units 1 and 2, which was selected in the State's SIP as a potentially affected source, the SIP submittal states: "LNB or LNB w/OFA seem to be the most reasonable choice[s] for the Dave Johnston Electric Generating Station boilers BW41 and BW42 based on the four factor analysis. The implementation of new control technologies on the two boilers are discussed in further detail in Chapter 8 (Section 8.3.4), Long-Term Strategy." Nonetheless, in section 8.3.4, the SIP stated: "The Air Quality Administrator cannot, per Wyoming Statute 35-11-202, establish emission control requirements except through State rule or regulation. Furthermore, the Wyoming statute requires the Administrator to consider the character and degree of injury of the emissions involved. In this case, visibility modeling would be required to assess the degree of injury caused by the emissions. Modeling is not available at this time to determine impacts from emission reduction."

As explained above, it is unreasonable and impermissible for the State to disregard its four factor analysis on the basis that the State lacked the necessary modeling and that reasonable progress requirements could be postponed until the next planning period. The considerations presented by the comment do not change this.

In addition, section 110(a)(2)(E)(i) of the Act requires that SIPs provide necessary assurances that, among other things, the State has adequate authority and resources to carry out the plan. The SIP language we quote above instead denies that the State has the proper authority and resources to meet the requirements of the RHR, in particular the requirement that the long-term strategy "include enforceable emissions limitations … and other measures as necessary to achieve the reasonable progress goals." 40 CFR 51.308(d)(3). As a result, Wyoming's Regional Haze submittal fails to

meet the requirements of section 110(a)(2)(E)(i), which is applicable to "[each] implementation plan submitted by a State under [the CAA]," including the Regional Haze submittal.

Comment: An area of the RHR that is unusual is in the timing of the implementation of the rule. It is the most forward looking of all the rules with requirements to be carried out by the grandchildren of the people who are currently working on the rule, with an end date of 2064. While EPA has established long-term targets through the acid rain program and ozone attainment requirements in a 10-20 year time frame, they have never set goals that were 60 years down the road. This is significant because EPA recognized that the problem was complicated and that it would take at least this much time to solve it.

EPA's strategy included breaking up the long-range goal of achieving natural conditions by 2064 into many smaller pieces. EPA included a requirement for states to submit comprehensive SIP revisions in 2018 and every ten years thereafter. In addition to the comprehensive SIP revisions, states will also be required under 40 CFR 51.308(g) to submit progress reports in the form of a SIP revision every five years, with the first revision due in 2013. Between both the comprehensive SIP revisions and the progress report SIP revisions, states will be working on 16 more SIP revisions, at a minimum, to address regional haze. The State views these upcoming SIP revisions on regional haze as opportunities to build on the first SIP, and that the current rush by the EPA to get so many reductions procured in the first time period as unnecessary. It is unnecessary because the State has submitted a plan to reduce NO_x from BART sources by 45,153 tons, and an additional 19,677 tons through the LTS in the first planning period. There are few states in the country that can demonstrate this magnitude of emission reductions Wyoming has secured.

EPA recognized in the RHR preamble that many factors will change over time and that it may be possible to procure emission reductions in the future that cannot be accomplished during

an earlier period. EPA expected reductions to occur over time and did not expect states to front end load this program with emission reductions.

The RHR provides states with the time necessary to intelligently address the very complicated problem of regional haze. Wyoming asks EPA to recognize their own intentions to roll out this program step by step and approve the State's decision to require SCR on PacifiCorp Units 1 and 2 of the Jim Bridger Power Plant in 2021 and 2022 as part of the LTS. The State also asks that EPA give the State the time it needs to create a rule to address reasonable progress, which would include reductions at the PacifiCorp Dave Johnston Plant, Units 1 and 2. Wyoming plans to create a general reasonable progress rule in the next planning period to address future reductions.

Response: While we recognize the emission reductions achieved by the State for the first planning period and that the regional haze program is a long-term program, the State must still meet the requirements of 40 CFR 51.308 for the first planning period. As we stated in our proposal notice, the State's plan does not fully meet the requirements for BART and reasonable progress. Because we have found that the State's SIP submission did not adequately satisfy the RHR requirements in full, we have not only the authority, but a duty to promulgate a FIP that meets those requirements. The EPA disagrees that the additional emission reductions required by our proposed FIP are unnecessary, as we have demonstrated that the State's SIP does not meet the requirements of 40 CFR 51.308. Our FIP action is only intended to ensure that CAA requirements are satisfied in accordance with our authority under the CAA.

Comment: We received numerous comments that monitoring data shows that the worst visibility days are due to wildfires and that EPA should be focusing on these emissions and not on nitrate emissions from stationary sources, which have little impact on poor visibility days. One

commenter pointed out data from Class I areas in Wyoming that show organic carbon and elemental carbon, which are indicators of wildfire, are major contributors on poor visibility days compared to nitrates. Another commenter stated that the only EPA policy to address fires is the *Interim Air Quality Policy on Wildland and Prescribed Fires* which has not been updated since 1998 and that the EPA is not taking action on this core issue.

Response: While we agree that industrial facilities are not the only causes of haze, we disagree with the thrust of this comment. We provide a detailed response to comments relating to wildfires and natural conditions in the modeling section of this response to comments. Regardless of the contribution from wildfire emissions, 40 CFR 51.308(d)(3)(iv) states, "The State must identify all anthropogenic sources of visibility impairment considered by the State in developing its long-term strategy. The State should consider major and minor stationary sources, mobile sources, and area sources." As discussed elsewhere, in its submittal the State identified a number of stationary sources as potential contributors to visibility impairment (i.e. potentially affected sources). The State was required, at a minimum, to evaluate the five statutory BART factors and four statutory reasonable progress factors for potentially affected sources and to reasonably determine controls, and we are required to evaluate the State's determination. 40 CFR 51.308(e) and 40 CFR 51.308(d)(3)(iv), respectively. The requirements of 40 CFR 51.308(d)(3)(iv) and 40 CFR 51.308(e) are not dependent on the showing of a certain amount of impairment from point sources.

Comment: The CAA and the RHR require SIPs to set forth goals, expressed in deciviews, that assure "reasonable progress toward meeting the national goal" of "natural visibility conditions [in Class I areas] by the year 2064." 42 U.S.C. 7491(a)(4), (b); 40 CFR 51.308(d)(1)(i)(A). The goals "must provide for an improvement in visibility for the most impaired days over the period

of the implementation plan and ensure no degradation in visibility for the least impaired days over the same period." 40 CFR 51.308(d)(1). To establish these goals, a state must also "[a]nalyze and determine the rate of progress needed to attain natural visibility conditions by the year 2064," by "compar[ing] baseline visibility conditions to natural visibility conditions [in Class I areas] and determin[ing] the uniform rate of visibility improvement" necessary to achieve natural conditions by 2064. 40 CFR 51.308(d)(1)(i)(B).

Wyoming's SIP meets these requirements. *See* SIP, at 114-31. The SIP calculates and compares baseline and natural visibility conditions, *Id.* at 114-15, analyzes the rate of progress needed to attain natural visibility conditions by 2064, *Id.*, and establishes a uniform rate of progress, *Id.* Wyoming also ensured improvement in visibility on the most impaired days and no degradation on the least impaired days. *See Id.* at 115 (Table 7.2.1). And, most importantly, the SIP establishes reasonable progress goals. *Id.* at 127- 131. The CAA and the RHR also require states to make reasonable progress determinations for particular sources by "[c]onsider[ing] the costs of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts of compliance, and the remaining useful life of any potentially affected sources, and includ[ing] a demonstration showing how these factors were taken into consideration in selecting the goal." 40 CFR 51.308(d)(l)(i)(A).

Wyoming also met this requirement. The SIP clearly explains how Wyoming considered these factors and identified sources impacting visibility in Class I areas. *See* SIP, at 116-17. Wyoming then explained in its SIP how it applied the factors to each individual source. *See Id.* at 117-27. The SIP therefore meets the requirements of the Act and the RHR.

Response: As discussed elsewhere, we have evaluated Wyoming's BART and reasonable progress determinations and we are disapproving them for Dave Johnston Unit 3, Wyodak Unit

1, and Laramie River Station Units 1-3. Because the State did not reasonably consider the statutory BART factors for these sources, the State also failed to adequately demonstrate (to the extent that the State relied on its BART determinations to demonstrate the required consideration of the reasonable progress factors) that the reasonable progress factors were appropriately considered in establishing the RPGs. The State also failed to adequately demonstrate, based on the statutory BART and reasonable progress factors, that achieving the URP was not reasonable and that the selected RPG is reasonable. Given our evaluation of these two demonstrations and the comments received, we have determined that the selected RPGs do not provide for reasonable progress towards natural visibility conditions.

In making this determination, we are not limited to merely noting whether the State has submitted an analysis that purports to consider the BART and reasonable progress statutory reasonable progress factors. Instead, we evaluate whether the State reasonably assessed the statutory BART and reasonable progress factors as applied to potentially affected sources and, based on those factors, reasonably determined whether controls were required for this planning period. In this case, the State did not do so.

As discussed earlier, because the State failed to meet the requirements of § 51.308(d)(1)(i) and (ii) when the State selected its RPGs as part of the State's Regional Haze SIP, EPA is obligated to promulgate a regional haze FIP to meet those requirements.

We do agree that the State did correctly calculate and compare baseline and natural visibility conditions, analyzed the rate of progress needed to attain natural visibility conditions by 2064, and established a URP. We agree that Wyoming's SIP ensured improvement in visibility on the most impaired days and no degradation on the least impaired days, as does our FIP.

Comment: EPA acknowledges that Wyoming evaluated the requisite four factors in its reasonable progress determinations. 78 FR 34785. But, EPA asserts that Wyoming incorrectly calculated costs in those determinations. *Id*. EPA, however, does not explain how Wyoming incorrectly calculated costs. EPA asserts first that "EPA's rationale for disapproving the State's reasonable progress determination[s]... can be found in Section VIII.B of [the proposal]." *ld.* at 34763. Section VIII.B - the location of EPA's supposed "rationale" - only reiterates EPA's general allegation of deficiencies in the control cost estimates. *Id.* at 34785. EPA therefore has not described with any meaningful degree of specificity the supposed errors that justify rejecting the State's reasonable progress determinations. EPA's failure to provide an intelligible justification for its action is unlawful and arbitrary, and precludes Wyoming from offering a more meaningful response.

Response: We disagree. First, the commenter fails to fully disclose EPA's proposed rationale for disapproving the State's reasonable progress determination for Dave Johnston Units 1 and 2. The commenter cites language related to our finding of deficiencies with the State's cost analysis (at 78 FR 34785), but fails to cite our fuller explanation for disapproving the State's determination a few pages later (at 78 FR 34787): "We disagree with the State's reasoning for not adopting reasonable progress controls for Dave Johnston Unit 1 and Unit 2. If the State determined that it needed to adopt a rule or perform modeling to adequately assess and, if warranted, require reasonable progress controls, the State should have completed these steps before it submitted its regional haze SIP. The RHR does not allow for commitments to potentially implement strategies at some later date that are identified under reasonable progress or for the State to take credit for such commitments."

We offered this rationale in response to the State's argument that no controls were reasonable because: 1) the State's four factor analysis was limited, in that no guidance was provided by EPA for identifying significant sources and EPA did not establish contribution to visibility impairment thresholds (a potential fifth factor for reasonable progress determinations), (2) the State cannot, per Wyoming Statute 35–11–202, establish emission control requirements except through State rule or regulation, (3) the Wyoming statute requires the State to consider the character and degree of injury of the emissions involved --- information that State claimed not to have, and (4) the State believes it has taken a strong and reasonable first step in identifying potential contributors to visibility impairment, and that the next step of creating an appropriate rule or regulation will be accomplished in the next SIP revision. 78 FR 34786. Therefore, our proposed rationale for disapproving the State's reasonable progress determination for Dave Johnston extended beyond our concerns with the cost analysis.

Even so, contrary to the commenter's assertions, and though perhaps not to the level of detail desired by the commenter, we did sufficiently explain our concerns with deficiencies in Wyoming's cost analyses, including those for Dave Johnston Units 1 and 2. Most notably, as described in Section VII.C of the proposed rule, we recognized that Wyoming had understated "the ability of SCR to reduce NOx." This was most pronounced at Dave Johnston Units 1 and 2 where the State assumed that SCR would only reduce NOx to an emission rate of about 0.09 lb/MMBtu (equivalent to an 80% reduction from 2001-2003 baseline). As we have established elsewhere in response to comments, in this instance SCR has the ability to reduce NOx to an emission rate of 0.05 lb/MMBtu or less. Therefore, it is clear that the State underestimated the emission reductions that can be achieved with SCR, and thereby miscalculated the cost effectiveness. And while EPA did not find that SCR was warranted for Dave Johnston Units 1

and 2, it was nonetheless necessary to correctly calculate the cost effectiveness of all of the technically feasible controls in order to rationally evaluate the State's decision to not impose any controls and to (had we been compelled to impose a FIP) select from among competing control options.

Comment: The RHR clearly states that every implementation plan must include reasonable progress goals. 40 CFR 51.308(d)(l). Those goals must be expressed in deciviews and must provide for visibility improvement on the most impaired days and no degradation on the least impaired days during the planning period. *Id.* In EPA's own words, RPGs are "[t]he vehicle for ensuring continuing progress towards achieving the natural visibility goal," 78 FR 34743, which is the focal point of the regional haze program, *see* 42 U.S.C. 749l(a)(l).

EPA proposes to disapprove the State's reasonable progress goals. 78 FR 34767. In the same sentence, EPA claims to be proposing a FIP to replace those goals, which EPA asserts can be found in Section VIII.C of the notice. Section VIII.C reveals, however, that EPA has in fact failed to establish replacement RPGs. *See Id.* at 34788. EPA does not set forth RPGs in deciviews, nor does it provide for visibility improvement on the most impaired days with no degradation on the least impaired days. *See Id.* Instead, EPA merely "anticipates" that its FIP would lead to improved visibility. *Id*. EPA's anticipation falls far short of the plain requirements of the RHR - concrete, deciview-based reasonable progress goals that provide for improved visibility on the worst days and no degradation on the best days. EPA's failure to establish RPGs to replace the SIP goals EPA proposes to disapprove is therefore unlawful.

EPA justifies its failure to establish the requisite RPGs by explaining that it "could not re-run the modeling due to time and resource constraints [.]" *Id.* This excuse stands in stark contrast to EPA's response to similar claims the State raised in the context of reasonable

progress. For example, the State explained to EPA that the State could not complete its evaluation of the impacts to visibility from oil and gas sources until the WRAP completes its emission inventory study. *Id*. at 34764-34765. EPA responded that "If the State determined that additional information was need ... the State should have developed the information." *Id.* at 34765. Similarly, the State explained to EPA that it needed to conduct additional modeling before it could justify controls for the Mountain Cement kiln. *Id*. at 34765-34766. Again setting forth its dual standard, EPA responded that "If the State determined that it needed to adopt a rule or perform modeling ... the State should have completed these steps before it submitted its regional haze SIP." *Id.* at 34766.

Response: EPA disagrees with this comment to the extent it argues that we should approve the State's RPGs. We note that the State did not, in setting its RPGs, re-run its modeling to reflect the State's selected controls. Instead, the State relied on WRAP modeling that reflected certain generic assumptions about the level of controls. See Wyo. 309(g) SIP, pages 53 and 127. As we have explained elsewhere, regardless of how the State quantified its RPGs, they cannot be approved, as the State failed to appropriately consider the four statutory reasonable progress factors for the sources the State selected as potentially affected sources. See 40 CFR 51.308(d)(1)(i)(A). In addition, the State cannot rely on the BART determinations that we are disapproving to show reasonable progress for those sources. Because we must disapprove the State's RPGs, and RPGs are a required component of a regional haze SIP, we must promulgate our own. We note that the RPGs are not directly enforceable. 40 CFR 51.308(d)(1)(v). The elements that directly impact sources and visibility are the emissions limitations in the long-term strategy, including those for BART and those for the reasonable progress sources.

Comment: When determining the responsibility for regional haze, Sweetwater County strongly believes that the DEQ and EPA need to investigate the contribution to Wyoming's haze problem by sources located outside of the United States, especially from countries like China that do not appreciate the necessity for strong environmental regulations. If we do not consider the effects of air pollution contributing to our nation's and our State's air quality issues, we open the door for unfair competition. To assign the entire cost of Wyoming's haze and air pollution to Wyoming industries without considering the effects of offshore sources is unfair to our industries, and it would cause unnecessary impacts to the economy of Wyoming and the United States.

Response: While sources outside Wyoming do contribute to haze in the Class I areas within Wyoming, that does not preclude the State's or our obligation to evaluate sources within the State according to the five BART factors and the four reasonable progress factors and to require additional controls where necessary. In addition, we note that the State did evaluate the sources of contribution to Class I areas in the State (see e.g., Chapter 5 of the SIP).

Comment: One commenter stated that EPA must re-evaluate its method for assessing visibility impacts from wildfires or states will never be able to achieve natural background goals. The commenter went on to say that EPA should 1) eliminate the impacts from fire from the annual contribution to the deciview analysis or 2) properly incorporate it into the natural background equation to establish a glide path states can achieve. The commenter provided graphical data from the IMPROVE network to show the contributions to light extinction from organic carbon, elemental carbon, and nitrate.

Response: EPA does recognize this issue and has taken it into consideration in this action on the Wyoming SIP and in our final FIP. We agreed that Wyoming did appropriately determine the

URP needed to attain natural visibility conditions by 2064 and we are approving that determination. We are not disapproving Wyoming's RPGs solely on the basis that they fall short of achieving the URP. Instead, as explained above, we are disapproving them on the basis that the State has failed to demonstrate that the four statutory reasonable progress factors were appropriately considered. As stated previously, regardless of the contribution from wildfire emissions, 40 CFR 51.308(d)(3)(iv) states, "The State must identify all anthropogenic sources of visibility impairment considered by the State in developing its long-term strategy. The State should consider major and minor stationary sources, mobile sources, and area sources." As discussed elsewhere, in its submittal the State identified a number of stationary sources as potential contributors to visibility impairment (i.e. potentially affected sources) and was required, at a minimum, to evaluate the five statutory BART factors and four statutory reasonable progress factors for potentially affected sources and to reasonably determine controls, and we are required to evaluate the State's determination. 40 CFR 51.308(e) and 40 CFR 51.308(d)(3)(iv), respectively.

2. Reasonable Progress Sources

a. Oil and Gas Sources

Comment: We received comments that volatile organic compound (VOC) emissions from the oil and gas industry must be controlled under reasonable progress. Commenters asserted that EPA acknowledged that oil and gas sources emit haze-causing VOCs but inexplicably failed to analyze whether reducing such VOC emissions is reasonable. One commenter pointed out that EPA has just designated Sublette County (and portions of Sweetwater and Lincoln Counties) in nonattainment with the 8-hour ozone national ambient air quality standard, so there is no doubt the ozone levels in Sublette County are of great concern. Commenters pointed out that ozone

severely impairs visibility; the failure to consider strategies to limit oil and gas industry VOC emissions was a significant oversight on both the part of the State and EPA. Thus, commenters concluded that EPA must correct this problem by analyzing and imposing reasonable progress controls on oil and gas industry VOC emissions.

Commenters pointed out that there are numerous opportunities to reduce VOC emissions from the oil and gas industry. These include requiring all oil and gas fields in the State to control VOC emissions to the same extent currently required in the Pinedale Anticline and Jonah fields pursuant to the State's BACT guidelines, implementing recommendations from the Upper Green River Basin Air Quality Citizens Advisory Task Force, and adoption of a statewide offset program.

Response: We disagree with this comment. The commenters did not provide any evidence of the impact of VOC emissions on visibility in Class I areas.

Comment: Wyoming claims that regulation of drilling rigs is problematic because drilling rigs are mobile sources over which states have limited CAA authority. EPA is not similarly constrained and may require emissions reductions from drilling rigs in a FIP. Replacement of Tier 2 engines with Tier 4 engines on drilling rigs has a cost effectiveness value as low as $900/ton, which is very reasonable.

Response: EPA disagrees with this comment. The costs noted by the commenter for controls for drill rig engines are the lower end of the costs presented by the State. For replacement of Tier 2 engines with Tier 4 engines, the State presented costs of $900 to $2400 per ton of NO_x removed, but the commenter cited only the $900 per ton figure. To the extent that drill rig engines could be regulated under the RHR, this range of costs is not so low that we are prepared to disapprove the State's determination in the reasonable progress context.

Comment: EPA states it disagrees with the State's reasoning for not adopting reasonable progress controls for the for oil and gas sources. It is our view that, having made this finding, it is inappropriate for EPA to then propose approval of the State's control plan, a plan which would involve no new controls on the oil and gas sector. Having found that the State's RPGs were not justified, the EPA must put in place a FIP establishing RPGs for the oil and gas sector or ask the State to revise its plan.

There are numerous available means for controlling NO_x from the oil and gas sector, which is the primary focus that EPA has. For example, the State has begun regulating NO_x emissions from drill rigs on the Pinedale Anticline and Jonah Field. The State has put in place a number of regulations on those drill rigs. We believe there is no reason this could not be extended to other fields in other portions of the state.

Response: We disagree with this comment. First, we did not propose approval of the State's control plan in its entirety. Instead, we proposed to disapprove the State's reasonable progress determination for Dave Johnston Units 1 and 2; we also proposed to disapprove the State's RPGs. We then proposed a FIP for the RPGs. While we are approving the State's reasonable progress determination for Dave Johnston Units 1 and 2, we are still finalizing a FIP for the RPGs, as we have disapproved some of the State's BART determinations. Second, as we stated in our proposal, although we disagree with the State's reasoning with respect to the oil and gas sector, after considering the costs presented by the State, we find that they are not so low that we are prepared to disapprove the State's determination in the reasonable progress context. With respect to NO_x emissions generally from the oil and gas sector, as discussed elsewhere, Wyoming applies minor source BACT to these sources. For drill rig engines in particular, see our response above. Finally, with respect to visibility impacts of NO_x emissions from oil and gas

sources on Class I areas, this comment provided no particular data. We respond below to other comments on visibility impacts of oil and gas sources.

Comment: The State provided sound reasoning for not adopting reasonable progress controls for oil and gas sources. Wyoming is an oil and gas production state, along with Colorado, North Dakota, New Mexico, Montana, and Utah. One of the biggest challenges faced by these WRAP states has been to inventory the emissions from this industry. At the beginning of the regional haze process, a comprehensive emission inventory of oil and gas production operations in the western region that covered both point and area sources had not been developed. No methodology had been developed to produce an inventory of this scope. The WRAP oil and gas states collaborated to develop and implement a uniform procedure for estimating area source emissions from oil and gas operations. WRAP initiated a study to focus on estimating emissions of pollutants with the potential to impair visibility near Class I areas in the West, particularly NO_x emissions.

Developing this inventory has been one of the most important tasks that needed to be completed before any of the western states could begin to look at imposing controls for improving visibility. In addition to developing these critical inventories, the State has also been very active in identifying and controlling emissions from the oil and gas industry. Wyoming has been ahead of the curve when it comes to controlling emissions from this industry to protect health standards. The EPA's recently finalized national oil and gas regulations to reduce air pollutants from the oil and gas production industry were patterned in large part after what Wyoming has been doing since the early 1990's. Since 2005, the State has been spending more time and resources to study and control emissions from natural gas production than any other sector.

When it came time to address visibility impacts associated with the oil and gas industry for the RHR, Wyoming completed the required reasonable progress analysis. Wyoming also laid out reasons for why the time was not right for requiring additional controls on the industry to reduce visibility impairment, including lacking the very critical information to be supplied by the WRAP inventory study. In spite of Wyoming's diligent efforts, EPA disagrees with the State's reasoning for not adopting reasonable progress controls for the industry during the first planning period.

EPA has completely misunderstood the purpose of the collaborative study to develop and implement a uniform procedure for estimating area source emissions from oil and gas operations. Wyoming could not have developed such a procedure on their own, and it continues to make no sense for each state in the West to develop independent emission inventories that cannot be compared to neighboring state inventories for a regional effort. EPA should understand this better than any individual state, since it relies on consistency in comprehensive national inventories to develop sound national rules. While Wyoming waits for the WRAP inventory study to be completed, it has not been idle with respect to developing information on the oil and gas industry. The State has invested huge resources in understanding emissions from this industry and EPA's suggestion that the State "just develop the information" shows a total lack of understanding of the problem.

EPA's whole issue is about substituting its view regarding timing in place of Wyoming's reasoned judgment. Wyoming is hopeful that as it addresses ozone nonattainment it can also demonstrate the co-benefits to improving visibility just as EPA has done in the East by developing an ozone control strategy that also demonstrates adequate visibility improvement. Wyoming's effort goes beyond the first planning period, and is in accordance with the RHR.

Wyoming respectfully requests that EPA acknowledge that Wyoming participation in the regional inventory development process satisfies reasonable progress for this first planning period.

Response: We do commend the State for the work it is doing on developing more comprehensive information on oil and gas emissions although we disagree with this comment. As we stated in our proposed notice, we disagree with the State's reasoning for not adopting reasonable progress controls for oil and gas sources. If the State determined that additional information on emission data from oil and gas sources was needed to potentially control oil and gas sources, the State should have developed the information in time for incorporation into their SIP.

Comment: Wyoming's booming oil and gas industry has a significant and growing impact on visibility in the State's national parks and wilderness areas. Given the close proximity of some of Wyoming's largest planned oil and gas fields to the Bridger and Fitzpatrick wilderness areas - between just 10 and 200 miles - these magnificent lands in western Wyoming suffer the greatest visibility impairment due to oil and gas activities. The 4,399 additional approved wells in the Pinedale Anticline Oil and Gas Exploration and Development Project alone are projected to degrade visibility in the Bridger Wilderness by up to 6.1 deciviews, and to cause impacts greater than 1.0 deciview on 45 days of each year. This impact is in addition to the impairment caused by the existing 1,819 wells in the Pinedale Anticline area, and the impacts from the numerous other existing and planned oil and gas fields in the region.

Wyoming and EPA are obligated to reduce haze-causing emissions from the State's oil and gas industry to achieve "reasonable progress" toward the national goal of eliminating human-caused visibility impairment in Class I areas, 42 U.S.C. 7491(b)(2)(B), and doing so by a

target year of 2064, 40 CFR 51.308(d)(1)(i)(B), (ii). See also 42 U.S.C. 7491(b) (requiring "measures as may be necessary to make reasonable progress toward meeting the national [visibility] goal"). Under Wyoming's Regional Haze SIP, natural visibility conditions would not be reached in Wyoming's Bridger and Fitzpatrick Wilderness Areas until 2165 - more than 100 years past the 2064 goal set by EPA. Wyo. 309(g) SIP at 115. Although EPA's proposed FIP includes additional measures that would hasten visibility improvement, EPA projects that Wyoming Class I areas still will not achieve the URP necessary to restore natural visibility by 2064. 78 FR 34788. Thus, EPA must demonstrate the reasonableness of its decision not to require emissions reductions from oil and gas activities that could make greater progress toward restoring natural visibility. 40 CFR 51.308(d)(1)(ii).

Both Wyoming and EPA have failed to demonstrate that regulating emissions from Wyoming oil and gas development activities is not reasonable, in light of the facts that pollution-control technologies are technologically feasible, cost effective, and would improve significantly visibility across several affected Class I areas. EPA properly "disagree[s] with the State's reasoning for not adopting reasonable progress controls for oil and gas sources." 78 FR 34765. Specifically, EPA rejects the State's view that it needs more time to collect information before it regulates the industry, stating "[i]f the State determined that additional information was needed to potentially control oil and gas sources, the State should have developed the information." *Id*. EPA also rejects Wyoming's claim that it needs up to two years to develop necessary regulations, because "[i]f regulations are needed to implement reasonable progress controls, the State must develop them as part of the regional haze SIP." See also *id*. at 34764 n.43. The Conservation Organizations agree that Wyoming is not excused from regulatory requirements to commit reasonable emissions reductions from the oil and gas industry in the current planning

period simply because Wyoming thinks more information about oil and gas activity emissions would be desirable. See 78 FR 34765. As we pointed out in previous comments, ample information about oil and gas industry emissions and their visibility impacts has already been developed and published in numerous state and federal environmental impact statements.

Response: EPA disagrees with the portions of this comment that take issue with our proposed action. We acknowledge the comment's support for our statement that Wyoming could not rely on the lack of data for the State's determination for oil and gas sources. With respect to the projected visibility impacts of future oil and gas production, we note that the analysis cited by the commenter relied on a background ammonia level of 1 ppb to determine visibility impacts on the Bridger Wilderness. Elsewhere, we explain why we reconsidered use of a background ammonia level of 2 ppb for modeling visibility impacts to the Bridger Wilderness; as a result we remodeled using both a monitored monthly varying concentration and an IWAQM default of 0.5 ppb for background ammonia. Thus, the analysis cited by the commenter may overstate visibility impacts. Furthermore, modeling of the visibility impacts alone does not quantify the potential visibility benefits of the controls the commenter supports.

The comment cites 40 CFR 51.308(d)(ii), which requires states (or EPA in this instance) to demonstrate, when the RPGs fall short of the URP, that the RPGs are reasonable and achieving the URP is unreasonable. As we stated in our proposal, we found this to be the case due to the results of the four–factor analyses along with emissions from sources outside the WRAP domain. The commenter does not take issue with the latter, and we explain elsewhere that we continue to think that the controls considered by Wyoming are not so cost-effective that it was necessarily unreasonable for Wyoming to require them.

Comment: Although Wyoming's January 2011 SIP identified in particular a need for the WRAP to complete its "Phase III" inventory of Wyoming oil and gas emissions before requiring additional regulations of the industry, that inventory was completed in November 2012. WRAP prepared technical memorandums specific to three areas in Wyoming - the Powder River Basin, the Wind River Basin, and the Greater Green River Basin - identifying both baseline emissions in 2006 and projected emissions in 2015. Indeed, WRAP even has completed "Phase IV" of its emissions inventory project, updating oil and gas industry baseline emissions as of 2009 for specific regions, including all three regions of Wyoming that were evaluated in Phase III. Thus, Wyoming has no justification based on incomplete data for refusing to identify oil and gas emissions control technology to satisfy reasonable progress requirements. And there should be no reason for EPA to accept Wyoming's invalid and outdated claim that more emissions information is needed when that information was available for more than six months prior to EPA's most recent Wyoming regional haze proposal.

Response: We disagree with this comment to the extent that it argues we should not approve Wyoming's decision to not impose controls on oil and gas sources. We did state in our proposal that the lack of emissions data was not an appropriate justification for Wyoming's decision to not impose controls on oil and gas sources. Instead, we proposed to approve Wyoming's decision based on the cost of controls and on the application of minor source BACT. The comment does not identify anything in the November 2012 data that affects that rationale and does not explain how emissions data would change the cost of controls or the application of the SIP-approved minor source BACT provisions. Thus the comment does not give a reason for us to change our decision.

Comment: While EPA rejects Wyoming's rationale for refusing to limit haze causing pollutants from this booming industry, EPA provides insufficient rationale of its own to justify the omission. EPA provides two reasons for proposing to accept the State's plan not to require NO_x emissions reductions from Wyoming oil and gas sources. First, "the most reasonable controls are for compressor engines, which the State already controls through its minor source BACT requirements." 78 FR 34765 & n.25 (citing Wyoming Air Quality Standards and Regulations, Chapter 6, Section 2). Second, "while the costs of some controls are within the range of cost effectiveness values Wyoming, other states, and we have considered as reasonable in the BART context, they are not so low that we are prepared to disapprove the State's conclusion in the reasonable progress context." *Id.* at 34765. Neither contention is supportable.

EPA is wrong that compressor engine NO_x emissions are regulated through Wyoming's minor source BACT requirements. Wyoming's minor source BACT guidelines for the oil and gas industry only regulate VOC and hazardous air pollutants, not NO_x. The guidelines make no provisions for NO_x controls at all. See *State of Wyoming, Oil and Gas Production Facilities Chapter 6, Section 2 Permitting Guidance* (presenting controls that apply to VOC and hazardous air pollutants, but not NO_x).

Moreover, EPA's singular focus on compressor engines overlooks the numerous other opportunities to significantly reduce haze-causing emissions from oil and gas operations. As even Wyoming's analysis demonstrates, cost-effective options are available to achieve high control efficiency of NO_x emissions from drill rig engines, turbines, and process heaters. See 78 FR 34764 (Table 26).

Response: We disagree with this comment. Chapter 6, Sections 2 and 4, which are approved into the State's SIP, both require BACT for new source compressor engines for regulated pollutants,

which includes NO_x and VOC. These regulatory requirements should not be confused with the State's oil and gas permitting guidance, which is not part of the SIP. The State guidance document provides additional compliance information for select sources of oil and gas VOC emissions, such as dehydration units, pumps and tanks. There are many sources which are regulated by the State's SIP and required to apply controls that are not included in the oil and gas permitting guidance.

We also explained the reason we discussed compressor engines in particular: the cost of controls for those sources was the most reasonable. For other oil and gas sources, the costs were generally higher. As we stated in our proposal, those costs were not so low that EPA could find it necessarily unreasonable for the State to not have adopted them. The comment gives us no reason to think otherwise.

Comment: EPA's justification that the costs of available controls are reasonable, but not so low that EPA is willing to require them, is both arbitrary and factually flawed. See 78 FR 34765 ("the costs of some controls are within the range of cost effectiveness values Wyoming, other states, and we have considered as reasonable in the BART context"). EPA's justification is arbitrary because it has not identified any objective threshold or rationale for reaching the determination that costs, although low, are still too high to justify modifying Wyoming's SIP determination.

Indeed, EPA rejected Wyoming's determination not to require reasonable progress controls for Dave Johnston Units 1 and 2, where the controls would cost approximately $1,000/ton of NO_x removed. See *id*. at 34788 ("Given predicted visibility improvement of approximately 0.30 deciviews per unit at the most impacted Class I area and the fact that Wyoming's RPGs will not meet the URP, we find that it was unreasonable for the State to reject

these very inexpensive controls.”). EPA’s statement that control technologies with similar - and even lower - costs were not justified for the oil and gas industry cannot be squared with this determination for Dave Johnston Units 1 and 2. See *id.* at 34765. As shown in Table 26 (of the proposed FIP), emissions controls for compressor engines are available in the $16 to $1,200/ton range. *Id*. at 34764. Enhanced NO_x-control technologies for drill rigs have cost-effectiveness values of $900 to $1,000/ton. *Id*.

Controls for NO_x emissions from turbines are very cost effective at around $560/ton. *Id*. All of these costs are at or below the costs that were deemed “very reasonable” at the Dave Johnston power plant and which led to EPA rejecting the State’s reasonable progress control proposal. If finalized, EPA’s contrary proposal for the Wyoming oil and gas industry would be arbitrary.

Response: EPA disagrees with this comment. The comparison with the costs of controls at Dave Johnston Units 1 and 2 is not apropos. First, as explained elsewhere, certain oil and gas sources are subject to the State’s SIP-approved construction permit program, including the requirement for minor source BACT. On the other hand, as explained below in response to PacifiCorp’s comments, PacifiCorp did not identify (nor is EPA aware of) any NOx control measures for Dave Johnston Units 1 and 2. Second, we did not propose to reject the State’s determination for these units solely on the basis of the cost-effectiveness of controls. In addition, the State relied on impermissible factors to disregard the results of its own four-factor analysis. Third, to assist in determining whether the state’s determination for Dave Johnston Units 1 and 2 was reasonable or not, we have quantified the visibility benefits of controls and decided that the State’s determination was not so unreasonable that we were prepared to disapprove it. Neither the commenter nor EPA has equivalent data for the oil and gas sources that the commenter

mentions. The visibility benefits of the commenter's suggested controls would of course vary considerably depending on the location of the source and other factors, and the data the commenter cites elsewhere regarding the bulk visibility impacts of oil and gas development do not address visibility benefits. Thus, the comparison with Dave Johnston gives no reason to change our decision. Finally, the RHR does not require EPA to establish a hard-and-fast dollar per ton threshold or other numeric criteria for determining when a State's decision to not impose controls on reasonable progress sources is unreasonable; rather all four factors are to be considered under the reasonable progress provisions of the RHR.

Comment: Control technologies to reduce oil and gas industry NO_x emissions are inexpensive and justified. Wyoming did not identify the cost of available controls as an impediment to their implementation, and Wyoming's own analysis demonstrated that cost-effective controls to reduce oil and gas industry emissions are available. See Wyo. 309(g) SIP at 123-26. In addition to Wyoming's generic analysis, the Conservation Organizations have identified available control technology. For example, the Bureau of Land Management (BLM) recommended basic pollution-reduction strategies such as replacing internal combustion engines for compressors with gas turbines, installing SCR on drilling rig engines, using electric or natural gas-powered drilling rigs, and centralizing production facilities to reduce truck traffic. The cost-effectiveness of such technologies is a reason for requiring them as reasonable progress measures; costs are not a basis for allowing Wyoming to avoid requirements to reduce the large impact of the State's oil and gas industry on Class I-area visibility.

Response: EPA disagrees with this comment. First, the commenter incorrectly suggests that a "generic" analysis, rather than a source-specific analysis, of the cost of controls for oil and gas sources violates the RHR. In the reasonable progress context, the cost-of-compliance factor can

be interpreted to encompass either the cost of compliance for individual sources or the cost of compliance for source categories. The language of 40 CFR 51.308(d)(1)(i)(A), cited by the commenter, does not explicitly require a source-specific analysis of the costs of compliance, contrary to the commenter's assertion. With respect to the control measures identified by BLM and referred to by the commenter, neither the comment, nor the letter cited in the comment, nor the records of decisions by the BLM cited by the letter, provide any data on the cost-effectiveness of these measures. The comment has no basis to describe the control measures identified by BLM as cost-effective.

Comment: When a SIP fails to establish an emissions reduction strategy that would achieve natural visibility conditions by 2064, as is the case in Wyoming, the state must demonstrate that the underlying "uniform rate of progress" is "not reasonable[,] and that the progress goal adopted by the State is reasonable." 40 CFR 51.308(d)(1)(ii); see also EPA, *Guidance for Setting Reasonable Progress Goals Under the Regional Haze Program*, at 2-3 (June 1, 2007) (demonstration should "identify and analyze the measures aimed at achieving the uniform rate of progress and … determine whether these measures are reasonable"). EPA proposes RPGs that leave visibility impaired in Wyoming's affected Class I areas well beyond the 2064 goal set by EPA. See 78 FR 34788. In light of EPA's rejection of every one of Wyoming's justifications for its conclusion that reasonable progress controls on the oil and gas industry are not reasonable, and EPA's lack of any valid rationale of its own to conclude that such measures are not reasonable, the failure to adopt any measures to reduce haze-causing emissions from the oil and gas industry cannot be supported and must be changed in the final rule.

Response: EPA disagrees with this comment. In our proposal we specifically stated our rationale for agreeing with Wyoming's determination to not impose controls on oil and gas

sources during this planning period. We respond elsewhere to the commenter's disagreement with that rationale. Because we are disapproving the State's RPGs, as part of our FIP we are imposing RPGs that are consistent with the controls in our FIP and the controls that we are approving in the State's SIP. We stated in our proposal that it was reasonable for the RPGs to fall short of the URP based not only on our consideration of the four statutory reasonable progress factors, but also based on emissions from sources outside the WRAP domain, which the commenter does not take issue with.

Comment: EPA proposes to approve Wyoming's reasonable progress determinations for oil and gas sources. 78 FR 34765. However, EPA states that it "disagree[s] with the State's reasoning for not adopting reasonable progress controls for oil and gas sources." *Id.* Wyoming explained in its SIP that it required additional information before it can determine whether and to what extent additional controls are necessary for oil and gas sources. *Id.* EPA thinks Wyoming should have obtained the additional information before submitting its SIP, though, EPA does not hold itself to this same standard. Nonetheless, EPA has previously recognized Wyoming's expertise and leadership in regulating the air quality impacts of oil and gas development. 76 FR 52738, 52757 (Aug. 23, 2011). In light of Wyoming's leadership in regulating air pollution from oil and gas development, EPA should approve Wyoming's reasonable progress determination for oil and gas sources.

Response: EPA disagrees with this comment. We are approving Wyoming's reasonable progress determination for oil and gas sources, although not on the State's basis. The notice cited in the comment relates to EPA's development of new source performance standards for oil and gas sources, which is not relevant to this action. As we explained in our proposal and elsewhere in these responses, the RHR sets certain requirements for reasonable progress for the

first planning period and does not provide for deferring those requirements to later planning periods; thus, the State's basis for its reasonable progress determination for oil and gas sources is invalid. Finally, while we did not re-run the WRAP modeling to quantify our RPGs, the State did not modify its RPGs or re-run the WRAP modeling to reflect the controls the State selected.

Comment: We received numerous comments urging EPA to require pollution controls on the oil and gas industry.

Response: There are a number of provisions in the CAA that potentially apply to oil and gas sources. With respect to the requirements of the RHR for those sources, we have evaluated Wyoming's submittal and we are approving it.

b. Dave Johnston Units 1 and 2

Comment: Wyoming did not evaluate the effectiveness of the LNB+OFA+SCR option. Instead, Wyoming assumed addition of SCR to these currently uncontrolled EGUs would only reduce NO_x emissions by 79% down to 0.12 lb/MMBtu on an annual average basis, although it is generally assumed that SCR can reduce NO_x emissions by 90% or down to 0.05 lb/MMBtu (or lower). Wyoming has not provided any documentation or justification to support the higher emission rates used in its analyses. Such an approach at Johnston adversely biases the cost-benefit analysis and is inconsistent with other EPA analyses.

Response: The commenter has incorrectly assumed that a 90% control efficiency can be achieved in all SCR applications regardless of the input NO_x emission rate or other parameters. In addition, we note that the emission rate analyzed by Wyoming, 0.07 lb/MMBtu, was on a 30-day rolling average basis, not an annual basis. Regardless, we agree that SCR can in most cases achieve a performance rate of 0.05 lb/MMBtu on an annual basis. (See section IV.C.4 of this rulemaking for more information on the control effectiveness of SCR). We have revised the

SCR costs for Dave Johnston Units 1 and 2 accordingly. However, as explained elsewhere, the revised costs for SCR have not led us to change our determination that the State was reasonable in not selecting SCR for Units 1 and 2.

Comment: Wyoming has assumed that Dave Johnston Unit 1 and Unit 2 emitted at 0.57 lb/MMBtu on an annual basis and used this as the baseline condition from which to calculate the control efficiency it used for each control option. However, our review of CAMD data back to 2000 shows that the highest annual NO_x emission rate for Unit 1 was 0.474 lb/MMBtu (2002) and 0.460 lb/MMBtu for Unit 2 (2006). For the 2001- 2003 baseline period, annual NO_x emissions were 0.46 and 0.44 lb/MMBtu for Johnston Unit 1 and Unit 2, respectively. Thus, Wyoming's proposal to reduce NO_x to 0.20 lb/MMBtu with LNB+OFA represents a 56% reduction instead of 65% assumed by Wyoming.

Response: In our revised cost analysis, we used baseline emissions for Dave Johnston Units 1 and 2 that reflect annual average emissions between 2001 and 2003, as found in the CAMD emissions system. These baseline rates are 0.45 lb/MMbtu and 0.41 lb/MMBtu, respectively. This corresponds to a 56.0% and 54.6% reduction, respectively.[238] Therefore, our revised cost analysis has addressed the concern raised by the commenter. As explained elsewhere, our revised costs have been taken into account, along with our revised visibility modeling, in our decision to approve the State's determination to not impose controls at Units 1 and 2.

Comment: The Conservation Organizations agree with EPA that reasonable progress controls for NO_x emissions are needed for Dave Johnston Units 1 and 2. EPA correctly found that it was unreasonable for Wyoming to reject cost effective NO_x controls that would improve visibility. EPA proposes to require only LNBs/OFA to achieve a NO_x emission limit of 0.20 lb/MMBtu

[238] Staudt memo, Tables 2 and 3.

(30-day rolling average). While we commend EPA for proposing a FIP to reduce NO_x emissions from Dave Johnston Units 1 and 2, we urge EPA to require SCR plus LNBs/OFA to meet a NO_x emission limit of 0.05 lb/MMBtu to achieve reasonable progress. Although EPA concluded that the cost of SCR is not justified by the projected visibility improvement, EPA's analysis unreasonably assumed that SCR would only achieve a NO_x emission rate of 0.12 lb/MMBtu, even though an emission rate of 0.05 lb/MMBtu is readily achievable. Correcting for this error, it appears that SCR at Dave Johnston Units 1 and 2 is very cost effective at $2,001 and $1,987/ton of NO_x removed, respectively. Accordingly, EPA should reconsider requiring SCR at Dave Johnston Units 1 and 2 to meet reasonable progress requirements.

Response: As discussed in our proposed rulemaking, we have revised the SCR cost analysis for Dave Johnston Units 1 and 2 to reflect the installation of LNB and OFA. However, our revised cost effectiveness values of $3,496/ton and $3,672/ton, respectively, are much higher than those suggested by the commenter. We also note that the incremental costs for this option are high, at $9,798 and $9,588 per ton, respectively. In light of this, and our revised modeling results, we do not find it unreasonable for the State to not have imposed SCR on these units.

Comment: EPA's conclusion that the addition of SCR is not justified due to the "small incremental visibility improvement" is based upon a flawed visibility analysis that over-values the addition of LNB+OFA and under-values the addition of SCR. Furthermore, the degree of visibility improvement is not one of the four statutory factors to be considered under the reasonable progress provisions of the RHR. Incremental visibility improvement is not mentioned anywhere in the reasonable progress provisions or BART Guidelines and EPA cannot create a new criterion for the sole purpose of eliminating a control option that is reasonably cost-effective and would yield a significant visibility improvement.

Response: As discussed elsewhere in this rulemaking, we have corrected the modeling analysis for Dave Johnston Units 1 and 2, and the commenter's concerns regarding our methodology have been addressed. Our revised modeling analysis shows that the visibility improvement associated with SCR with LNB and OFA at Units 1 and 2 is 0.18 deciviews and 0.18 deciviews, respectively. The visibility improvement associated with LNB and OFA is 0.12 deciviews and 0.11 deciviews, respectively. We continue to find that the additional visibility improvement is not significant enough to warrant selection of SCR with LNB and OFA for these reasonable progress sources. As discussed earlier, we also find that the visibility improvement from LNBs and OFA does not justify us requiring reasonable progress controls on these two units. While it is true that incremental visibility improvement is not among the four statutory reasonable progress factors, the RHR does not prohibit EPA from assessing visibility improvement, in addition to the four statutory reasonable progress factors, when considering controls at potentially affected sources. We did not create a new criterion for the sole purpose of eliminating SCR at Dave Johnston Units 1 and 2; instead, we think it appropriate to consider visibility improvement when assessing control options for reasonable progress, especially when taking into account the purposes of the RHR. In comparing control options and selecting one, it is appropriate to compare the visibility improvement (that is, to compute the incremental visibility improvement) for each option.

Comment: EPA is proposing that the FIP NO_x BART for Dave Johnston Units 1 and 2 is LNBs with OFA at an emission limit of 0.22 lb/MMBtu (30-day rolling average). EPA provided no reason for rejecting addition of SCR even though: 1) Cost/ton was $3,300 - $3,400, which is less than the $3,900/ton accepted at Laramie River Unit 3; 2) Visibility at the most-impacted Class I area would improve by more than 0.4 deciview (which is greater than the 0.3 deciview

improvement for EPA's proposal; 3) Cumulative visibility improvement would exceed 0.6 deciviews (versus EPA's proposed 0.43 deciview improvement for Dave Johnston Unit 2 at Wind Cave and Badlands); 4) Cost-effectiveness is $15 million/deciview at Wind Cave (versus $27,798,246/deciview at Badlands due to application of SCR to Laramie River Unit 3); 5) Cumulative cost-effectiveness is less than $10 million/deciview (versus $10,140,825/cumulative deciview due to application of SCR to Laramie River Unit 2.)

We believe that SCR is Reasonable Progress for Dave Johnston Units 1 and 2. Under the EPA proposal, Dave Johnston Units 1 and 2 would each contribute over 0.9 deciview impairment at Wind Cave National Park (and 0.7 deciviews at Badlands National Park). With the addition of SCR, impairment would drop to less than 0.5 deciviews for each unit.

Response: We disagree with this comment. We have responded in detail to the use of a $/deciview metric in section V.D.1.b of this final rulemaking action. In addition, as stated above, our revised modeling analysis shows that the visibility improvement associated with SCR with LNB and OFA is 0.18 deciviews and 0.18 deciviews, respectively. By contrast, the visibility improvement associated with LNB and OFA, is 0.12 deciviews and 0.11 deciviews, respectively. We continue to find that the additional visibility improvement is not significant enough to warrant selection of SCR with LNB and OFA for these reasonable progress sources, and as discussed earlier in our response to comments, we do not find the visibility improvement, when considered with the other reasonable progress factors, from LNBs and OFA warrants the implementation of reasonable progress controls. In addition, as we discuss above, the revised incremental costs for SCR that we present above are sufficiently high for us to conclude that it is reasonable to not impose SCR on Dave Johnston Units 1 and 2.

Comment: EPA acknowledged that, for a reasonable progress analysis, only four factors must be analyzed. Indeed, the CAA clearly requires only four factors be analyzed. 42 U.S.C. 7491(g)(1). EPA employed the four-factor reasonable progress analysis for the other two Wyoming reasonable progress sources: oil and gas sources and the Mountain Cement Company plant. EPA has approved other regional haze SIPs where the state employed this same four-factor analysis, including Nevada. For both the oil and gas sources and the Mountain Cement Company plant, EPA disagreed with Wyoming's reasonable progress analysis and found "cost effective" NO_x controls could be employed, but EPA did not require those NO_x controls because the costs were "not so low that we are prepared to disapprove the State's conclusion in the reasonable progress context." If EPA found the NO_x controls "cost effective", then PacifiCorp is unclear what additional cost analysis was performed, or what the statutory or regulatory basis for EPA's additional cost analysis may be. EPA does not differentiate PacifiCorp's Dave Johnston Units 1 and 2 from the oil and gas sources or the Mountain Cement Company plant.

Also, EPA has approved other reasonable progress SIPs where the state is not meeting the URP, but has determined that no reasonable progress controls are required for the initial planning period. (See 77 FR 30248, 30256-30257; SIP Approval for Idaho). Here, EPA admitted that Wyoming "provided a four factor analyses that adequately evaluated the required factors" for Dave Johnston Units 1 and 2, but then arbitrarily concluded "it is also appropriate for this facility to consider a fifth factor for evaluating potential reasonable progress control options – the degree of visibility improvement that may reasonably be anticipated from the use of reasonable progress controls."

EPA justified its decision by citing to EPA guidance on states setting reasonable progress goals. However, the referenced guidance does not support EPA's position for several reasons:

• The guidance concedes it is "merely guidance and that States or the . . . [EPA] may elect to follow or deviate from this guidance, as appropriate." EPA cannot find Wyoming acted "unreasonably" when it chose not to apply discretionary guidance.

• The guidance identifies several factors that EPA did not include in its proposed regional haze FIP, such as the "control measures and associated emission reductions that are expected to result from compliance with existing rules." EPA cannot criticize Wyoming for not following the guidance when EPA itself chose not to apply part of the same guidance in the EPA regional haze FIP.

• The guidance suggests that air quality models be used to estimate "the improvement in visibility that would result from the implementation of the control measures you have found to be reasonable and compare this to the uniform rate of progress." Here, EPA has no "modeling results" demonstrating the alleged improvement in visibility from the suggested NO_x controls and the impact on the URP.

• The States, not EPA, are to determine the "reasonableness" of RPGs and are given flexibility to do so.

• The guidance clearly indicates that a state must support its RPGs "based on the statutory factors," which EPA admits Wyoming did.

• Finally, the guidance explains that no additional reasonable progress controls may be needed for the first planning period.

Response: EPA disagrees with this comment. With respect to the reasonable progress determination for the Mountain Cement facility, the cost effectiveness of potential controls is generally higher than the controls we proposed for Dave Johnston Units 1 and 2. As we stated in our proposal, although the costs for potential controls for the Mountain Cement facility might be

considered reasonable in the BART context, in the reasonable progress context those costs were not so low that we were prepared to disapprove the State's determination to not impose controls. That was not the case for Dave Johnston Units 1 and 2, for which combustion controls were significantly more cost-effective. Similar reasoning applies to the cost-effectiveness of controls for the oil and gas sources; in addition, as we noted in the proposal, Wyoming generally applies minor source BACT to these sources.

As a result, EPA determined that we should perform visibility modeling to assess the visibility benefits of controls on Dave Johnston Units 1 and 2. As explained elsewhere, we considered it appropriate to assess, in addition to the four statutory reasonable progress factors, the visibility improvement from potential controls at these units, particularly in light of the purposes of the RHR. In this instance, the revised visibility modeling has confirmed that the State's decision to not impose controls on Dave Johnston Units 1 and 2 (although not the State's rationale) was not so unreasonable that EPA is compelled to disapprove it.

EPA also disagrees that EPA's proposal was inconsistent with the cited notice proposing action on the Idaho Regional Haze SIP. In that notice, EPA stated, "EPA agrees with Idaho's conclusion that additional controls of non-BART point sources for reasonable progress purposes are not reasonable at this time, because even though there are cost effective controls identified, *visibility improvement is anticipated to be relatively small*." (77 FR 30248, 30256, May 22, 2012) (emphasis added). To derive that conclusion, EPA examined the modeled visibility impacts for the BART eligible sources and noted that, in Idaho's case, the sources with a Q/d of less than 26 had visibility impacts of less than 0.5 deciviews. EPA conservatively inferred from this that other potentially affected sources in Idaho with a Q/d of less than 20 would likely also have visibility impacts of less than 0.5 deciviews. In contrast, our original proposal showed

modeled benefits at each unit of 0.3 deciviews from combustion controls. As a result, we reject the comparison with the notice proposing action on the Idaho Regional Haze SIP. Nonetheless, based on our revised modeling we have reconsidered our proposed determination to require LNBs and OFA on these two units, and now do not find the State's decision to not impose controls to be unreasonable.

Furthermore, we are not disapproving the State's determination of which sources should be considered potentially affected sources. Wyoming reasonably used a Q/d threshold of 10 for determining the set of potentially affected sources, and the State selected (among others) Dave Johnston Units 1 and 2. That Idaho used a different threshold does not show that Wyoming's choice was unreasonable. However, even if EPA in the first instance was selecting potentially affected sources, we might also consider it reasonable to select Dave Johnston 1 and 2 based on a Q/d threshold.

We disagree that we cited our reasonable progress guidance as part or whole of our basis for proposing to disapprove the State's reasonable progress determination for Dave Johnston Units 1 and 2. Instead, we briefly cited the guidance for the unremarkable proposition that the State must at a minimum consider the four statutory reasonable progress factors but could also take into account other relevant factors. Our proposed disapproval was not based on that proposition, but was based on the State's inadequately supported determination to not impose controls, which relied on impermissible factors. Although the commenter argues that it is the State, and not EPA, that should determine reasonable progress, as explained above we are required to evaluate the State's reasonable progress determinations. 40 CFR 51.308(d)(1)(iii).

We disagree with the commenter's other statements regarding the guidance. While the State did assess the four statutory reasonable progress factors for Dave Johnston Units 1 and 2,

the guidance does not suggest that a state may ignore the results of that assessment for impermissible reasons such as a claimed lack of authority. The guidance also does not suggest that a state may *per se* choose to impose no reasonable progress controls regardless of the state's assessment of the four statutory factors.

Guidance aside, both the Act and the RHR explicitly require the state to consider the four factors for potentially affected sources. CAA section 169A(g)(1) ("shall be taken into consideration"); 40 CFR 51.308(d)(1)(i)(A). Assessing the four factors but ignoring the results of that assessment for invalid reasons such as lack of authority to impose controls does not amount to considering the factors and violates the explicit requirements of the Act and the RHR.

With respect to control measures expected to result from compliance with existing rules, the commenter did not identify any such NO_x control measures for Dave Johnston Units 1 and 2, nor are we aware of any. Finally, we did independently run CALPUFF to model the visibility improvement from potential controls at Dave Johnston Units 1 and 2 and it is part of the basis for our final decision.

F. General Comments

1. Replacement of FIP Elements with SIP

Comment: EPA has proposed to disapprove the monitoring, recordkeeping, reporting, and RAVI portions of Wyoming's SIP. 78 FR 34788. Wyoming acknowledges these deficiencies in its SIP and commits to making the necessary revisions. However, Wyoming will revise its SIP in a manner that comports with statutory and regulatory processes. Unlike EPA, Wyoming will not shortcut legal processes designed to ensure FLM consultation and public participation to meet an arbitrary deadline EPA has established with special interest groups in litigation to which Wyoming was not a party. Such arbitrary deadlines defeat the cooperative federalism Congress

intended to guide CAA implementation by needlessly expediting the process, tying EPA's hands, and precluding the State from an opportunity to revise its SIP. In this context, EPA's promise - to "propose approval of a SIP revision as expeditiously as practicable if the State submits such a revision and the revision matches the terms of our proposed FIP," *id.* 34738 - rings hollow.

Response: We appreciated the State's willingness to make the SIP revisions necessary to correct the deficiencies with the monitoring, recordkeeping, reporting, and RAVI requirements. Once EPA receives the SIP revisions from the State, EPA will work as expeditiously as practicable to review such revisions and approve the State's revisions if they meet the terms of our FIP. We have responded to other comments elsewhere in this document.

2. Public Comment

Comment: DEQ and Governor Mead requested that EPA defer its hearing until sixty days after the date EPA first released its proposal, with an additional thirty days of comment after the hearing. *See, e.g.,* Letter from Todd Parfitt, Director, DEQ, to Shaun McGrath, Region 8 Administrator, EPA (June 14, 2013). Although EPA agreed to hold two additional public hearings and provide an additional thirty days for public comment, EPA did not provide the time for public participation that Wyoming requested, evidently because EPA wanted to meet the deadline for final action it established with the special interest groups. Thus, while EPA did not hesitate to extend that deadline on multiple occasions when it benefitted EPA and the special interest groups, EPA refused to provide the additional time Wyoming requested for the benefit of the State.

We also received comments from other parties that we should extend the public comment period so that there is more time to review and comment on our action. Some commenters specifically requested a 60-day extension of the comment period. One commenter noted that if

the driving force for the short timeframe in this instance is a consent decree to which the EPA is a party, that no agreement between an agency and any interested party, whether as part of litigation or not, should or can modify requirements of law for a meaningful opportunity for public comment.

Response: EPA took several steps to provide the opportunity for meaningful public comment. In addition to the initial 60-day public comment period, we extended the public comment period from August 9, 2013, until August 26, 2013. In doing so, we took into consideration how an extension might affect our ability to consider comments received on the proposed action and still comply with the terms of the consent decree deadline,[239] which at the time required our final action signed by the Administrator on or before November 21, 2013. Additionally, we could not extend the comment period any further and still have time to respond to the immense amount of public comments we anticipated receiving. As the commenter notes, EPA also added two public hearings and we received substantial comments at these additional hearings. We find that the comment period provided for the Wyoming Regional Haze SIP and FIP exceeds CAA requirements and is reasonable and consistent with what the Agency has provided on other FIP and SIP actions. For example, EPA provided a 60-day comment period for both the Montana and North Dakota regional haze actions (see 77 FR 23988 and 76 FR 58570, respectively.) In addition, in our first proposal on Wyoming regional haze (77 FR 33022), we provided a 60-day comment period with no objections from interested parties.

Finally, the State and impacted sources have had many years to prepare and submit an approvable SIP to EPA. As detailed in the Docket for this action, the State received numerous detailed comment letters from EPA on many issues and also participated in meetings with EPA.

[239] *WildEarth Guardians v. McCarthy*, Case No. 1:11-cv-0001-CJA-MEH.

Indeed, the fact that the State was able to prepare an extensive 33-page document and provide extensive comments at the various public hearings, all within the allotted time period, supports EPA's contention that the 77-day time period for this proposed rulemaking was reasonable.[240]

3. Economic Concerns

Comment: We received numerous comments that the FIP will cost anywhere from an additional $300 million to $1 billion more than the State's SIP, but provide no perceptible improvement in visibility when compared with the SIP. We received numerous comments that EPA's FIP would lead to higher electricity costs to consumers and job losses at a time when the economy and people cannot afford an additional burden.

Response: We disagree with these comments. We have addressed the issue of perceptible visibility improvement in section V.C.5 of this final rulemaking. In addition, it is not EPA's intention to endanger the economic viability of or to place an undue burden on PacifiCorp or Basin Electric's customers. EPA has considered the comments on these issues very carefully. Regarding the legal basis for our decision, neither the CAA nor the RHR requires states or EPA to consider the affordability of controls or ratepayer impacts as part of a BART analysis. Rather, the CAA and RHR require consideration of the following factors, which as detailed elsewhere in our notice, we have fully considered: "the costs of compliance, the energy and non-air quality environmental impacts of compliance, any existing pollution control technology in use at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology."

[240] In fact, the State received the proposed notice on May 28, 2013, two business days after the proposal was signed, and the proposed notice was posted on the Region's Internet site on May 28, 2013, well in advance of the Federal Register publication on June 10, 2013.

Comment: One commenter noted that visitors to Wyoming's parks notice when the air is dirty, which can have a direct impact on tourism, the second largest business in the State. According to Wyoming's Office of Tourism, the travel and tourism industry in Wyoming creates 30,000 jobs and generates $730 million in employment earnings and $2.8 billion in travel expenditures annually. Over 3.5 million people visit Yellowstone National Park each year. The Commenter also indicated that the proposed plan will also reduce health care costs in the State. Combined, coal plants in Wyoming emit over 60,000 tons of NO_x pollution and almost 65,000 tons of SO_2 pollution annually. The Clean Air Task Force estimates that coal plant pollution in the State results in over $850 million in preventable health care costs.

Response: We acknowledge the commenter's points.

Comment: We received a comment that EPA failed to calculate the costs of the proposed rule that will be passed on to residential and business customers.

Response: Explained elsewhere in this document, we have taken these costs into consideration.

Comment: We received numerous comments that EPA's action could have the potential to shift the energy balance in favor of gas, rather than coal, and that this shift may force utilities to convert their power plants from coal to natural gas. Commenters expressed particular concern over the potential conversion of Naughton Unit 3, and possibly Naughton Units 1 and 2. Commenters expressed concern over the potential impacts natural gas conversion could have on local economies.

Response: As stated above, the CAA and RHR require consideration of the five statutory factors. Based on our consideration of these factors, EPA determined the appropriate emission limit for BART for each unit. Sources have the choice of how to meet that limit, including conversion to

natural gas. EPA's action does not require any source to convert to natural gas, as all of the requirements in our FIP can be met with combustion and post-combustion control technology.

Comment: One commenter stated that coal-fired plants in Wyoming have installed over one billion dollars in additional air quality controls and that, according to EPA standards, Wyoming has better visibility than virtually any other state in the country. Therefore, it seems unreasonable, illogical and, frankly, irrational that the EPA would demand Wyoming businesses and homeowners foot the bill for another one billion dollars in emission controls that have little probability of improving the quality of lives or the livelihoods of our citizens and, in fact, has a great potential to harm our people and our state.

Response: EPA disagrees with this comment. EPA carefully considered the five statutory factors and determined that there are additional, cost-effective controls that will result in significant visibility improvement in Wyoming's Class I areas, and that these controls represent BART.

Comment: One commenter was concerned that the investments mandated under the FIP will have significant adverse impacts on the quality and reliability of service provided to Wyoming ratepayers. The SIP is a well vetted plan by the State and its stakeholders that, in association with other regulatory requirements such as the construction authority process, assures that Wyoming utilities will be able to comply with its requirements with the least amount of impact to customers. The FIP, on the other hand, with its more stringent control requirements and accelerated compliance deadlines, will assure not only that compliance is needlessly expensive, but that it is also rushed, that scheduled outages cannot be timed to minimize the cost of replacement power, and that third party vendors will have free reign in determining how much a particular project costs. To the extent that schedules cannot be met, non-compliant plants will be forced out of service until the work is done. Such outages will necessitate the purchase of

replacement power in the market and will result in diminishing system reserves, all of which will jeopardize system reliability and increase costs for ratepayers.

Response: We appreciate the commenter's concerns, but note that the commenter has provided no data to support these assertions.

Comment: The companies working with Wyoming have scheduled shutdown and installation on a schedule that will allow them to maintain service to their customers. The new timeline demanded in the re-proposal would threaten both service interruptions and an increased risk of having to spot purchase energy which would be an additional increase of costs to residential, business, manufacturing, and agricultural customers.

Response: We appreciate the commenter's concerns, but note that the commenter has provided no data to support these assertions. Additionally, CAA section 169A(b)(2)(A) requires subject-to-BART sources to install BART and comply with any applicable emission limits "as expeditiously as practicable." The Act defines this term to mean "as expeditiously as practicable but in no event later than five years after . . . the date of promulgation." CAA section 169A(g)(4). Consequently, the final rule appropriately provides that the BART units must comply with the emission limits as expeditiously as practicable but in no event later than five years after the date of promulgation of the final rulemaking.

4. National Ambient Air Quality Standards (NAAQS)

Comment: The EPA is duty-bound to ensure that the proposed SIP does not interfere with attainment and maintenance of the NAAQS, in accordance with section 110(l) of the CAA. Thus, the EPA must ensure that the proposed SIP and the proposed FIP adequately limit air pollution in order to safeguard public health.

In this case, we are concerned that in proposing to approve portions of Wyoming's regional haze plan, the EPA has not demonstrated that the proposal adequately safeguards the 2008 8-hour ozone NAAQS (see 40 CFR 50.15), the newly promulgated 1-hour nitrogen dioxide ("NO_2") NAAQS (see 40 CFR 50.11(b)), the newly promulgated 1-hour SO_2 NAAQS (see 40 CFR 50.17), the 2006 24-hour $PM_{2.5}$ NAAQS (see 40 CFR 50.13), and the 2012 annual $PM_{2.5}$ NAAQS (see 78 FR 3086 (Jan. 15, 2013)).

We are particularly concerned that the EPA overlooked its 110(l) obligations under the CAA given that, although the Proposed Rule may lead to emission reductions, no analysis or assessment has been prepared to demonstrate that even after these emission reductions, the recently promulgated NAAQS will be met. In this case, we are particularly concerned that the recently promulgated 1-hour NO_2 and SO_2 NAAQS could be jeopardized, as well as the recently promulgated 2012 $PM_{2.5}$ annual NAAQS. Indeed, many, if not most, of the proposed emission rates are based on 30-day rolling averages. There is no indication that meeting emission rates on a 30-day rolling average will ensure that 1-hour NAAQS will be sufficiently protected. Indeed, a source could comply with a 30-day rolling average limit, yet still emit enough pollution on an hourly basis to cause or contribute to violations of the NAAQS, thereby interfering with attainment or maintenance. Further, there has been no analysis at all as to whether the recently promulgated revisions to the annual $PM_{2.5}$ NAAQS will be protected.

In this case, the EPA must either disapprove the Wyoming SIP over the State's failure to perform a 110(l) analysis or prepare its own 110(l) analysis to demonstrate that the SIP will not interfere with attainment or maintenance of the NAAQS. Furthermore, the EPA must demonstrate that its FIP will not interfere with attainment or maintenance of the NAAQS. The EPA has not done so, rendering its proposed rule substantively flawed.

Response: CAA section 110(l) provides that EPA "shall not approve a revision of a plan if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress…, or any other applicable requirement of" the CAA. The commenter has not provided any evidence that the Wyoming Regional Haze SIP will interfere with any applicable requirement concerning attainment and reasonable progress or any other applicable requirement of the CAA, or that further analysis under 110(l) is necessary. To the contrary, the commenter acknowledges that the Regional Haze SIP revision will lead to emission reductions.

The commenter asserts that it is not enough that the SIP will lead to emission reductions and that EPA must determine that the SIP will ensure the NAAQS are met. We disagree. The CAA and EPA's regulations require regional haze SIPs to address visibility impairment in mandatory Class I areas; attainment of the NAAQS is provided for through a separate SIP process. It is EPA's consistent interpretation of section 110(l) that a SIP does not interfere with attainment and maintenance of the NAAQS if the SIP at least preserves the status quo air quality by not relaxing or removing any existing emissions limitation or other SIP requirements. EPA does not interpret section 110(l) to require a full attainment or maintenance demonstration for each NAAQS for every SIP revision. *See, e.g., Kentucky Resources Council, Inc.,* v. *EPA,* 467 F.3d 986 (6th Cir. 2006); *see also,* 61 FR 16050, 16051 (April 11, 1996) (actions on which the *Kentucky Resources Council* case were based).

Thus, in this action, we need not determine whether a 30-day limit is adequate to protect a shorter-term NAAQS because the regional haze SIP is not required to ensure attainment of the NAAQS. The fact that the regional haze SIP specifies 30-day limits will not preclude Wyoming from adopting limits with a shorter averaging time, if at some future date such limits are found to be necessary and required by the CAA to protect the NAAQS.

5. Other

Comment: We received over 250 comments in a general mass mailer campaign in support of our action. We received over 220 mass mailer comments on behalf of National Parks Conservation Association in support of our action. We also received numerous general comments from individuals and organizations in support of our action.

Response: We acknowledge the commenters' support of our proposed action.

Comment: We received over 850 mass mailer comments opposed to our action. We also received numerous general comments from individuals and organizations in opposition to our action.

Response: We note the commenters' opposition to our proposed action.

Comment: We received numerous general comments in opposition to our action that stated that the State's plan was good enough, that it would achieve appropriate emission reductions, and that it represented a balanced approach.

Response: We note the commenters' opposition to our proposed action.

Comment: We received numerous general comments in opposition to our FIP that stated that the visibility in Wyoming is not hazy and that Wyoming has some of the best air quality in the country.

Response: We note the commenters' general qualitative observations, but note that the commenters did not provide any quantitative information to substantiate their comment.

Comment: We received numerous comments that we should approve Wyoming's SIP because it represents collaboration between the State, industry, local governments, and the public.

Response: We note the commenters' points, but as stated earlier, EPA can only approve a state's SIP if it meets the requirements of the CAA and EPA's implementing regulations.

Comment: We received numerous comments that EPA's FIP will only reduce NO_x by 2,900 tpy more than the Wyoming's SIP, which reduces NO_x by 63,000 tpy. Other commenters went on to say that EPA's FIP will basically achieve the same emission reductions the State's SIP would by 2022.

Response: We disagree with this comment. EPA's calculations show that our proposed FIP will result in approximately 17,000 tpy more NO_x reductions than the State's SIP, through 2022 and beyond.

Comment: We received numerous comments that the proposed FIP, along with other EPA regulations, are in support of EPA's hidden agenda to kill the coal industry and shut down coal-fired power plants.

Response: As stated earlier, EPA's proposed action was based on its careful consideration of the five statutory factors in the CAA and related statutory and regulatory requirements.

Comment: We received numerous comments that the State's SIP was created through coordination with PacifiCorp and other Wyoming industries and that it is based on sound science that complies with the CAA and provides a balance between achieving compliance with the RHR while ensuring reliable, affordable electricity.

Response: We note the commenters' points, but as stated earlier, EPA can only approve a state's SIP if it meets the requirements of the CAA and EPA's implementing regulations.

Comment: We received a comment that it is generally more hazy now than it was ten years ago and that the commenter was supportive of reducing haze.

Response: We note the commenter's support.

Comment: We received a comment that provided data that showed voters in Wyoming were supportive of continued implementation of the CAA and environmental protections for our

environment. The commenter went on to say that the majority of voters thought environmental protection and a good economy were compatible and encouraged EPA to finalize its proposed action. The commenter urged EPA to ignore negative media attention its action has drawn, stating that the negative publicity was being driven by economic interests.

Response: We note the commenter's support of our proposed rule.

Comment: EPA has applied selective comment response to the development of its re-proposal and the public comment process, which is inappropriate. EPA's process has lacked transparency, particularly to the State. EPA has not acknowledged the Governor's comments submitted last year. The EPA has not acknowledged the DEQ's comments submitted last year. DEQ was not consulted in the re-proposal process. It would appear that EPA only considered select comments that support its predetermined agenda.

Response: Consistent with our statutory obligations, we have evaluated all written and oral comments on the proposal rulemaking (placing all the comments received in the docket for this action at www.regulations.gov); determined whether any revisions to the proposed rule are warranted; and prepared the final rulemaking and supporting information. The final rulemaking decisions are accompanied by the bases for the decisions, explanations of major changes from the proposals, and a response to each of the significant comments submitted in written or oral presentations during the comment period, which includes responses to such comments submitted by the Governor and DEQ.

Comment: For years, Wyoming has pursued developing a collaborative and professional relationship with the EPA, but with the regional haze SIP process, the EPA has not reciprocated the same cooperative effort. This lack of effort on the part of the EPA does not represent the intent of what performance partnership agreements are put in place to accomplish.

Wyoming is a leader in collaboration. Whether it is hydraulic fracturing, Sage Grouse Core Area Development, or carbon sequestration, Wyoming has demonstrated a willingness, and really eagerness, to work with federal agencies, local government, and industry to create solutions that not only minimize detrimental impact, but may actually do the opposite: encouraging sustainable economic growth in Wyoming.

EPA's imposition of the FIP would pour a bucket of cold water on the solutions resulting from this type of collaboration. In its place, EPA risks disenfranchising ratepayers when industry has little choice but to transfer the costs associated with retrofitting the EGUs. Moreover, because EPA failed to consider the primary cause of regional haze in Wyoming and the Interior West—smoke from wildfires—it risks alienating local government and state cooperating agencies who will perceive EPA as being out of touch with the regulated community.

Response: We disagree with this comment. EPA values its relationship with the State of Wyoming and prior to our proposed action had numerous meetings with State and industry representatives to explore ways in which the State could have addressed our long standing concerns with the approvability of the State's Regional Haze SIP. Regrettably, we were unable to find a path forward during those discussions that could have resulted in the submission of a fully approvable regional haze SIP. Nevertheless, we remain committed to working collaboratively with the State on future regional haze actions and encourage the State to submit a SIP revision that could potentially replace all or a portion of our FIP. We do note that in a previous action we finalized full approval of the State's 309 (SO_2) portion of the Regional Haze SIP. In this action we will also be finalizing approval of many aspects of the State's 309g (NO_x and PM) portion of the regional haze plan.

Comment: We received numerous comments that the regulation of regional haze is focused on

improving visibility, not public health.

Response: We agree with the commenter that the CAA's visibility program and the RHR are focused on improving visibility and not public health.

Comment: The Conservation Organizations submitted comments on July 23, 2012 urging EPA not to finalize its proposal to approve Wyoming's participation in a Western Backstop Trading Program in lieu of satisfying BART requirements for SO_2. Under 40 CFR 51.309, states within the Grand Canyon Visibility Transport region, including Wyoming, may adopt a BART-alternative for the state's SO_2 emissions provided that, among other things, the program is shown to provide for greater reasonable progress than would be achieved by application of BART pursuant to 40 CFR 51.308(e)(2). Wyoming's alternative program does not satisfy this requirement. Accordingly, Wyoming must comply with BART requirements for all haze-causing pollutants, including SO_2.

Response: We finalized approval of the State's 309 SIP that includes the requirements for the Western Backstop Trading Program on December 12, 2012 (77 FR 73926). Because this comment pertains to that final rulemaking, it is not germane to this final rulemaking action.

Comment: Unlike other programs, the regional haze program requires regular updates and reviews to ensure that reasonable progress is being made towards the ultimate goal ending in 2064. In fact, the State will be required to submit a progress report to EPA in 2013 and a new regional haze SIP in 2018. EPA should approve the Wyoming Regional Haze SIP, and reserve most of its arguments and concerns expressed in its regional haze FIP for consideration in Wyoming's 2018 regional haze SIP submittals. In the meantime, EPA can be assured that the significant emission reductions required under the Wyoming Regional Haze SIP, nearly all of which already have been installed, will continue to contribute to visibility improvement.

Response: Because we have found that the State's Regional Haze SIP did not adequately satisfy the RHR requirements in full, we have a duty to promulgate a FIP during this planning period that meets those requirements.

Comment: EPA pays undue attention to the "health" issues in its FIP. For reasons it does not explain, EPA's FIP discusses the asserted health impacts of fine particulates, when health impacts are not part of the BART analysis. The regional haze program is not a health-based program; rather, it is focused on aesthetics.

Response: We disagree with this comment. In our proposed notice, we stated that "$PM_{2.5}$ can also cause serious health effects and mortality in humans and contributes to environmental effects such as acid deposition and eutrophication." 78 FR 34741. The commenter suggests that this brief informational statement somehow means that we based our BART determinations in part on the health impacts of $PM_{2.5}$. This is not the case, as we clearly based our BART determinations on the five statutory factors, as required by section 169(a) of the CAA and the RHR.

Comment: In light of EPA's apparent coordination with the special interest groups and the particular influence those groups seemed to be exerting over EPA's regional haze program, Wyoming and eleven other states submitted to EPA a Freedom of Information Act (FOIA) request seeking communications between EPA and the special interest groups related to EPA action on regional haze SIPs. *See* Letter from P. Clayton Eubanks, Deputy Solicitor General, Office of Oklahoma Attorney General, to FOIA Officer, EPA (Feb. 6, 2013) (FOIA Request). EPA denied the states' public records request on the ground that the states' fee waiver request was invalid because the states "have not expressed a specific intent to disseminate the information to the public." Letter from Larry F. Gottesman, National FOIA Office, EPA, to

Clayton Eubanks, Deputy Solicitor General, Office of Oklahoma Attorney General (Feb. 22, 2013). *But see* FOIA Request, at 5-9 (Feb. 6, 2013) (describing in detail the states' intent to disseminate the information to the public).

The states appealed that plainly erroneous decision. *See* Letter from P. Clayton Eubanks, Deputy Solicitor General, Office of Oklahoma Attorney General, to National FOIA Officer, EPA (March 15, 2013) (Exhibit 4). On May 2, 2013, EPA's Office of General Counsel informed the states that it needed "a brief extension of time"-until May 15, 2013-to respond to the states' appeal. Electronic mail from Lynn Kelly, Attorney-Advisor, EPA Office of General Counsel, to P. Clayton Eubanks, Deputy Solicitor General, Office of Oklahoma Attorney General. Two weeks later, EPA again informed the states that it needed more time to review the appeal, promising a decision by May 31, 2013. Electronic mail from Lynn Kelly, Attorney-Advisor, EPA Office of General Counsel, to P. Clayton Eubanks, Deputy Solicitor General, Office of Oklahoma Attorney General (May 15, 2013).

On that date, EPA denied the states' FOIA request, claiming the states' request "fails to adequately describe the records sought[.]" Letter from Kevin M. Miller, Assistant General Counsel, EPA Office of General Counsel, to P. Clayton Eubanks, Deputy Solicitor General, Office of Oklahoma Attorney General, at 1 (May 31, 20 13). *But see* FOIA Request, at 1-3 (describing in detail the records sought). In the face of EPA's blatant attempts to frustrate the states' right to access public records directly related to matters of great importance to the states and the public, the states sued EPA in federal court. Compl., *Oklahoma v. EPA*, No. 5:13-cv-00726-M (W.D. Okla. July 16, 2013).

In related litigation seeking the documents that the states requested, as well as others, a federal judge has questioned EPA's truthfulness and concluded "that leaders in EPA may have

purposefully attempted to skirt disclosure under the FOIA." Mem. Op., at 13, *Landmark Legal Found. v. EPA*, No. 12-1726 (D.D.C. Aug. 14, 2013). One cannot help but to similarly question EPA's honesty and wonder what EPA is trying to hide.

Response: EPA disagrees with this comment. EPA has not coordinated with environmental organizations regarding the outcome of this action. As we explain elsewhere, nothing in the consent decree requires any particular substantive outcome concerning Wyoming's Regional Haze SIP. With respect to the allegations made relating to FOIA litigation, EPA has fully responded to those claims in federal court. In any case, the issues in the FOIA litigation mentioned by the commenter, such as whether the FOIA requester reasonably described the records sought, are unrelated to the commenter's unsupported allegations of coordination with environmental organizations.

With respect to the commenter's insinuations of bias, EPA firmly rejects them. We have given careful consideration to all comments and views submitted, regardless of their origin. In response to some comments—both from industry and from environmental organizations—we have acknowledged the merits of the comments and accordingly adjusted not only our technical analyses, but also our final determinations. We have also, at our discretion, considered comments from both industry and from environmental organizations that were submitted after the close of the comment period. It is hard to imagine what better evidence there could be that EPA is willing and able to rationally consider arguments and does not have an unalterably closed mind on the issues in this action. *See Air Transp. Ass'n of Am., Inc. v. Nat'l Mediation Bd.*, 663 F.3d 476, 487 (D.C. Cir. 2010) (standard for prejudgment of rulemaking issues) (citing *Ass'n of Nat'l Advertisers, Inc. v. FTC*, 627 F.2d 1151 (D.C. Cir. 1979), *cert. denied*, 447 U.S. 921 (1980)).

VI. Non-Relevant Comments from EPA's Original Proposal

The following is a summary of the significant comments, criticisms, and new data we received on our initial June 4, 2012 proposed rulemaking, which we are not responding to because they are no longer relevant to the action we proposed on June 10, 2013, or the specific regional haze related action we are taking in this final rulemaking.

A. General Comments

Comment: EPA is proposing to calculate compliance with tons per year (tpy) BART emissions limits on a rolling 12-month basis. Based on EPA's proposal, the owner/operator is to calculate and record a new 12-month rolling average emission rate from the arithmetic average of all valid hourly emission rates from the continuous emissions monitoring systems for the current month and the previous 11 months, and to report the result in tons. The calculation and compliance determination shall be performed at the end of each calendar month.

Wyoming established BART emissions limits based on a 30-day rolling average in accordance with 40 CFR part 51 Appendix Y. Wyoming also established annual emissions limits for units with BART limits. For all units with BART limits, except Units 1 through 3 at Basin Electric's Laramie River Station, Wyoming based the annual emissions limits on the 30-day averaged lb/hr emissions limit and full-time operation for 8,760 hours per year.

Wyoming deliberately established these limits on a calendar year basis to reduce recordkeeping and reporting burdens, without being any less stringent than what was prescribed under Appendix Y. Every year, when the Title V emissions inventory is submitted for each of these facilities, the reported annual emissions can be compared to the annual BART limits established in the State permits to determine compliance. Requiring compliance with a 12-month rolling average will result in unnecessary monitoring, recordkeeping, and reporting, as the

12-month rolling emissions limit would be based on full-time operation of the unit and the more stringent 30-day averaged lb/hr value.

Comment: We received a comment from a coalition of physicians that expressed concerns over the health impacts from air pollution, particularly particulate matter and ozone.

Comment: We received a comment from a member of the public that points out the amount of coal production in Wyoming and its contribution to carbon dioxide and climate change.

B. Basin Electric Laramie River

Comment: Wyoming has overestimated the ability of SNCR to reduce emissions. EPA is basing its BART determination on the assumption that LNB+OFA+SNCR can achieve 0.12 lb/MMBtu on a 30-day rolling average. This means that addition of SNCR must reduce NO_x emissions from the LNB+OFA strategy by another 48%. Given the sensitivity of SNCR to boiler operation, size, and configuration, we are concerned that SNCR may not be able to achieve the proposed level of performance on a consistent basis. For example, our query of CAMD data for 2011 found no EGUs with SNCR (out of 3,621 coal-fired EGUs) that met 0.12 lb/MMBtu each month.

Comment: EPA should ensure that SNCR plus LNBs/OFA are capable of meeting the proposed NO_x limit of 0.12 lb/MMBtu, which would reflect a 43% NO_x removal efficiency for SNCR. This level of removal is approximately twice that considered for other Wyoming facilities, as well as facilities in other state BART analyses. Further, in commenting on EPA's BART proposal for Montana's Colstrip Units 1 and 2, the NPS researched 3,621 coal-fired EGUs with SNCR and found only two units that could meet 0.15 lb/MMBtu consistently on a monthly basis. Accordingly, we question whether SNCR plus combustion controls can achieve a 0.12 lb/MMBtu NO_x limit at Laramie River Station Units 1-3. Should EPA find that this level of

control with SNCR is achievable, and fail to impose adequate BART limits reflective of SCR capabilities; we request the EPA ensure the proposed NO_x limits are made enforceable as a backstop and that if greater removal efficiencies are achievable, rates be revised downwards within a 12-month period from the date the technology becomes operable. We also request that level of ammonia slip not exceed 5ppm, and such limit likewise be made enforceable.

Comment: EPA's BART analysis for Laramie River Station Units 1-3 improperly relied on cost estimates from Basin Electric that overestimated capital costs and significantly underestimated operation and maintenance costs for SNCR. Particularly, Basin Electric underestimated the cost of reagent. We corrected these errors in our revised cost calculation using the Sargent & Lundy SNCR cost module from the IPM, and evaluated the cost of SNCR to reduce NO_x from the 0.21 lb/MMBtu Wyoming BART limit for LNBs/OFA down to EPA's proposed FIP limit of 0.12 lb/MMBtu which reflects a NO_x reduction across the SNCR of 43%. We also evaluated the cost effectiveness for an SNCR system designed to achieve 20% NO_x removal, which would equate to a NO_x rate of 0.17 lb/MMBtu. Our revised estimates show the cost effectiveness of SNCR plus combustion controls is between $2,435/ton and $2,623/ton to meet a 0.12 lb/MMBtu NO_x rate (or between $2,062/ton and $2,368/ton to meet a 0.17 lb/MMBtu NO_x rate). These corrected cost effectiveness values for meeting a 0.12 lb/MMBtu NO_x rate with SNCR are higher than the cost effectiveness values, between $2,056/ton and $2,109/ton, assumed by EPA.

Comment: EPA relied on SCR cost estimates provided by Basin Electric that failed to include LNBs/OFA and therefore assumed unreasonably high construction and operation costs for the SCR.

Comment: A comparison of SCR to EPA's preferred LNB+OFA+SNCR option shows incremental costs less than $4,000/ton which are well below values EPA typically accepts. For

example, in its proposal to disapprove part of the North Dakota plan, EPA cited the "…relatively low incremental cost effectiveness between the two control options ($4,855 per ton)…" For Laramie River Station, the National Park Service (NPS) estimates of incremental costs of SCR are only slightly greater than SCR's average costs, which are reasonable when compared to costs accepted by other states and EPA.

Comment: Although Basin Electric opposes EPA's SIP disapproval and FIP, it supports the agency's decision not to require SCR at Laramie River Station in its proposed FIP. EPA eliminated the option of LNBs/OFA plus SCR from consideration as BART for the Laramie River Station because "the cost effectiveness value is significantly higher than LNBs with OFA and there is a comparatively small incremental visibility improvement over LNBs with OFA." Basin Electric agrees with and supports the EPA on this issue.

Comment: EPA's analysis for Basin Electric's Laramie River Station acknowledged that additional emissions reductions from LNB and OFA were proposed in the SIP, but did not assess the benefit of these lower emissions rates. The short term mass emissions rate was reduced to 1,220 lb/hr for Laramie River Station on Units 1 and 2, and reduced to 1,254 lb/hr for Laramie River Station Unit 3. EPA explained that since the State did not provide additional cost information for the lower limits, revised modeling based on 0.21 lb/MMBtu was not performed, nor did EPA perform a revised cost analysis.

The reduced mass emissions are based on a performance level of 0.19 lb/MMBtu, which will be achieved by the installation of LNB with OFA at no additional cost. Accounting for additional reduction in emissions, without changing the control costs, yields a significantly higher incremental cost, approximately $3,300, between LNB with OFA and SNCR. If EPA had accounted for additional reduction from LNB and OFA and resulting smaller incremental

visibility improvement (less than 0.23 delta deciviews), the State anticipates that SNCR would not have been BART. This conclusion is based on EPA's determination in the proposed FIP for Montana that "…the cost of SOFA+SCR ($3,195/ton) [lower than the incremental cost of SNCR] is not justified by the visibility improvement of 0.404 deciviews at Theodore Roosevelt National Park and 0.378 deciviews at UL Bend." 77 FR 24027.

When evaluating Wyoming's 309(g) Regional Haze SIP, EPA should have considered the additional NO_x emissions reductions achieved in the SIP before making a final determination on the approvability of the SIP.

Comment: EPA's comparison of annual emissions from the installation of SNCR to the annual emissions cap established in a settlement is not consistent. Operation of SNCR on Laramie River Station Units 1 through 3 is anticipated to result in annual emissions of 8,468 tons per year. The State established an annual facility emissions cap of 12,773 tons per year in a permit. The 8,468 tons per year value is based on an average of 2001-2003 actual heat input for each boiler, while the 12,773 tons of NO_x is a facility cap on potential emissions. Typically, actual emissions are notably less than potential emissions in order to maintain a margin of compliance. It is the State's expectation that the emissions difference between EPA's SNCR determination and the State's reduced facility emissions cap will be less than the calculated 4,305 tons per year. A more direct comparison would be to base the difference on the potential to emit for each of the three Laramie River Station units (0.12 lb/MMBtu times the maximum heat input rate times 8,760 hours of operation) which yields an annual facility NO_x emission rate of 10,218 tons per year, and a difference from the State's emission cap of 2,555 tons.

Comment: EPA states "We find it was unreasonable for the State not to determine that LNBs with OFA plus SNCR was NO_x BART for LRS Units 1-3." This statement provides no insight into the agency's reasons for disapproving the State's NO_x BART for Laramie River Station.

C. Jim Bridger Units 1-4

Comment: In its regional haze FIP, EPA identifies the relatively high incremental cost effectiveness of SCR ($5,721 per ton) for the Bridger units. Nevertheless, EPA does not account for this number in its own BART decision making. EPA also fails to accord any deference to Wyoming's consideration of these same costs. Such action is arbitrary and contrary to EPA's actions in other states. Here, EPA erred by not considering any incremental costs for Bridger, and by not honoring Wyoming's consideration of costs for the Bridger units.

Comment: In response to EPA's request for comment on alternative approaches for the Jim Bridger BART determination, EPA received general comments in favor of our third proposal in the alternative. Although these commenters supported our third proposal in the alternative, the commenters did not provide quantitative information to support their position.

Comment: EPA is seeking comment on an alternative that would allow PacifiCorp to install SCR at Jim Bridger Units 3 and 4 within 5 years from the date of EPA's final action. EPA's reasoning is that this alternative would allow PacifiCorp the flexibility to determine the implementation schedule for BART controls on all four Jim Bridger units. Because EPA's initial proposal to require BART installation by 2016 best complies with the statutory requirement that BART be installed and operated as expeditiously as practicable, 42 U.S.C. 7491(b)(2)(A), we support EPA's proposal over the alternative.

Comment: EPA likely underestimated the visibility benefits attributable to SCR to control NO_x emissions in other ways. First, EPA failed to follow its BART guidelines in estimating pre- and

post-control emissions. EPA's baseline for modeling included the PM and SO_2 limits that will be established by the regional haze plan, rather than using a pre-SIP baseline (typically from the time period of 2001-2004) as required by EPA's BART guidelines. This approach resulted in an understatement of visibility improvement from NO_x BART controls. Further, EPA deviated from its BART guidelines by modeling baseline emissions that were based on allowable emission rates rather than actual maximum 24-hour rates. As a result, EPA's baseline is based on long-term average emissions that mask actual maximum visibility impairment. Further, EPA greatly overestimates the ammonia slip (SO_4 emissions) associated with SCR. For example, actual increases in SO_4 emissions due to operation of SCR at each of the Jim Bridger units are 7.89 lb/hr per unit, far lower than EPA's assumed increase in SO_4 emissions of 54.0 lb/hr per unit. This error, too, likely caused EPA to understate the visibility benefits of SCR.

The Conservation Organizations conducted modeling analyses to examine how widespread the impacts from each BART-subject source were and to analyze the widespread visibility improvements that would result if all units were required to install SCR along with combustion controls at 0.05 lb/MMBtu limits routinely achieved to meet NO_x BART. The Conservation Organizations did not attempt to address all of EPA's errors in their supplemental modeling of visibility impacts. Had the Conservation Organizations done so (i.e., changed baseline to reflect pre-SIP emissions of SO_2, PM as well as NO_x, and reduced the projected increase in sulfates to more reasonable levels), we assume that even greater visibility benefits would have been demonstrated with SCR required as BART at all BART-subject units.

D. Dave Johnston Units 3 and 4

Comment: EPA relied on Wyoming's cost-effectiveness analysis of SCR plus LNBs/OFA at Dave Johnston Unit 3, which significantly overestimates the cost of this technology. While EPA

presented a cost effectiveness of $3,243/ton, our revised cost-effectiveness calculation using the Sargent & Lundy SCR cost module shows that SCR plus LNBs/OFA at Dave Johnston Unit 3 to meet a NO_x limit of 0.05 lb/MMBtu is much lower: $1,632/ton.

Comment: EPA relied on Wyoming's dramatic underestimation of the cost for SNCR at Dave Johnson Unit 3. Wyoming's BART analysis used costs provided by PacifiCorp, which greatly underestimated reagent costs for SNCR. Further, although PacifiCorp's SNCR cost analysis was based on achieving a NO_x rate of 0.22 lb/MMBtu, Wyoming stated that SNCR was assumed to meet a NO_x rate of 0.19 lb/MMBtu. This skewed the cost-effectiveness results by making SNCR appear less costly and more effective. Our revised analysis using the Sargent & Lundy SNCR cost module from the IPM to achieve a 0.22 lb/MMBtu NO_x rate (20% removal across the SNCR) demonstrated that SNCR has a higher cost-effectiveness value than is presented in the proposed rule. While EPA presented and relied on a cost effectiveness for SNCR of $721/ton, correcting the flaws in that analysis demonstrates a cost effectiveness for SNCR of $1,443/ton. Based on these corrected cost calculations, the cost of SCR plus LNBs/OFA is $1,632/ton, not appreciably higher than the cost of SNCR at $1,443/ton.

Comment: EPA makes the same errors in its BART analysis for Dave Johnston Unit 4 as it did for Unit 3. EPA has proposed to approve Wyoming's NO_x BART determination for Dave Johnston Unit 4, requiring LNBs with advanced OFA to achieve a NO_x emission limit of 0.15 lb/MMBtu. Although the cost effectiveness of SCR plus LNBs with OFA at Dave Johnston Unit 4 presented by Wyoming and relied upon by EPA was abundantly reasonable at $2,210 per ton of NO_x removed, EPA apparently agreed with Wyoming that the incremental cost effectiveness of these controls compared to LNBs/OFA was too high to justify SCR as BART.

Wyoming calculated the cost effectiveness of SCR plus LNBs/OFA to be $2,210/ton with a projected maximum visibility improvement of 0.97 deciviews. In comparison, Wyoming and EPA found that these same controls constitute BART at Naughton Unit 3, even though the cost was greater, $2,830/ton, and the projected maximum visibility improvement was roughly the same, 1.0 deciviews. Wyoming and EPA also found that SCR plus LNBs and SOFA met BART for Jim Bridger Units 3 and 4 at a cost effectiveness of $2,258/ton and a projected visibility improvement of 0.80 and 0.82 deciviews, respectively. Further, EPA found that SCR plus LNBs and SOFA met BART for Jim Bridger Units 1 and 2 at a cost effectiveness of $2,258/ton and a visibility improvement of 0.76 deciviews and 0.82 deciviews, respectively. EPA's contrary conclusion for Dave Johnston Unit 4 is arbitrary and inconsistent with EPA's other decisions.

Comment: Although EPA's data in the proposed rule demonstrated that SCR plus LNBs/OFA is cost effective at $2,210/ton of NO_x removed, EPA overestimated the cost of SCR for Dave Johnston Unit 4 in the same way it did for Dave Johnston Unit 3. We recalculated the cost effectiveness of SCR plus combustion controls at Dave Johnston Unit 4 using the Sargent & Lundy SCR IPM Cost Module to meet a NO_x rate of 0.05 lb/MMBtu. The revised cost analysis shows a cost effectiveness of $1,837/ton for these controls.

Comment: EPA appears to have placed undue weight on incremental costs. In its proposal to disapprove part of the North Dakota plan, EPA cited the "…relatively low incremental cost effectiveness between the two control options ($4,855 per ton)…" For Johnston units 3 and 4, the NPS estimates of incremental costs of SCR are two - three times greater than LNB+OFA+SCR's average costs, which are reasonable when compared to costs accepted by other states and EPA.

E. Naughton Units 1-3

Comment: We received comments that the cost analysis of SCR at Naughton is over inflated. One commenter estimated that, using a capital cost of $266/kW, LNB+OFA+SCR for Unit 1 would remove 3,249 tpy and cost $2,098/ton. The commenter went on to say that they estimated the cost for the addition of SCR to Unit 2 and Unit 3 would be $2,037 and $2,844/ton. A commenter estimated the costs for the addition of SCR to Unit 3 would be $1,788/ton. Another commenter estimated the cost of SCR of $1,550/ton for Naughton Unit 1 and $1,501/ton for Naughton Unit 2.

Comment: Even taken at face value, the $2,750 and $2,848 costs per ton estimated by Wyoming for LNB+OFA+ SCR on Naughton Units 1 and 2, respectively, are similar to or lower than the cost/ton values accepted as reasonable in other BART analyses, including Wyoming's and EPA's conclusion that addition of OFA+SCR at $2,830/ton is reasonable for Naughton Unit 3.

Comment: Despite our concerns with the visibility modeling conducted by EPA, taken at face value, the annual costs and visibility improvements (presented by EPA) associated with the addition of SCR result in cost-effectiveness of $9.6 million/deciview for Naughton Unit 1, $11.5 million/deciview for Unit 2, and $15.7 million/deciview for Unit 3 (which EPA deemed reasonable) at the nearest Class I area. All three of these estimates are below or within the range of average cost/deciview accepted as "reasonable".

Comment: EPA relied solely on an incremental cost-benefit rationale to reject SCR as BART for Naughton Units 1 and 2. This conclusion is improper where SCR plus combustion controls is cost effective, even using EPA's inflated numbers, and its visibility benefit would be significant. Indeed, the costs and visibility benefits of SCR at Units 1 and 2 are nearly identical to the costs and visibility benefits of SCR at Unit 3, at which EPA found SCR to be BART. Specifically, SCR at Naughton Units 1 and 2 has a cost effectiveness of $2,750/$2,848 per ton of NO_x

removed and results in maximum visibility improvements of 1.07/1.10 deciviews. Given these very similar numbers, EPA's determination that SCR is BART at Unit 3 but SCR is not BART at Units 1 and 2 is arbitrary.

Comment: EPA has placed undue emphasis on incremental cost effectiveness is even more improper considering its inaccuracy. EPA stated incorrectly the incremental cost effectiveness of LNBs/OFA plus SCR compared to LNBs/OFA as $8,000/ton. However, this calculation actually refers to the incremental cost effectiveness of the SCR option compared to the SNCR BART option. The incremental cost effectiveness between the SCR option and the LNB/OFA option based on Wyoming's cost and emission estimates provided in its BART Application Analyses are $6,665/ton for Unit 1 and $6,518/ton for Unit 2.

F. Wyodak

Comment: We received comments that the costs for SCR were overinflated. One commenter estimated that LNB+OFA+SCR would remove 3,773 tpy and cost $3,475/ton. Another commenter estimated that based on the Sargent & Lundy SCR cost module, the revised cost estimate for these controls to meet a NO_x limit of 0.05 lb/MMBtu is $2,602/ton of NO_x removed.

Comment: As it did for Dave Johnston Unit 3, EPA also relied on Wyoming's gross underestimate of the costs of SNCR. Rather than the $958/ton of NO_x removed assumed by EPA, the more accurate cost effectiveness of SNCR based on the Sargent & Lundy SNCR IPM cost module is $3,139/ton. Thus, SCR is more cost effective than SNCR to control NO_x at Wyodak.

Comment: EPA has placed undue weight on incremental costs and incremental benefits. Our analysis of the LNB+OFA+SCR option shows an incremental cost of $3,726/ton for adding SCR to LNB+OFA. Our estimates of incremental costs of SCR are only slightly greater than

LNB+OFA+SCR's average costs, which are reasonable when compared to costs accepted by other states and EPA.

G. Dave Johnston Units 1 and 2

Comment: The Conservation Organizations agree with EPA that reasonable progress controls for NO_x emissions are needed for Dave Johnston Units 1 and 2. EPA correctly found that it was unreasonable for Wyoming to reject cost effective NO_x controls that would improve visibility. EPA proposes to require only LNBs/OFA to achieve a NO_x emission limit of 0.20 lb/MMBtu (30-day rolling average). While we commend EPA for proposing a FIP to reduce NO_x emissions from Dave Johnston Units 1 and 2, we urge EPA to require SCR plus LNBs/OFA to meet a NO_x emission limit of 0.05 lb/MMBtu to achieve reasonable progress. Although EPA concluded that the cost of SCR is not justified by the projected visibility improvement, EPA's analysis unreasonably assumed that SCR would only achieve a NO_x emission rate of 0.12 lb/MMBtu, even though an emission rate of 0.05 lb/MMBtu is readily achievable. Correcting for this error, it appears that SCR at Dave Johnston Units 1 and 2 is very cost effective at $2,001 and $1,987/ton of NO_x removed, respectively. Accordingly, EPA should reconsider requiring SCR at Dave Johnston Units 1 and 2 to meet reasonable progress requirements.

Comment: EPA deviated from the BART Guidelines in the way it estimated the emission rates it used in its modeling analyses. For Dave Johnston Unit 1 and Unit 2, EPA assumed that NO_x emissions would drop from 1,012.5 lb/hr (base case) to 354.375 lb/hr with the addition of LNB+OFA and to 202.5 lb/hr with addition of SCR. However, our review of 2001 – 2003 daily CAMD data found that daily NO_x emissions from Johnston Unit 1 and Unit 2 during 2001- 2003 never exceeded 680 lb/hr. EPA modeling analysis cannot be relied upon to estimate "a

comparatively small incremental visibility improvement" because the emissions modeled are incorrect.

Comment: The EPA conclusion that the addition of SCR is not justified due to the "small incremental visibility improvement" is based upon a flawed visibility analysis that over-values the addition of LNB+OFA and under-values addition of SCR. Furthermore, the degree of visibility improvement is not one of the four statutory factors to be considered under the reasonable progress provisions of the RHR. Incremental visibility improvement is not mentioned anywhere in the reasonable progress provisions or BART Guidelines and EPA cannot create a new criterion for the sole purpose of eliminating a control option that is reasonably cost-effective and would yield a significant visibility improvement.

H. Modeling

Comment: EPA conducted visibility impact modeling from the Wyoming sources for its BART and reasonable progress analyses. Unfortunately, EPA failed to present and/or fully explain the results of its modeling to the public, thus preventing a complete analysis of the benefits of installation of SCR on the Wyoming sources. Accordingly, we request that EPA provide clarification on the following issues: (1) Please clarify whether the spreadsheet provided in response to our FOIA request represents EPA's complete and final modeling results. If not, we request that EPA post all final visibility modeling results to the docket for this rulemaking, including any post-processing of modeling results, and allow the public to submit comment on the modeling results; (2) Please describe and clarify any discrepancies between EPA's proposed rule and its final modeling results; (3) Please explain how EPA calculated the visibility results presented in its proposed rule and provide all data upon which these calculations were made. In addition, we request that EPA re-run its visibility impact modeling for years 2001-2003 and

incorporate all proposed changes to its modeling provided in this comment letter, in the TSD, and in the Expert Report of Howard Gebhart, including, but not limited to utilization of the correct version of the model, correct emission rates, and compressive inclusion of impacted Class I areas. We also request that EPA post its new corrected modeling results to the docket for this rulemaking and provide the public with an adequate opportunity to respond and comment on the new visibility impact modeling.

Comment: Wyoming DEQ evaluated visibility improvements at the three nearest Class I areas—Bridger, Fitzpatrick, and Mount Zirkel Wilderness Areas —and reported the "cumulative 3-year averaged visibility improvement from Post-Control Scenario A across the three Class I areas..." We requested to DEQ that the other eight Class I areas within 300 km of Bridger (Grand Teton National Park, Yellowstone National Park, Rocky Mountain National Park, Washakie Wilderness Area, Teton Wilderness Area, Flat Tops Wilderness Area, Rawah Wilderness Area, and Eagles Nest Wilderness Area) be included in the modeling analysis. However, instead of expanding the modeling analysis, EPA R8 reported results for only the Mount Zirkel Wilderness Area.

Comment: EPA R8 has incorrectly estimated visibility improvement from all NOx control options: WY DEQ evaluated visibility improvements at the four nearest Class I areas and reported the "The cumulative 3-year averaged 98th percentile visibility improvement from Post-Control Scenario A summed across all four Class I areas achieved with Post-Control Scenario B was 0.754 delta deciviews from Unit 3 and 0.405 delta from Unit 4." EPA R8 reported results for only one Class I area. PacifiCorp apparently considered cost/ a useful metric when it made the following statements for its Unit #3 BART proposal: "the incremental cost effectiveness for Scenario 1 compared to the Baseline is reasonable at $0.4 million per day and $14.4 million per

deciview to improve visibility at Badlands NP" and for its Unit #4 BART proposal, "the incremental cost effectiveness for Scenario 1 compared to the Baseline is reasonable at about $800,000 per day and $31.7 million per deciview." PacifiCorp's conclusions are consistent with those reached across the country that the average cost per deciview proposed by either a state or a BART source is $14 - $18 million, with a maximum of almost $50 million per deciview proposed by Colorado at the Martin Drake power plant. Combining the modeling results provided by EPA R8 (which we believe have underestimated SCR benefits) and Wyoming DEQ's cost analyses (which we believe have overestimated SCR costs), addition of SCR at Dave Johnston Unit 3 would improve visibility by 1.16 deciview at a cost of $14 million per deciview at the most-impacted Class I area. Likewise, addition of SCR at Dave Johnston Unit 4 would improve visibility by 0.97 deciview at a cost of $17 million per deciview. Not only is addition of SCR cost-effective (even by PacifiCorp's criteria), it would be even more cost-effective if the issues we have noted above are addressed. By overestimating costs of SCR and underestimating control efficiency and visibility benefits, EPA R8 concluded that combustion controls plus SNCR is BART for Unit 3 and combustion controls are BART for Unit 4, rather than SCR.

Comment: EPA states that a change of 1.0 deciview is perceptible and causes visibility impairment and a change of 0.5 deciviews, although not perceptible, is considered to contribute to visibility impairment. 40 CFR part 51, App. Y, section III.A.1, 70 FR 39120. Sources that do not have an impact of 0.5 deciviews or more may be exempted from BART altogether. 40 CFR part 51, App. Y, section III.A.1. In Wyoming, EPA approved the State's selection of a 0.5 deciview threshold for exempting sources from BART, based on the "relatively limited impact on visibility" from sources under the threshold.

In Colorado, the state established criteria that SNCR would be required as BART only if the cost effectiveness for SNCR was less than $5,000/ton and the visibility improvement was greater than 0.2 deciviews. Although EPA stated it did "not necessarily agree" that these criteria would always be appropriate for determining BART, it proposed to approve all BART determinations the state made using these criteria.

The modeled visibility improvement using the final BART permit levels that would be achieved with SNCR at Laramie River is one-tenth of what EPA contends is humanly perceptible, one-fifth of the level used to exempt Wyoming sources from BART due to relatively limited visibility impact, and one-half the SNCR threshold used by Colorado to establish limits that EPA proposed to approve. This de minimis improvement rebuts EPA's disapproval of the State's NO_x BART for Laramie River, and supports the State's final BART determination. Even if EPA were entitled to disapprove a state's BART determination based on a standard of "unreasonableness," it cannot be unreasonable for the state to fail to require additional SNCR controls that would offer tiny and imperceptible visibility improvements at enormous cost. However one characterizes the facts, millions of dollars would be spent every year to install and operate SNCR.

Moreover, the modeled visibility improvements for the Jim Bridger units resulting from the requirement to install SCR (as BART under the EPA regional haze FIP and as part of the LTS under the Wyoming Regional Haze SIP) are too small to justify the overall expense of requiring these controls. Spending hundreds of millions of dollars for imperceptible visibility changes does not meet the intent, or purpose, of the regional haze program.

Comment: EPA has improperly failed to account for the very few number of days of visibility impacts or the seasonal timing of when those few impacts occur. EPA is proposing to accelerate

the timeline for installing the Jim Bridger Unit 1 SCR from 2022 to 2017 and the Jim Bridger Unit 2 SCR from 2021 to 2017. Even when relying on the CALPUFF models that significantly overestimate the visibility impacts, EPA's proposal will only result in imperceptible visibility improvements for only eleven days a year until the SCRs would have been installed as required by the State's plan.

In a similar manner, the days of impacts need to be considered when evaluating the additional controls that EPA proposes to install on Wyodak and Dave Johnston Unit 3. EPA's modeling of Wyodak indicates that installing and incurring the additional costs for the SNCR will not only result in an imperceptible 0.15 deciview of visibility improvement, but the days per year the unit is modeled to impact the park by greater than 0.5 deciviews will be reduced from sixteen to twelve days; a benefit of only four days per year.

EPA's modeling of Dave Johnston Unit 3 indicates that installing and incurring the additional costs for SNCR will result not only in an imperceptible 0.17 deciview improvement, but the days per year the unit is modeled to impact the park by greater than 0.5 deciviews will only be reduced from nine to six days; a benefit of only three days per year. None of these imperceptible modeled visibility improvements occurring during only a few days a year justify the tremendous cost of controls required under EPA's regional haze FIP.

VII. Statutory and Executive Order Reviews

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

This action is not a "significant regulatory action" under the terms of Executive Order 12866 (58 FR 51735, October 4, 1993) and is therefore not subject to review under Executive Orders 12866 and 13563 (76 FR 3821, January 21, 2011). As discussed in section C below, the

final FIP applies to only three facilities and five BART units.[241] It is therefore not a rule of general applicability.

B. Paperwork Reduction Act

This action does not impose an information collection burden under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. Burden is defined at 5 CFR 1320.3(b). Because the final FIP applies to just three facilities, the Paperwork Reduction Act does not apply. See 5 CFR 1320(c).

C. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of today's final rule on small entities, small entity is defined as: (1) a small business as defined by the Small Business Administration's (SBA) regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of today's final rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small

[241] Dave Johnston Unit 3, Laramie River units 1, 2, and 3, and the unit at Wyodak.

entities. The Regional Haze FIP that EPA is finalizing for purposes of the regional haze program consists of imposing federal controls to meet the BART requirement for NO_x emissions on five specific BART units at three facilities in Wyoming The net result of this FIP action is that EPA is finalizing direct emission controls on selected units at only three sources. The sources in question are each large electric generating plants that are not owned by small entities, and therefore are not small entities. The final partial approval of the SIP merely approves state law as meeting Federal requirements and does not impose additional requirements. *See, e.g., Mid-Tex Electric Cooperative, Inc. v. FERC*, 773 F.2d 327 (D.C. Cir. 1985)(hereinafter *Mid-Tex*).

D. Unfunded Mandates Reform Act (UMRA)

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104-4, establishes requirements for federal agencies to assess the effects of their regulatory actions on State, local, and Tribal governments and the private sector. Under section 202 of UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for final rules with "Federal mandates" that may result in expenditures to State, local, and Tribal governments, in the aggregate, or to the private sector, of $100 million or more (adjusted for inflation) in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 of UMRA do not apply when they are inconsistent with applicable law. Moreover, section 205 of UMRA allows EPA to adopt an alternative other than the least costly, most cost-effective, or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely

affect small governments, including Tribal governments, it must have developed under section 203 of UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory actions with significant federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

Under Title II of UMRA, EPA has determined that this final rule does not contain a federal mandate that may result in expenditures that exceed the inflation-adjusted UMRA threshold of $100 million ($150 in 2013 when adjusted for inflation) by State, local, or Tribal governments or the private sector in any one year. The private sector expenditures that will result from the FIP, including BART controls for Basin Electric Laramie River Station Units 1-3 ($67,128,584 per year)[242], and PacifiCorp Dave Johnston Unit 3 ($11,680,144 per year)[243] and Wyodak ($15,073,502)[244], are $93,882,230 per year. This calculation assumes that PacifiCorp would choose to install SCR on Dave Johnston Unit 3, and not to otherwise voluntarily retire the unit, an option which the FIP allows. Additionally, we do not foresee significant costs (if any) for state and local governments. Thus, because the annual expenditures associated with the FIP are less than the inflation-adjusted threshold of $150 million in any one year, this rule is not subject to the requirements of sections 202 or 205 of UMRA. This rule is also not subject to the

[242] Andover Technology Partners, "Cost of NOx Controls on Wyoming EGUs", October 28, 2013; Wyoming EGU BART and Reasonable Progress Costs – 10/2013.
[243] Andover Technology Partners, "Cost of NOx Controls on Wyoming EGUs", October 28, 2013; Wyoming EGU BART and Reasonable Progress Costs – 10/2013.
[244] Andover Technology Partners, "Cost of NOx Controls on Wyoming EGUs", October 28, 2013; Wyoming EGU BART and Reasonable Progress Costs – 10/2013.

requirements of section 203 of UMRA because it contains no regulatory requirements that might significantly or uniquely affect small governments.

E. Executive Order 13132: Federalism

Executive Order 13132, *Federalism*, (64 FR 43255, August 10, 1999) revokes and replaces Executive Orders 12612 (Federalism) and 12875 (Enhancing the Intergovernmental Partnership). Executive Order 13132 requires EPA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" is defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government." Under Executive Order 13132, EPA may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the federal government provides the funds necessary to pay the direct compliance costs incurred by state and local governments, or EPA consults with state and local officials early in the process of developing the final regulation. EPA also may not issue a regulation that has federalism implications and that preempts state law unless the Agency consults with state and local officials early in the process of developing the final regulation.

This rule will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132, because it merely addresses the State not fully meeting its obligation under the CAA to include in its SIP provisions to meet the visibility requirements of Part C of Title I of the CAA and to prohibit

emissions from interfering with other states measures to protect visibility. Thus, Executive Order 13132 does not apply to this action.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

Executive Order 13175, entitled *Consultation and Coordination with Indian Tribal Governments* (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure "meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications." This final rule does not have tribal implications, as specified in Executive Order 13175. It will not have substantial direct effects on tribal governments. Thus, Executive Order 13175 does not apply to this rule.

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

EPA interprets EO 13045 (62 FR 19885, April 23, 1997) as applying only to those regulatory actions that concern health or safety risks, such that the analysis required under section 5-501 of the EO has the potential to influence the regulation. This action is not subject to EO 13045 because it implements specific standards established by Congress in statutes. However, to the extent this final rule will limit emissions of NO_x and PM, the rule will have a beneficial effect on children's health by reducing air pollution.

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

This action is not subject to Executive Order 13211 (66 FR 28355 (May 22, 2001)), because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 ("NTTAA"), Public Law No. 104-113, 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This final rulemaking does not involve technical standards. Therefore, EPA is not considering the use of any voluntary consensus standards.

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

Executive Order 12898 (59 FR 7629, February 16, 1994), establishes federal executive policy on environmental justice. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

We have determined that this final action will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it increases the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population. This final rule limits emissions of NO_x from

three facilities and five BART units in Wyoming. The partial approval of the SIP merely approves state law as meeting Federal requirements and imposes no additional requirements beyond those imposed by state law.

K. Congressional Review Act

The Congressional Review Act, 5 U.S.C 801 et seq., as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. Section 804 exempts from section 801 the following types of rules (1) rules of particular applicability; (2) rules relating to agency management or personnel; and (3) rules of agency organization, procedure, or practice that do not substantially affect the rights or obligations of non-agency parties. 5 U.S 804(3). EPA is not required to submit a rule report regarding today's action under section 801 because this is a rule of particular applicability. This rule finalizes a FIP for three sources.

L. Judicial Review

Under section 307(b)(1) of the CAA, petitions for judicial review of this action must be filed in the United States Court of Appeals for the appropriate circuit by [insert date 60 days from the date of publication in the Federal Register]. Pursuant to CAA section 307(d)(1)(B), this action is subject to the requirements of CAA section 307(d) as it promulgates a FIP under CAA section 110(c). Filing a petition for reconsideration by the Administrator of this final rule does not affect the finality of this action for the purposes of judicial review nor does it extend the time within which a petition for judicial review may be filed, and shall not postpone the effectiveness

of such rule or action. This action may not be challenged later in proceedings to enforce its requirements. See CAA section 307(b)(2).

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides, Volatile organic compounds.

Dated: January 10, 2014

Gina McCarthy
Administrator
U.S. EPA

40 CFR part 52 is amended to read as follows:

PART 52 APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS

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

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

Subpart ZZ – Wyoming

2. Section 52.2620, in the table in paragraph (e) is amended by adding an entry for "XXIII. Wyoming State Implementation Plan for Regional Haze for 309(g)" at the end of the table.

§ 52.2620 Identification of plan.

* * * * *

(e) * * *

Name of nonregulatory SIP provision	Applicable geographic or nonattainment area	State submittal date/adopted date	EPA approval date and citation[3]	Explanations
* * * * * * *				
XXIII. Wyoming State Implementation Plan for Regional Haze for 309(g)	Statewide	Submitted: 1/12/2011	[Insert **Federal Register** date of publication], [Insert **Federal Register** page number where the document begins.]	Excluding portions of the following: Chapter 6.4, Chapter 6.5.5, Chapter 6.5.7, Chapter 6.5.8, and Chapter 7.5. We are excluding portions of these chapters because EPA disapproved: 1) the NOx BART determinations for: 1) Laramie River Units 1-3, Dave Johnston Unit 3, and Wyodak Unit 1; 2) the State's monitoring, recordkeeping, and reporting requirements for BART units; 3) the State's reasonable progress goals.

3. Add § 52.2636 to subpart ZZ to read as follows:

[3] In order to determine the EPA effective date for a specific provision listed in this table, consult the Federal Register notice cited in this column for the particular provision

§52.2636 Implementation plan for regional haze.

(a) Applicability. (1) This section applies to each owner and operator of the following emissions units in the State of Wyoming for which EPA approved the State's BART determination:

(i) FMC Westvaco Trona Plant Units NS-1A and NS-1B (PM and NO_x);

(ii) TATA Chemicals Partners (previously General Chemical) Boilers C and D (PM and NO_x);

(iii) Basin Electric Power Cooperative Laramie River Station Units 1, 2, and 3 (PM);

(iv) PacifiCorp Dave Johnston Power Plant Unit 3 (PM);

(v) PacifiCorp Dave Johnston Power Plant Unit 4 (PM and NO_x);

(vi) PacifiCorp Jim Bridger Power Plant Units 1, 2, 3, and 4 (PM and NO_x);

(vii) PacifiCorp Naughton Power Plant Units 1, 2, and 3 (PM and NO_x); and

(viii) PacifiCorp Wyodak Power Plant Unit 1 (PM).

(2) This section also applies to each owner and operator of the following emissions units in the State of Wyoming for which EPA disapproved the State's BART determination and issued a NO_x BART Federal Implementation Plan:

(i) Basin Electric Power Cooperative Laramie River Station Units 1, 2, and 3;

(ii) PacifiCorp Dave Johnston Unit 3; and

(iii) PacifiCorp Wyodak Power Plant Unit 1.

(b) Definitions. Terms not defined below shall have the meaning given them in the Clean Air Act or EPA's regulations implementing the Clean Air Act. For purposes of this section:

(1) BART means Best Available Retrofit Technology.

(2) BART unit means any unit subject to a Regional Haze emission limit in Table 1 and Table 2 of this section.

(3) CAM means Compliance Assurance Monitoring as required by 40 CFR part 64.

(4) Continuous emission monitoring system or CEMS means the equipment required by this section to sample, analyze, measure, and provide, by means of readings recorded at least once every 15 minutes (using an automated data acquisition and handling system (DAHS)), a permanent record of NO_x emissions, diluent, or stack gas volumetric flow rate.

(5) FIP means Federal Implementation Plan.

(6) The term lb/hr means pounds per hour.

(7) The term lb/MMBtu means pounds per million British thermal units of heat input to the fuel-burning unit.

(8) NO_x means nitrogen oxides.

(9) Operating day means a 24-hour period between 12 midnight and the following midnight during which any fuel is combusted at any time in the BART unit. It is not necessary for fuel to be combusted for the entire 24-hour period.

(10) The owner/operator means any person who owns or who operates, controls, or supervises a unit identified in paragraph (a) of this section.

(11) PM means filterable total particulate matter.

(12) Unit means any of the units identified in paragraph (a) of this section.

(c) Emissions limitations. (1) The owners/operators of emissions units subject to this section shall not emit, or cause to be emitted, PM or NO_x in excess of the following limitations:

Table 1 to § 52.2636
Emission limits for BART units for which
EPA approved the State's BART and Reasonable Progress determinations

Source Name/ BART Unit	PM Emission Limits - lb/MMBtu	NO_x Emission Limits - lb/MMBtu (30-day rolling average)
FMC Westvaco Trona Plant/Unit NS-1A	0.05	0.35
FMC Westvaco Trona Plant/Unit NS-1B	0.05	0.35
TATA Chemicals Partners (General Chemical) Green River Trona Plant/ Boiler C	0.09	0.28
TATA Chemicals Partners (General Chemical) Green River Trona Plant/ Boiler D	0.09	0.28
Basin Electric Power Cooperative Laramie River Station/Unit 1	0.03	N/A
Basin Electric Power Cooperative Laramie River Station/Unit 2	0.03	N/A
Basin Electric Power Cooperative Laramie River Station/Unit 3	0.03	N/A
PacifiCorp Dave Johnston Power Plant/Unit 3	0.015	N/A
PacifiCorp Dave Johnston Power Plant/Unit 4	0.015	0.15
PacifiCorp Jim Bridger Power Plant/ Unit 1 [1]	0.03	0.26/0.07
PacifiCorp Jim Bridger Power Plant/ Unit 2 [1]	0.03	0.26/0.07
PacifiCorp Jim Bridger Power Plant/ Unit 3 [1]	0.03	0.26/0.07
PacifiCorp Jim Bridger Power Plant/ Unit 4 [1]	0.03	0.26/0.07
PacifiCorp Naughton Power Plant/ Unit 1	0.04	0.26

PacifiCorp Naughton Power Plant/ Unit 2	0.04	0.26
PacifiCorp Naughton Power Plant/ Unit 3	0.015	0.07
PacifiCorp Wyodak Power Plant/ Unit 1	0.015	N/A

[1] The owners and operators of PacifiCorp Jim Bridger Units 1, 2, 3, and 4 shall comply with the NO_x emission limit for BART of 0.26 lb/MMBtu and PM emission limit for BART of 0.03 lb/MMBtu and other requirements of this section by March 4, 2019. The owners and operators of PacifiCorp Jim Bridger Units 1, 2, 3 and 4 shall comply with the NO_x emission limit for reasonable progress of 0.07 lb/MMBtu by: December 31, 2022 for Unit 1, December 31, 2021 for Unit 2, December 31, 2015, for Unit 3, and December 31, 2016, for Unit 4.

Table 2 to § 52.2636
Emission limits for BART units for which
EPA disapproved the State's BART determination
and implemented a FIP

Source Name/ BART Unit	**NO_x Emission Limit - lb/MMBtu (30-day rolling average)**
Basin Electric Power Cooperative Laramie River Station/Unit 1	0.07
Basin Electric Power Cooperative Laramie River Station/Unit 2	0.07
Basin Electric Power Cooperative Laramie River Station/Unit 3	0.07
PacifiCorp Dave Johnston Unit 3	0.07 (or 0.28 and shut-down by December 31, 2027)
PacifiCorp Wyodak Power Plant/ Unit 1	0.07

(2) These emission limitations shall apply at all times, including startups, shutdowns, emergencies, and malfunctions.

(d) Compliance date. (1) The owners and operators of PacifiCorp Jim Bridger Units 1, 2, 3, and 4 shall comply with the NO_x emission limit of 0.26 lb/MMBtu and PM emission limit of 0.03 lb/MMBtu and other requirements of this section by March 4, 2019. The owners and operators of PacifiCorp Jim Bridger Units 1, 2, 3 and 4 shall comply with the NO_x emission limit of 0.07 lb/MMBtu by: December 31, 2022 for Unit 1, December 31, 2021 for Unit 2, December 31, 2015, for Unit 3, and December 31, 2016, for Unit 4.

(2) The owners and operators of the other BART sources subject to this section shall comply with the emissions limitations and other requirements of this section by March 4, 2019.

(3) Compliance alternatives for PacifiCorp Dave Johnston Unit 3. (i) The owners and operators of PacifiCorp Dave Johnston Unit 3 will meet a NO_x emission limit of 0.07 lb/MMBtu (30-day rolling average) by March 4, 2019; or

(ii) Alternatively, the owners and operators of PacifiCorp Dave Johnston Unit 3 will permanently cease operation of this unit on or before December 31, 2027.

(e) Compliance determinations for NO_x. (1) For all BART units other than Trona Plant units:

(i) CEMS. At all times after the earliest compliance date specified in paragraph (d) of this section, the owner/operator of each unit shall maintain, calibrate, and operate a CEMS, in full compliance with the requirements found at 40 CFR part 75, to accurately measure NO_x, diluent, and stack gas volumetric flow rate from each unit. The CEMS shall be used to determine compliance with the emission limitations in paragraph (c) of this section for each unit.

(ii) Method. (A) For any hour in which fuel is combusted in a unit, the owner/operator of each unit shall calculate the hourly average NO_x emission rate in lb/MMBtu at the CEMS in accordance with the requirements of 40 CFR part 75. At the end of each operating day, the owner/operator shall calculate and record a new 30-day rolling average emission rate in

lb/MMBtu from the arithmetic average of all valid hourly emission rates from the CEMS for the current operating day and the previous 29 successive operating days.

(B) An hourly average NO_x emission rate in lb/MMBtu is valid only if the minimum number of data points, as specified in 40 CFR part 75, is acquired by both the pollutant concentration monitor (NO_x) and the diluent monitor (O_2 or CO_2).

(C) Data reported to meet the requirements of this section shall not include data substituted using the missing data substitution procedures of subpart D of 40 CFR part 75, nor shall the data have been bias adjusted according to the procedures of 40 CFR part 75.

(2) For all Trona Plant BART units:

(i) CEMS. At all times after the compliance date specified in paragraph (d) of this section, the owner/operator of each unit shall maintain, calibrate, and operate a CEMS, in full compliance with the requirements found at 40 CFR part 60, to accurately measure NO_x, diluent, and stack gas volumetric flow rate from each unit, including the CEMS quality assurance requirements in appendix F of 40 CFR part 60. The CEMS shall be used to determine compliance with the emission limitations in paragraph (c) of this section for each unit.

(ii) Method. (A) For any hour in which fuel is combusted in a unit, the owner/operator of each unit shall calculate the hourly average NO_x emission rate in lb/MMBtu at the CEMS in accordance with the requirements of 40 CFR part 60. At the end of each operating day, the owner/operator shall calculate and record a new 30-day rolling average emission rate in lb/MMBtu from the arithmetic average of all valid hourly emission rates from the CEMS for the current operating day and the previous 29 successive operating days.

(B) An hourly average NO_x emission rate in lb/MMBtu is valid only if the minimum number of data points, as specified in 40 CFR part 60, is acquired by both the pollutant concentration monitor (NO_x) and the diluent monitor (O_2 or CO_2).

(f) Compliance determinations for particulate matter. Compliance with the particulate matter emission limit for each BART unit shall be determined from annual performance stack tests. Within 60 days of the compliance deadline specified in paragraph (d) of this section, and on at least an annual basis thereafter, the owner/operator of each unit shall conduct a stack test on each unit to measure particulate emissions using EPA Method 5, 5B, 5D, or 17, as appropriate, in 40 CFR part 60, Appendix A. A test shall consist of three runs, with each run at least 120 minutes in duration and each run collecting a minimum sample of 60 dry standard cubic feet. Results shall be reported in lb/MMBtu. In addition to annual stack tests, the owner/operator shall monitor particulate emissions for compliance with the BART emission limits in accordance with the applicable Compliance Assurance Monitoring (CAM) plan developed and approved by the State in accordance with 40 CFR part 64.

(g) Recordkeeping. The owner/operator shall maintain the following records for at least five years:

(1) All CEMS data, including the date, place, and time of sampling or measurement; parameters sampled or measured; and results.

(2) Records of quality assurance and quality control activities for emissions measuring systems including, but not limited to, any records required by 40 CFR part 75. Or, for Trona Plant units, records of quality assurance and quality control activities for emissions measuring systems including, but not limited to appendix F of 40 CFR part 60.

(3) Records of all major maintenance activities conducted on emission units, air pollution control equipment, and CEMS.

(4) Any other CEMS records required by 40 CFR part 75. Or, for Trona Plant units, any other CEMs records required by 40 CFR part 60.

(5) Records of all particulate stack test results.

(6) All data collected pursuant to the CAM plan.

(h) Reporting. All reports under this section shall be submitted to the Director, Office of Enforcement, Compliance and Environmental Justice, U.S. Environmental Protection Agency, Region 8, Mail Code 8ENF-AT, 1595 Wynkoop Street, Denver, Colorado 80202-1129.

(1) The owner/operator of each unit shall submit quarterly excess emissions reports for NO_x BART units no later than the 30th day following the end of each calendar quarter. Excess emissions means emissions that exceed the emissions limits specified in paragraph (c) of this section. The reports shall include the magnitude, date(s), and duration of each period of excess emissions, specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the unit, the nature and cause of any malfunction (if known), and the corrective action taken or preventative measures adopted.

(2) The owner/operator of each unit shall submit quarterly CEMS performance reports, to include dates and duration of each period during which the CEMS was inoperative (except for zero and span adjustments and calibration checks), reason(s) why the CEMS was inoperative and steps taken to prevent recurrence, and any CEMS repairs or adjustments. The owner/operator of each unit shall also submit results of any CEMS performance tests required by 40 CFR part 75. Or, for Trona Plant units, the owner/operator of each unit shall also submit results of any CEMs

performance test required appendix F of 40 CFR part 60 (Relative Accuracy Test Audits, Relative Accuracy Audits, and Cylinder Gas Audits).

(3) When no excess emissions have occurred or the CEMS has not been inoperative, repaired, or adjusted during the reporting period, such information shall be stated in the quarterly reports required by paragraphs (h)(1) and (2) of this section.

(4) The owner/operator of each unit shall submit results of any particulate matter stack tests conducted for demonstrating compliance with the particulate matter BART limits in paragraphs (c) of this section, within 60 calendar days after completion of the test.

(5) The owner/operator of each unit shall submit semi-annual reports of any excursions under the approved CAM plan in accordance with the schedule specified in the source's title V permit.

(i) Notifications. (1) The owner/operator shall promptly submit notification of commencement of construction of any equipment which is being constructed to comply with the NO_x emission limits in paragraph (c) of this section.

(2) The owner/operator shall promptly submit semi-annual progress reports on construction of any such equipment.

(3) The owner/operator shall promptly submit notification of initial startup of any such equipment.

(j) Equipment operation. At all times, the owner/operator shall maintain each unit, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.

(k) Credible evidence. Nothing in this section shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in

compliance with requirements of this section if the appropriate performance or compliance test procedures or method had been performed.

4. Add § 52.2637 to subpart ZZ to read as follows:

§52.2637 Federal implementation plan for reasonable attributable visibility impairment long-term strategy.

As required by 40 CFR 41.306(c), EPA will ensure that the review of the State's reasonably attributable visibility impairment long-term strategy is coordinated with the regional haze long-term strategy under 40 CFR 51.308(g). EPA's review will be in accordance with the requirements of 40 CFR 51.306(c).

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