IN THE UNITED STATES COURT OF APPEALS
FOR THE TENTH CIRCUIT

STATE OF UTAH, on behalf of the Utah Department of Environmental Quality, Division of Air Quality, Petitioner, v. UNITED STATES ENVIRONMENTAL PROTECTION AGENCY and GINA McCARTHY, Administrator, United States Environmental Protection Agency, Respondents. ---------- CARBON COUNTY, UTAH et al., Petitioners-Intervenors, and HEAL UTAH et al., Respondents-Intervenors.	Case No. 16-9541
PACIFICORP, Petitioner, v. UNITED STATES ENVIRONMENTAL PROTECTION AGENCY et al., Respondents. ----------	Case No. 16-9542

CARBON COUNTY, UTAH et al., Petitioners-Intervenors, and HEAL UTAH et al., Respondents-Intervenors.	
UTAH ASSOCIATED MUNICIPAL POWER SYSTEMS, Petitioner, v. UNITED STATES ENVIRONMENTAL PROTECTION AGENCY et al., Respondents. ---------- CARBON COUNTY, UTAH et al., Petitioners-Intervenors, and HEAL UTAH et al., Respondents-Intervenors.	Case No. 16-9543
DESERET GENERATION & TRANSMISSION CO-OPERATIVE, Petitioner, v.	Case No. 16-9545

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY et al.,

Respondents.

CARBON COUNTY, UTAH et al.,

Petitioners-Intervenors,

and

HEAL UTAH et al.,

Respondents-Intervenors.

PACIFICORP'S MOTION FOR STAY

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RULE 26.1 CORPORATE DISCLOSURE STATEMENT

Pursuant to Rule 26.1 of the Federal Rules of Appellate Procedure, PacifiCorp submits the following statement:

PacifiCorp's common stock is 100% owned by PPW Holdings, LLC, a Delaware limited liability company, which is, in turn, wholly owned by Berkshire Hathaway Energy Company. Berkshire Hathaway Energy Company is a majority-owned subsidiary of Berkshire Hathaway Inc., a publicly held corporation. No publicly held company directly owns ten percent (10%) or more of PacifiCorp's common stock.

DATED this 28th day of October, 2016.

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

BART	Best Available Retrofit Technology
CAA	Clean Air Act
Class I Areas	Certain identified national parks and wilderness areas
EGU	Electrical Generating Unit
EPA	Environmental Protection Agency
FIP	Federal Implementation Plan
LNB/SOFA	Low-NOx Burners with Separated Overfire Air
NO_x	Nitrogen Oxide
PM	Particulate Matter
SCR	Selective Catalytic Reduction
SIP	State Implementation Plan
SO_2	Sulphur Dioxide

INTRODUCTION

Respondent Environmental Protection Agency ("EPA") illegally ordered the installation of more than $700 million[1] in pollution control equipment (known as Selective Catalytic Reduction equipment, or "SCR") at PacifiCorp's Hunter (Units 1 and 2) and Huntington (Units 1 and 2) coal-fired power plants ("Utah BART Units"). EPA's order takes the form of a federal implementation plan ("FIP")[2] that unlawfully re-defines the Clean Air Act's ("CAA") regional haze program as applied to the Utah BART Units, including the best available retrofit technology ("BART") and BART Alternative requirements. Before EPA issued the FIP, the State of Utah submitted to EPA for review—as required under the CAA—a state implementation plan ("SIP") that included a lawful BART Alternative under the CAA. The Utah SIP BART Alternative provides better visibility improvements at

[1] EPA claims total capital costs of $517.4 million for installation of SCRs at the Utah BART Units. 81 Fed. Reg. at 43903. PacifiCorp's professionally estimated costs exceed $700 million. *See* PacifiCorp Comments (Exhibit A), at 1-2 and Attachment 5.

[2] The final rule was published on July 5, 2016, and is titled "Approval, Disapproval and Promulgation of Air Quality Implementation Plans; Partial Approval and Partial Disapproval of Air Quality Implementation Plan; Utah; Revisions to Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze," 81 Fed. Reg. 43894 (July 5, 2016) ("Final Rule") (Exhibit B). References herein to the Final Rule refer to both EPA's issuance of the FIP and disapproval of the SIP.

a lower cost without the negative economic and environmental consequences of EPA's FIP. Yet, EPA rejected Utah's BART Alternative and issued the FIP.

EPA's FIP will require PacifiCorp to incur significant expenses in the near future, which cannot be recouped from EPA. Therefore, PacifiCorp seeks a stay of part of EPA's FIP, pursuant to Federal Rule of Appellate Procedure 18 and 5 U.S.C. §705, pending judicial review. To have any practical effect, PacifiCorp requests that the stay result in a day-for-day extension of the compliance deadline identified in the FIP.

A stay is appropriate because: (1) EPA's illegal FIP will have an immediate and irreparable impact on PacifiCorp due to the cost and impact of the four SCR projects at the Utah BART Units, and PacifiCorp has no monetary recourse against EPA if the FIP is reversed; (2) PacifiCorp is likely to prevail on the merits because EPA illegally refused to consider the comparative costs and environmental impacts between Utah's BART Alternative and SCR controls; EPA illegally refused to correctly account for control equipment already installed on the Utah BART Units; and EPA ignored, and acted contrary to, evidence and information before the agency; (3) the public interest and balance of harms favor a stay due to Utah's and PacifiCorp's significant steps towards meeting Congress' 2064 natural visibility under the CAA's regional haze program. This court granted a stay in

similar circumstances for a regional haze FIP in Wyoming. *See* Stay Order, *Wyoming v. EPA*, No. 14-9529 (10th Cir. Sept. 9, 2014).

EPA and Respondent-Intervenors have indicated that they oppose PacifiCorp's motion to stay. All other parties to the appeal support the motion to stay.

REQUEST FOR STAY BEFORE AGENCY

Prior to filing this Motion, PacifiCorp submitted to EPA a petition for reconsideration ("Petition for Reconsideration") and request for an administrative stay of the FIP.[3] Although the Final Rule is fatally defective, EPA has taken no action on PacifiCorp's request for stay.

STATEMENT OF JURISDICTION

EPA had jurisdiction to review Utah's SIP, and to issue the FIP, under 42 U.S.C. §7410. This Court has jurisdiction to review EPA's decisions on the Final Rule (including disapproval of the SIP and issuance of the FIP) under 42 U.S.C. §7607(b)(1), and this Court has authority to grant a stay of EPA's FIP under 5 U.S.C. §705.

[3] *See* PacifiCorp's Request for Reconsideration and Request for Administrative Stay of EPA's Final Rule ("Admin. Stay Request") (Sept. 2, 2016) (Exhibit C).

BACKGROUND

I. CAA and Regional Haze Program

Under the CAA's regional haze program, Congress empowered states to create plans, known as SIPs, to address regional haze at national parks and wilderness areas ("Class I Areas"), with the goal of preserving and restoring natural visibility background conditions by the year 2064. 42 U.S.C. §§7491(a)(1); 40 C.F.R. § 51.308(d)(i)(B). These SIPs are based on each state's unique analyses of the appropriate environmental controls and emission limits (including BART controls and limits) necessary to make statutorily-defined "reasonable progress" within the applicable Class I Areas. *See* 42 U.S.C. §7491(g)(1). After states complete an extensive rule-making process to create the SIPs, they submit their SIPs to EPA for review.

Congress gave EPA authority to create nationwide regulations for the regional haze program and to review the SIPs for compliance with all "applicable requirements." 42 U.S.C. §§7491(b), 7410(k)(3). And if the SIPs do meet the "applicable requirements," EPA is required by law to approve the SIP, even if EPA would prefer a different plan. *See* 42 U.S.C. §7410(k)(3); *see also Train v. Nat. Res. Def. Council, Inc.*, 421 U.S. 60, 79 (1975).

EPA promulgated the current regional haze regulations in 2005 ("RH Rules"). 70 Fed. Reg. 39104 (July 6, 2005), codified at 40 C.F.R. Part 51,

subpart P. The RH Rules provide two pathways to address the CAA's BART requirements: (1) a case-by-case BART determination under the provisions of 40 C.F.R. §51.308(e)(l) (analyzing the five statutory factors)[4] or (2) an alternative to BART under the provisions of 40 C.F.R. §51.308(e)(2), which must achieve greater statutorily-defined "reasonable progress." States have the discretion to pursue either pathway. *Id.* Here, Utah chose a BART Alternative, but EPA rejected this approach and substituted its own five-factor BART analyses.

II. PacifiCorp's Operations in Utah

PacifiCorp, which operates in Utah under the business name Rocky Mountain Power, supplies electricity to more than 1.8 million residential and business customers in the state of Utah and five other western states. PacifiCorp owns, in majority or whole, and operates all four Utah BART Units.[5] The Utah BART Units are the only sources in Utah subject to the CAA's BART requirements. PacifiCorp also owns and operates a third unit at the Hunter plant that is not BART-eligible. It also owns the former Carbon plant, which also was not BART-eligible and which closed in 2015. As allowed by the CAA, the State of Utah required emission reductions in its SIP at Hunter Unit 3 and the Carbon plant as part of Utah's BART Alternative, which also included nitrogen oxide

[4] EPA issued the "BART Guidelines" in Appendix Y of 40 C.F.R. Part 51 to assist with evaluating and analyzing the five BART factors.

("NO_x") reductions at the Utah BART Units. *See* Declaration of Chad Teply ("Teply Decl.", Exhibit D) ¶¶ 5-9, 11-13, 17.

III. NO_x BART History of the Utah BART Units

The State of Utah submitted timely SIPs in 2003 and 2008 to EPA, but EPA repeatedly failed to approve or disapprove these SIPs within the deadlines established in the CAA. *See* 42 U.S.C. §7410(k)(1)(B) and (k)(2). The State of Utah's 2008 SIP included BART determinations for NO_x for the Utah BART Units, and became state law in Utah pursuant to the CAA-required state rulemaking process. Hence, PacifiCorp was legally required to install the 2008 SIP-required NO_x BART controls—low NO_x burners and separated over-fire air ("LNB/SOFA")—on the Utah BART Units, which it did from 2006-2014. *See* Teply Decl. ¶¶ 11-13. These 2008 SIP NO_x Controls reduced NO_x emissions at the Utah BART Units by approximately 11,000 tons annually, at a capital cost of approximately $40 million. *Id.* [6]

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[5] Deseret Generation & Transmission Cooperative, Utah Associated Municipal Power Systems, and Utah Municipal Power Agency are co-owners of, and receive a portion of the electrical output from, affected units at the Hunter power plant. These entities and their customers also will be impacted by the Final Rule. The Huntington power plant is wholly owned and operated by PacifiCorp. All of the co-owners have either intervened or filed independent petitions for review.

[6] The 2008 SIP also required the installation of equipment to reduce particulate matter ("PM") and SO_2 emissions. PacifiCorp installed this equipment at the Utah BART Units during the same 2006 – 2014 timeframe at the total cost of

Utah submitted additional SIP revisions focused on sulfur dioxide ("SO_2") emission issues to EPA in 2010 and 2011. The 2010 revisions clarified the NO_x BART determinations without making substantive changes, and the 2011 submittal contained nothing new related to NO_x BART. In the interim, EPA settled a lawsuit that required EPA to take action on the 2008 SIP by April 30, 2012. *Wildearth Guardians v. EPA*, No. 10-01218 (D. Colo. Jan. 31, 2011) (order entering consent decree). Acting to meet this deadline, EPA disapproved the part of Utah's 2008 SIP containing the BART determinations for NO_x and PM, while approving an SO_2 BART Alternative (the SO_2 backstop trading program). 77 Fed. Reg. 74355 (Dec. 14, 2012). EPA did not issue a FIP for NO_x and PM BART in 2012, but instead encouraged Utah to propose a different solution in the form of a new SIP revision. *See* Teply Decl. ¶ 15.

Utah did exactly as requested, working collaboratively with EPA to submit a revised SIP in 2015. Utah's revised 2015 SIP included extensive analyses, using nine different "reasonable progress" metrics, eight of which supported a BART Alternative for NO_x that would achieve greater statutorily-defined "reasonable progress" than the SCR BART option.

However, despite EPA's involvement with Utah in development of the NO_x BART Alternative, EPA changed course and issued a contradictory, bifurcated

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approximately $515 million, resulting in the reduction of approximately 12,700 annual tons of SO_2 emissions. *See* Teply Decl. ¶14.

proposed rule that simultaneously proposed approving the BART Alternative, but also proposed disapproving the BART Alternative based on the exact same information. 81 Fed. Reg. 2004 (Jan. 14, 2016) ("Proposed Rule"). In one part of the Proposed Rule, EPA proposed to determine that Utah committed errors in its weight-of-evidence analysis for the BART Alternative that EPA had never before identified, while the other part of the Proposed Rule agreed with Utah's weight-of-evidence determination.[7] *See generally id.*

After a public comment period in which PacifiCorp, Utah, and others provided voluminous evidence to support the BART Alternative, while seriously questioning the lawfulness of EPA's proposed FIP, EPA nonetheless issued the FIP and rejected Utah's NO_x BART Alternative portion of the SIP. *See, e.g.*, 81 Fed. Reg. 43894, 43909, 43911-12. In so doing, EPA rejected as irrelevant or improper numerous important metrics that Utah had painstakingly analyzed and relied on in support of the BART Alternative. EPA myopically focused instead on a single metric evaluated by Utah to issue the FIP, despite EPA's own estimates that its FIP (SCR at all four units) would result in an average incremental visibility improvement (over the BART Alternative) of a miniscule 0.14 deciviews

[7] EPA collaborated with the State of Utah throughout the development of the BART Alternative for NO_x and submitted generally-supportive comments (with no indication of any disagreement about the "weight of evidence" test or with any metric used by Utah) during the state rulemaking phase. *See* Utah's Motion for Stay, Addendum 9. EPA's dramatic course change remains unexplained.

(approximately one-seventh of what is discernible to the human eye) **at a cost of over half-a-billion dollars more** than the BART Alternative. 81 Fed. Reg. at 43898-99. To reach this shaky conclusion, EPA illegally ignored or discounted the other eight separate metrics that Utah determined, on balance, would lead to greater "reasonable progress" under the BART Alternative. A stay should be granted until this Court can order EPA to correct its actions.

STANDARD OF REVIEW

The Tenth Circuit applies the preliminary injunction standard in deciding motions to stay agency action. *See generally Assoc. Sec. Corp. v. SEC*, 283 F.2d 773, 774-75 (10th Cir. 1960). "A plaintiff seeking a preliminary injunction must establish that he is likely to succeed on the merits, that he is likely to suffer irreparable harm in the absence of preliminary relief, that the balance of equities tips in his favor, and that an injunction is in the public interest." *Winter v. Natural Res. Def. Council*, 555 U.S. 7, 20 (2008); *see also RoDa Drilling Co. v. Siegal*, 552 F.3d 1203, 1208 (10th Cir. 2009).[8] For the reasons described below, PacifiCorp satisfies each of the stay factors.

[8] The Tenth Circuit has adopted a modified requirement as to the likelihood of success, allowing a lesser showing on the merits where the other factors are strongly demonstrated. *See O Centro Espirita Beneficiente Uniao Do Vegetal v. Ashcroft*, 389 F.3d 973, 1002 (10th Cir. 2004).

STATEMENT OF ISSUES

This Court should grant the requested stay because (1) PacifiCorp's challenges are based on sound legal principles and are likely to succeed on the merits, (2) a stay is necessary to prevent irreparable harm to PacifiCorp and its customers, (3) a stay is in the public interest, and (4) no significant harm will result to either EPA, the affected Class I areas or the public from a stay—particularly because many of the emission reductions and resulting visibility improvements from the Utah BART Alternative already are in place.

ARGUMENT

I. PacifiCorp Is Likely to Succeed on the Merits

As explained below, EPA's FIP should be stayed because the Final Rule, including EPA's rejection of the BART Alternative, is flawed in several critical respects. PacifiCorp raised these issues, and more, with EPA in a Request for Reconsideration and Administrative Stay, which EPA has ignored. *See* Admin. Stay Request. As demonstrated by the motions to stay filed by other petitioners and intervenors, EPA made numerous legal errors (more than can be addressed in one motion) in the Final Rule. PacifiCorp adopts the "merits" arguments of the other motions to stay.

A. EPA failed to consider statutorily-required cost and energy/environmental impacts when rejecting Utah's BART Alternative.

When EPA compared the "reasonable progress" from Utah's BART Alternative to the SCR BART Benchmark (EPA's preferred option) as required by the Regional Haze Program, 40 C.F.R. §51.308(e)(2), EPA purposely ignored the hundreds of millions of dollars difference in capital and operating costs.[9] EPA also knowingly ignored the comparative energy and environmental benefits[10] of the BART Alternative. In so doing, EPA violated the clear language of the regional haze statutes, 42 U.S.C. §§7491 and 7492, the RH Rules, and EPA's specific guidance relating to BART Alternatives, 71 Fed. Reg. 60612 (Oct. 13, 2006) ("BART Alternative Rule").

The ultimate measure for a BART Alternative is whether or not it results in greater "reasonable progress" than BART. 40 C.F.R. §51.308(e)(2). In the regional haze statutes, Congress explicitly required that "**costs of compliance**" and "**the energy and nonair quality environmental impacts of compliance**" "**shall**

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[9] EPA claims the cost difference of at least $500 million (PacifiCorp's estimates are over $700 million) had no "direct bearing on whether the BART Alternative achieves greater reasonable progress" and was not "material," claiming instead that EPA could focus only on "relative visibility benefits." 81 Fed. Reg. at 43901.

[10] EPA incorrectly found that the comparative energy and non-air quality environmental benefits of the BART Alternative "do not have direct bearing on whether the BART Alternative achieves greater reasonable progress" and are "not material." 81 Fed. Reg. 43900.

be taken into consideration" when "determining reasonable progress." 42 U.S.C. §7491(g)(1) (emphasis added).[11] This congressional mandate cannot be any clearer.

EPA itself acknowledged this in the preamble to the final BART Alternative Rule: "The EPA continues to support State efforts to develop . . . alternative strategies to fulfill the goals of the CAA. . . . *and to do so in the most cost-effective manner practicable*." 71 Fed. Reg. at 60614 (emphasis added). Rather than rely on these statutory and regulatory requirements, however, EPA instead improperly redefined "reasonable progress" to mean "greater visibility improvement." *See, e.g.*, 81 Fed. Reg. at 43900. EPA's self-crafted, and impermissibly narrower, "greater visibility improvement" standard illegally supplants the "reasonable progress" statutory standard, which clearly requires consideration of costs and environmental/energy impacts.

In another recent air quality case, the U.S. Supreme Court rejected EPA's similar attempts to ignore cost through a skewed statutory reading. In a statute where cost was less clearly articulated, the Court found, "EPA strayed far beyond those bounds when it read §7412(n)(1) to mean that it could ignore cost when

[11] This Court also has confirmed the requirement to consider both costs and energy/environmental impacts to determine reasonable progress when evaluating a BART Alternative. *WildEarth Guardians v. EPA*, 770 F.3d 919, 924 note 3 (10th Cir. 2014) (quoting 42 U.S.C. §7491(a)(4)); *see also* 40 C.F.R. § 51.308(d)(1)(i)(A).

deciding whether to regulate power plants." *Michigan v. EPA*, 135 S. Ct. 2699, 2707 (2015). Here, the plain language of the applicable statute requires consideration of comparative cost, energy, and certain environmental impacts, which EPA refused to do. PacifiCorp will prevail on the merits for this issue.

B. EPA's failure to account for "existing pollution control equipment" in its BART analysis for the FIP violates the CAA.

EPA is required to analyze all five BART factors when adopting a BART determination through a FIP. EPA's failure to do so is illegal. 42 U.S.C. §7491(g)(2); *North Dakota v. EPA*, 730 F.3d 750, 762-64 (8th Cir. 2013). When EPA conducted its BART analyses for the Utah BART Units, particularly its cost and visibility analyses, it did not properly consider the statutory "existing equipment" factor.[12] LNB/SOFA were installed at each of the Utah BART Units from 2006-2014, a fact that EPA openly acknowledges. *See, e.g.*, 81 Fed. Reg. at 2023. However, EPA ignorethe existing LNB/SOFA when establishing the baseline emissions for the required cost effectiveness and visibility improvement analyses.[13] As a result, EPA's projected visibility improvements resulting from

[12] EPA admitted that its "baseline emissions," a key component of the BART cost and visibility analyses, "predates the installation of the LNB/SOFA at the four BART Units." 81 Fed. Reg. at 43904.

[13] EPA requires that the "*baseline emissions* rate should represent a *realistic* depiction of anticipated annual emissions for the source. . . . *based upon actual emissions* from a baseline period." 40 C.F.R. App. Y § IV.D.4.d (emphasis added).

SCR are inflated and the average cost-effectiveness of SCR is artificially enhanced. *See, e.g.* 81 Fed. Reg. at 43903-07, Tables 1-7.

The regional haze statute requires consideration of "*any* existing pollution control technology in use at the source" to establish control equipment as BART. 42 U.S.C. §7491(g)(2) (emphasis added).[14] EPA has considered the same "existing equipment" (LNB/SOFA) in baseline emissions for BART determinations for other states (including at some of PacifiCorp's other facilities). *See* 81 Fed. Reg. at 43905 ("Colorado considered these existing controls as given and included them in the baseline emissions") and 43906 ("EPA included the existing controls, LNB and OFA, in the baseline for the three units [in Arizona]"). And the Eighth Circuit Court of Appeals overturned a FIP where EPA tried to avoid consideration of "any" existing equipment based on the purpose for which the equipment was installed. *North Dakota*, 730 F.3d at 764. Similar to *North Dakota*, here EPA has refused to consider "any existing equipment" as part of the baseline emissions analysis because "they were installed pursuant to a proposed BART determination." 81 Fed. Reg. 43905. This Court has stayed a regional haze FIP in the past when EPA failed to properly account for "existing" control equipment.

[14] The five BART factors are: (i) the costs of compliance; (ii) the energy and non-air quality environmental impacts of compliance; (iii) *any existing pollution control technology in use at the source*; (iv) the remaining useful life of the source; and (v) the degree of improvement in visibility that may be expected as a result of such technology. 42 U.S.C. §7491(g)(2) (emphasis added).

See Stay Order, *Wyoming v. EPA*, No. 14-9529. This Court should do so again. PacifiCorp should prevail on the merits on this issue.

C. EPA's FIP is illegal because it does not – and never can – ensure BART implementation by 2018 as required by law.

EPA's FIP requires installation of the BART controls by August 4, 2021. 81 Fed. Reg. at 43924. Because EPA's FIP does not require BART installation during the planning period covered by the SIP (through 2018), it is unlawful. The Fifth Circuit Court of Appeals recently granted a stay of an EPA FIP in part based upon EPA's failure to ensure controls were installed within the initial planning period of 2007-2018. *Texas v. EPA*, 829 F.3d 405, 429-30 (5th Cir. 2016). Because EPA's FIP for Utah does not comply with the same requirements to install BART before 2018,[15] the FIP is invalid. The State of Utah has addressed this argument in its Motion, and PacifiCorp hereby incorporates that argument.[16]

D. EPA's explanation for rejecting Utah's BART Alternative runs counter to the evidence before the agency.

EPA uses technical camouflage to hide the fact that EPA's rejection of the BART Alternative runs counter to the legitimate evidence relied on by Utah. An agency action is arbitrary and capricious, and illegal, if it "runs counter to the evidence before the agency." *Motor Vehicle Mfrs. Ass'n. v. State Farm Mut. Auto*

[15] The four SCRs required by EPA's FIP cannot practicably be constructed prior to the end of 2018 due to extensive, necessary processes (engineering, regulatory review, construction, etc.). *See* Teply Declaration ¶ 27.

[16] PacifiCorp incorporates Utah's entire Motion to Stay by this reference.

Ins. Co., 463 U.S. 29, 43 (1983); *see also Motor Vehicle Mfrs. Ass'n. v. EPA*, 768 F.2d 385, 389 n.6 (D.C. Cir. 1985). By ignoring and distorting a substantial amount of the evidence Utah relied on to support the BART Alternative (all submitted to EPA with the SIP), EPA's rejection of the Utah BART Alternative runs counter to the evidence before it.

Two examples, among many, illustrate how EPA used the technical nature of these regional haze determinations to disguise its selective consideration of the evidence. First, EPA rejected one critical metric supporting the BART Alternative by feigning ignorance of the evidence that SO_2 emissions have the greatest visibility impact for Class I areas affected by the Utah BART Units. Second, when analyzing the benefits of the BART Alternative, EPA knowingly ignored evidence of "early and on-going" emission reductions.

i. EPA ignored relevant SO_2 emission reductions relied upon by Utah in approving the BART Alternative.

Utah found the "aggregate annual emissions" metric supported the BART Alternative. 81 Fed. Reg. at 43898. This metric compares the total tonnage reductions of visibility-impairing pollutants (SO_2, NO_x, and PM). Utah's analysis determined that the BART Alternative's relatively small comparative NO_x emissions increase would be offset by much greater SO_2 and PM emissions reductions. *Id.* EPA admitted that this metric is a "relevant concept" that relates to "visibility impacts," *id.*, but EPA rejected the metric, claiming it lacked sufficient

evidence that the SO_2 and PM emissions reductions counted in the "aggregate emissions reduction" metric would have the same, or greater, visibility impact than the NO_x emissions. *Id.* at 43910.

EPA's rejection of this metric is contrary to mountains of evidence and EPA's own actions. Numerous studies and government reports in the record show SO_2 emissions actually have a greater visibility impact than emissions of NO_x emissions at the Class I areas impacted by the Utah BART Units, and thus a reduction in SO_2 emissions results in a greater visibility improvement than a similar reduction in NO_x emissions. *See, e.g.,* Western Regional Air Partnership, Regional Haze Rule Reasonable Progress Report Support Document, State and Class I Area Summaries (Doc. No. EPA-R08-OAR-2015-0463-0200), at 6-11 through 6-16 (compare "aerosol extinction" numbers for ammonium sulfate and ammonium nitrate); Utah Div. of Air Quality, Progress Report for Utah's State Implementation Plan for Regional Haze (Utah Progress Report), May 18, 2015, at F-26 through F-28 (relevant excerpts of both documents are attached as Exhibit E). Due to the demonstrated greater visibility improvements associated with SO_2 emission reductions, EPA has allowed the use of SO_2 emissions reductions as surrogates for NO_x reductions for other BART Alternatives. *See, e.g.*, 80 Fed Reg. 19220, 19221 (Feb. 27, 2015) ("the Alternative would result in greater NO_X emissions, but lower emissions of SO_2 and PM_{10}")(Arizona). In the Final Rule,

and consistent with the evidence, EPA admitted that human-caused "visibility impairment on the Colorado Plateau is dominated by sulfates [SO_2]" and concurred that "sulfate [SO_2] is the largest contributor to visibility impairment at the affected Class I areas." 81 Fed. Reg. at 43900.

Despite this evidence and its own concessions, EPA refuses to recognize that SO_2 emissions reductions under the BART Alternative have the same, or greater, visibility benefits as NO_x emissions reductions because of "differences in visibility impacts and complex interactions between pollutants." 81 Fed. Reg. at 42898. EPA's position is nonsensical and contrary to the evidence. If SO_2 emissions are the "largest contributor to visibility impairment," then reductions of those emissions will have a greater, or at least equivalent, impact as NO_x emissions. PacifiCorp will prevail on the merits of this issue.

ii. EPA ignored legitimate, "early" NO_x emission reductions after 2011 that could have been outcome-determinative.

EPA and this Court have recognized that "early" and on-going emission reductions are appropriate factors to consider when analyzing a BART Alternative. *See WildEarth Guardians v. EPA*, 770 F.3d 919, 937 (10th Cir. 2014) (quoting EPA). And EPA has taken early and on-going emission reductions into account for other BART Alternatives. *See, e.g.*, 79 Fed. Reg. 46514, 46517 (Navajo Nation); 77 Fed. Reg. 34801, 34804 (Minnesota). Yet here, EPA refused to credit more than 575,000 tons of "early and on-going" emission reductions that have and

will occur between 2011 and the FIP compliance deadline in 2021. EPA's Response to Comments ("RTC") (relevant excerpts attached as Exhibit F), at 136-137 (*see* the figure at 137). EPA incorrectly claims these 2014-2021 reductions were not considered by the State, and that these reductions occur after an incorrect BART deadline (2014) and are not eligible to be considered. *Id.* at 138.[17] EPA's claims are contrary to its own admissions. In the Proposed Rule, EPA admitted the State did consider "early and on-going" emissions reductions after 2011. 81 Fed. Reg. at 2012 (citing Utah's reliance on on-going "reductions from the August 2015 retirement of PacifiCorp's nearby Carbon power plant"); at 2018, Table 9 (admitting Utah relied on reductions from controls installed from 2006-2014 and recognizing those reductions as "on-going"). PacifiCorp also submitted persuasive evidence regarding the "early and on-going" emissions reductions (post 2014) that EPA ignored. *See* PacifiCorp Comments at 16-18. EPA's failure to consider a significant amount of the "early and on-going" emissions reductions from the BART Alternative is contrary to EPA's admissions in the Proposed Rule, the facts, and is arbitrary. PacifiCorp will prevail on this issue.

[17] For purposes of its FIP, EPA argues the BART deadline is 2021. *Id.* at 338. Inconsistently, EPA argues the BART deadline is 2014 when analyzing the BART Alternative. *Id.* at 138. EPA is wrong on both accounts.

II. PacifiCorp and Its Customers Will Suffer Irreparable Harm without a Stay

The FIP's August 2021 BART compliance deadline, requiring four massive construction projects within five years, places PacifiCorp in an untenable position. *See* Teply Decl. ¶¶ 21-22. The estimated cost of SCR construction and installation at the Utah BART Units is in excess of $700 million, with a resultant increase in annual Operating and Maintenance costs of approximately $6 million (which does not include the millions of dollars in SCR catalyst replacement costs necessary every four years). *Id.* ¶ 21. This is in addition to the **$1.3 billion** spent system-wide on regional haze compliance costs since 2005. *Id.* ¶ 24. As a result of the FIP, approximately $200,000 will be spent on development of the SCR projects by the end of 2016, with more than $2 million to be spent in 2017 and a "significant ramp up in costs" after that. *Id.* ¶ 23.

No mechanism exists for PacifiCorp to recover from EPA PacifiCorp's share of the estimated $2.2 million or more in SCR development costs that will be incurred in 2016-2017 if the Final Rule is found to be invalid. *See Crowe & Dunlevy v. Stidham*, 640 F.3d 1140, 1157 (10th Cir. 2011) ("[I]mposition of money damages that cannot later be recovered for reasons such as sovereign immunity constitutes irreparable injury.") (citations omitted). PacifiCorp's share of these FIP-SCR costs could be passed on to PacifiCorp's customers in the form in increased rates, and rate increases caused by EPA-mandated control equipment

was one of several factors found to support the recent stay of the Regional Haze FIP in Texas. *See Texas*, 829 F.3d at 433-44, notes 40-42.

Irreparable harm will result from EPA's FIP if no stay is granted.

III. The Balance of Equities Favors PacifiCorp's Stay Request, and Granting a Stay Is in the Public Interest

The balance of equities and the public interest strongly support granting PacifiCorp's stay request, pending completion of judicial review of the Final Rule. Here, balancing the equities focuses on a comparison of (i) the effects of keeping the FIP compliance deadline for the Utah BART Units in place pending review and assuming that the Final Rule is eventually overturned, with (ii) the effects of suspending the effective date and compliance deadline in the FIP pending review and assuming that the Final Rule is eventually affirmed. In the context of regional haze, this is not a close call.

If the FIP and its compliance deadline remain effective, and the Final Rule is overturned, the Utah BART Unit owners would have expended in excess of $2.2 million in SCR-related costs in 2016-2017 that would be unrecoverable. *See* Teply Decl. ¶ 23. Because PacifiCorp expects to include its share of the costs in its rate structure, this also would have an obvious adverse effect on the citizens of Utah and other western states who have to pay higher electricity rates.

In contrast, neither EPA nor the regional haze program's overarching "visibility goals" will suffer any irreparable or other harm from a stay. Even if

EPA's FIP is ultimately upheld, Utah already is ahead of its reasonable progress goals, without imposition of the FIP. *See, e.g.*, Utah Progress Report, at F10-F11, F-62. Utah reported to EPA (pre-FIP) that "the current implementation plan elements and strategies are sufficient . . . to meet all established reasonable progress goals." *Id.* at F-62. And EPA has admitted that Utah is making reasonable progress towards the visibility goals. 77 Fed. Reg. at 74367-68 (Dec. 14, 2012) (finding that Utah "met all reasonable progress requirements for the Class I areas in Utah" and Utah's pre-FIP actions are sufficient "to address the relevant requirements of the RHR related to impacts on Class I areas in other states."). PacifiCorp's compliance with the existing state-approved SIP has resulted in the annual reduction of approximately 12,700 tons of SO_2 emissions and 11,000 tons of NO_x emissions. *See* Teply Declaration ¶¶ 13-14. In addition, PacifiCorp has reduced approximately 8,000 tons annually of SO_2 emissions, 4,900 tons of NO_x emissions, and 570 tons of PM emissions as a result of the closure of the Carbon power plant and the installation of emissions reduction equipment at Hunter Unit 3. *Id.* ¶ 17.

Because of the unique situation in Utah, and the emissions reductions that already have occurred, granting a stay will not impede Utah's visibility improvement because: (1) the Utah BART Alternative reductions are already effectively in place; (2) EPA's FIP does not require further NO_x emission

reductions until 2021; (3) the BART Alternative provides increased visibility benefits compared to the FIP according to eight of nine "reasonable progress" metrics; and (4) even in EPA's best case scenario (ignoring the impacts from SO_2 reductions and relying on questionable modeling) the average difference in impacts between the BART Alternative and SCR-as-BART is an imperceptible 0.14 dv (one dv is considered humanly perceptible). 81 Fed. Reg. at 43898-99. Given that EPA took over four years to rule on Utah's initial SIP, and that the FIP would not produce additional emission reductions until after 2021, EPA's own actions concede that a stay while the court considers challenges to the FIP are consistent with the public interest.

Additionally, PacifiCorp incorporates by reference the discussion of employment impacts from the State's Motion and Counties' intervenor motion, and the economic impacts addressed by the other parties supporting a stay. Importantly, the applicable statutes and the RH Rules do not address matters of public health. *See, Texas*, 829 F.3d at 434, note 42. Thus, delaying the effective date of the Utah FIP is not a concern in regard to public health.

CONCLUSION

If a stay is not entered, PacifiCorp and the other co-owners will be forced to begin the planning, engineering, and construction processes for SCR at the four Utah BART Units at significant cost (over $2.2 million during 2016-2017). The

actual costs of installing and operating SCR at the four units would exceed $700 million, while EPA's projected improvement in visibility over Utah's BART Alternative will be imperceptible at best, and actually lower than Utah's proposed BART Alternative according to eight of nine "reasonable progress" metrics. On the other hand, granting PacifiCorp's stay request will have no negative consequences on the stated visibility goals while allowing well-justified further consideration of the Final Rule.

Based on the foregoing, this Court should grant PacifiCorp's Motion for Stay.

DATED this 28th day of October, 2016.

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CERTIFICATE OF SERVICE

I hereby certify that on this 28th day of October, 2016, the foregoing **MOTION FOR STAY** was served electronically on all active registered counsel of record through the Court's CM/ECF system to the following:

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CERTIFICATE OF DIGITAL SUBMISSION

I hereby certify that with respect to the foregoing:

(1) all required privacy redactions have been made per 10th Cir. R. 25.5;

(2) if required to file additional hard copies, that the ECF submission is an exact copy of those documents;

(3) the digital submissions have been scanned for viruses with the most recent version of a commercial virus scanning program, Symantec Endpoint Protection (Version 12.1.6), and according to the program are free of viruses.

DATED this 28th day of October, 2016.

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CERTIFICATE OF COMPLIANCE WITH RULE 32(a) AND OCTOBER 6, 2016 ORDER

Certificate of Compliance With Type-Volume Limitation, Typeface Requirements, and Type Style Requirements

1. In accordance with this Court's Order dated October 6, 2016, which allows a combined limitation of 20,800 words for the Motions to Stay imposed on all petitioners by said Order:

   [X] this motion contains 5,524 words, excluding the parts of the motion exempted by Fed. R. App. P. 32(a)(7)(B)(iii), or

   [ ] this motion uses a monospaced typeface and contains <state the number of> lines of text, excluding the parts of the motion exempted by Fed. R. App. P. 32(a)(7)(B)(iii).

2. This motion complies with the typeface requirements of Fed. R. App. P. 32(a)(5) and the type style requirements of Fed. R. App. P. 32(a)(6) because:

   [X] this motion has been prepared in a proportionally spaced typeface using MS Word 2010 in 14 point Times New Roman, or

   [ ] this motion has been prepared in a monospaced typeface using <state name and version of word processing program> with <state number of characters per inch and name of type style>.

DATED this 28th day of October, 2016.

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Exhibit A
PacifiCorp v. EPA, Consolidated Case Nos. 16-9541, 16-9542, 16-9543, 16-9545

PacifiCorp's Comments
(Docket ID No. EPA-R08-OAR-2015-0463)
(Mar. 14, 2016)

PACIFICORP

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March 14, 2016

Submitted via email and electronically to www.regulations.gov

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Re: Docket ID No. EPA-R08-OAR-2015-0463
Approval, Disapproval and Promulgation of Air Quality Implementations Plans; Partial Approval and Partial Disapproval of Air Quality Implementation Plans and Federal Implementation Plan; State of Utah; Revisions to Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze (Docket ID No. EPA-R08-OAR-2015-0463)("Proposed Rule")

Dear Ms. Fallon,

PacifiCorp appreciates the opportunity to offer these comments (including the extended comments, attachments and exhibits) in the above matter. PacifiCorp strongly encourages EPA to approve Utah's BART Alternative, thereby guaranteeing "reasonable progress" towards Utah's regional haze goals in a cost-effective manner. Utah's BART Alternative meets all "applicable requirements" of the Clean Air Act; therefore it should be approved by EPA. PacifiCorp strongly opposes EPA's proposed federal implementation plan, which would result in hundreds of millions of dollars in costs with less "reasonable progress" than the BART Alternative.

Because of the length of PacifiCorp's expanded comments, we have summarized for emphasis some of those comments as follows. The below summary is not intended to be a summation of PacifiCorp's expanded comments; those stand on their own in their complete form. Rather, this summary is provided as a convenience and as part of our overall comments.

UTAH'S SIP PROPOSAL SATIFIES THE REGIONAL HAZE REQUIREMENTS AND SHOULD BE APPROVED

- *Utah's SIP Proposal meets all applicable requirements.* Through proper application of each applicable requirement in the regional haze rules, Utah determined – and so did EPA –that the weight of the evidence demonstrates that the Utah SIP Proposal makes greater reasonable progress than installation and operation of BART; and it does so at a substantially lower cost.

- *EPA arbitrarily refuses to consider the dramatic cost difference between the two co-proposals.* EPA has made clear that the BART Alternative program is intended to achieve greater visibility progress in the most cost-effective manner. The Utah SIP does just that. EPA, however, refused to consider the cost savings associated with the Utah SIP proposal. This not only violates the foundational premise of its own BART alternative rule, but it also violates one of the fundamental tenets of reasonable regulation.

- *EPA should evaluate all visibility metrics under the weight of the evidence test.* Although EPA does an adequate job in identifying and weighing most of the available metrics, data and information under its weight of evidence analysis, it gives far too much weight to certain metrics (like the 98th Percentile metric) and not enough to other metrics (like cost and the timing of emission reductions under the BART Alternative analysis). By properly considering evidence, data and information and assigning the proper weight to each, EPA's approval of the Utah SIP Proposal will become even stronger.

- *EPA arbitrarily and capriciously applies two inappropriate standards to the Utah SIP Proposal.* In an attempt to replace Utah's determination with its own, EPA imposes a "Reasonableness Standard" without concluding the Utah SIP Proposal contains data or methodological flaws – the limited circumstances under which courts have upheld use of this standard – and also imposes a "Complexity of Evaluation" standard which finds no support in the CAA or applicable regulations.

- *EPA unfairly minimizes the timing of emissions reductions.* EPA glosses over the benefits of the timing of the BART Alternative emissions reductions. The emissions reductions associated with the BART Alternative began in 2007 and have continued to this day, long before any emissions reductions would occur under the FIP Proposal. Further, by attempting to impose BART controls EPA is actually requiring both the BART Alternative and BART – reaching well beyond the scope of its authority.

EPA's FIP PROPOSAL IS NOT LEGALLY SUSTAINABLE

- *Illegal treatment of existing controls.* EPA failed to properly consider existing controls by calculating a baseline emissions rate that did not include previously installed combustion

controls. This flawed baseline emissions rate led to incorrect and inflated cost and visibility data that EPA cannot rely on to implement its FIP Proposal.

- *Grossly flawed analysis of cost.* EPA's cost analysis is wrong for the numerous reasons, including the following: (1) it utterly fails to provide *any* rationale for the 70 million dollar difference between its cost estimate for SCR and PacifiCorp's cost estimate for SCR; (2) EPA failed to follow its own the Cost Control Manual – one that EPA has compulsively required utilities' to use – by disallowing material costs that are specifically included and allowed by the CCM. Finally, EPA's expert inexplicably and incorrectly redesigned the SCR technology – without any engineering support – to "show" that only one reactor is necessary instead of two and that less catalyst could be used, thereby further skewing the SCR cost analysis.

- *Improper accounting of Energy and Non-Air Quality Impacts.* EPA did not identify or quantify the solid, liquid, and gaseous discharges from the SCR control devices under review, or the discharges with potential for causing adverse environmental effects. Also, EPA should have considered multiple energy impacts of installing SCR, but it did not. These impacts are supposed to carry greater weight in situations like the one at hand, where the visibility improvement of a particular option is marginal at best.

- *Visibility Improvements.* The visibility improvements of EPA's FIP Proposal are not reasonably anticipated from the installation of SCR because (1) EPA failed to account for the margin of error in the CALPUFF model and other material limitations of CALPUFF; (2) EPA summed up the per unit improvements rather than modeling all four BART units together; and (3) EPA failed to properly account for the limited impact of additional NOX reductions.

Again, the above summary is provided only as a tool of convenience in regard to PacifiCorp's overall comments. Please feel free to contact me with any questions.

Sincerely,

William K. Lawson

Docket ID No. EPA-R08-OAR-2015-0463

PacifiCorp's Expanded Comments to: **Approval, Disapproval and Promulgation of Air Quality Implementation Plans; Partial Approval and Partial Disapproval of Air Quality Implementation Plans and Federal Implementation Plan; Utah; Revisions to Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze**

PacifiCorp provides these comments in response to the above proposed action by the U.S. Environmental Protection Agency ("**EPA**") as published in the Federal Register January 14, 2016 at 81 FR 2004 ("**Proposed Action**").[1]

I. INTRODUCTION

PacifiCorp, which operates in Utah under the business name Rocky Mountain Power, supplies electricity to more than 1.8 million residential and business customers in the state of Utah and five other western states. PacifiCorp is the majority owner and operator of Hunter Units 1 and 2, and is the owner and operator of Huntington Units 1 and 2 (collectively "**Utah BART Units**"). The Utah BART Units are the only sources that Utah and EPA have determined to be subject to the Clean Air Act's ("**CAA**") Best Available Retrofit Technology ("**BART**") requirements. As a result, PacifiCorp and its customers will be directly affected by EPA's final action regarding Utah's regional haze state implementation plan. The Utah regional haze state implementation plan, and all supporting documents, collectively are referred to herein as the "**Utah SIP**".

With regard to NOx emissions, EPA describes its Proposed Action as two "co-proposals" and further describes those as "A proposal to approve the State SIP in its entirety, and a proposal to partially approve and partially disapprove the State SIP and propose a FIP." See 81 FR at 2006. PacifiCorp refers to the "proposal to approve the State SIP in its entirety" as the "**SIP Proposal**," and the "proposal to partially approve and partially disapprove the State SIP and propose a FIP" as the "**FIP Proposal**."

PacifiCorp supports EPA's approval of the SIP Proposal because the Utah SIP satisfies the regional haze requirements as EPA itself has proposed to conclude. This conclusion should be the beginning and the end of EPA's final action. The SIP Proposal produces better visibility improvement under every metric (except one) and does so at cost savings of over $700 million[2] compared to the FIP Proposal. In addition, the single metric EPA

[1] These comments are in addition to those offered during the public hearing sponsored by EPA on January 26, 2016. A copy of the hearing comments are included at EPA-R08-OAR-2015-0463-0112 and identified as "Bill Lawson, Rocky Mountain Power."

[2] As explained below, adding LNB/OFA/SCR to the Utah BART Units will cost approximately $170 million for each unit, with the total for all four Utah BART Units

asserts shows better visibility improvement under the FIP Proposal (98th Percentile metric) should be afforded little or no weight in evaluating the SIP Proposal. Utah considered all of the applicable metrics and evidence and, under the weight-of-evidence analysis, easily determined that the BART Alternative produces greater reasonable progress than the BART Benchmark[3] at the Utah BART Units. Similarly, under the Proposed Action, EPA has a choice in evaluating the Utah SIP of approving one option (the SIP Proposal) with more visibility improvements at a substantially lower cost, or approving the other option (the FIP Proposal) with lower visibility improvements at a substantially higher cost. The choice is obvious. EPA should finalize its SIP Proposal and approve the Utah SIP.

PacifiCorp opposes the FIP Proposal because: (i) EPA has not provided adequate justification to conduct a new BART analysis for NOx while simultaneously proposing to conclude that the Utah SIP meets applicable regional haze requirements; and (ii) EPA's proposed BART analysis for each Unit is flawed, making the FIP Proposal legally unsustainable. In addition, EPA is not empowered under the CAA to require compliance with both the SIP Proposal and the FIP Proposal. As a practical matter, that is precisely what EPA proposes to do to the extent it approves the FIP Proposal. This is because PacifiCorp already has implemented the SIP Proposal as required by Utah law. If EPA were to select the FIP Proposal, it would do so knowing[4] that PacifiCorp would be required to implement both the SIP Proposal and the FIP Proposal. Nothing in CAA or

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exceeding $700 million. By contrast, EPA incorrectly asserts that the cost of LNB/OFA/SCR at each Utah BART Unit is about $110 million.

[3] According to EPA, the term "BART Benchmark" means "an analysis of the best system of continuous emission control technology available and the associated reductions for each source subject-to-BART covered by the alternative program…." See 81 FR at 2011. EPA sometimes uses this term in the FIP Proposal to mean requiring LNB, OFA and SCR as BART for NOx at each of the Utah BART Units, and without conceding EPA is correct, PacifiCorp refers to BART Benchmark herein in the same manner.

[4] EPA is well aware that the Utah SIP, as it has been implemented over time, became binding state law in regard to the Utah BART Units and ultimately the other units covered by the BART Alternative. This makes it particularly egregious that, even though EPA knew that PacifiCorp was required to expend hundreds of millions of dollars to fully implement the BART Alternative under state law, EPA said nothing about its intention to issue a competing co-proposal until after PacifiCorp had completed all of the emission reductions required under the Utah SIP. See EPA letter to Utah Division of Air Quality dated May 1, 2015 commenting on the then-proposed Utah SIP (including the BART Alternative). This secretive approach by EPA also caught the Utah Division of Air Quality off guard as explained in their oral comments during the January 26, 2016 hearing: "Throughout the SIP development process, we worked as regulatory partners, closely and extensively with EPA staff to ensure that Utah's Alternative to BART SIP revision met all the requirements of the Clean Air Act and was approvable by EPA. The EPA should approve the option that Utah developed while in close consultation with EPA and not the option that Utah was not even aware was being prepared or under consideration until it was proposed in the Federal Register."

regional haze rules allows EPA to require such a result when the Proposed Action itself states that EPA it "intends to finalize only one proposal." See 81 FR at 2006.

II. THE BART ALTERNATIVE DESERVES EPA APPROVAL

At least three different sources document that the SIP Proposal satisfies applicable regional haze requirements: (i) the Utah SIP; (ii) PacifiCorp's comments filed with the state of Utah in support of the Utah SIP (which comments are attached hereto as Attachment 1 and incorporated herein by this reference); and (iii) EPA's SIP Proposal. In general, EPA must approve any SIP, including the Utah SIP, that "meets all of the applicable requirements" of the CAA. See 42 U.S.C. 7410(k)(3). By the same token, EPA is prohibited from imposing additional requirements upon its approval/disapproval of a SIP that do not qualify as "applicable requirements." The applicable requirements that the Utah SIP must meet are described below. Also described are certain requirements that EPA purports to apply in evaluating the Utah SIP, but shouldn't, because they are not applicable requirements of the CAA.

A. Applicable BART Alternative Requirements

The Proposed Action properly describes the Utah SIP as "an alternative to BART" for NOx ("**BART Alternative**") that Utah adopted "instead of establishing BART controls" at the Utah BART Units. See 81 FR at 2006. The Proposed Action further describes EPA's support for BART alternative plans in general by noting that "the idea of a BART alternative…is a reasonable one, and one that EPA supports where consistent with the CAA and [regional haze requirements]." *Id.* In other words, as long as the BART Alternative complies with the CAA and applicable regional haze requirements, EPA is required to accept this approach in lieu of a BART determination.[5]

The Proposed Action also properly describes the evaluation (found generally at 40 C.F.R. 51.308(e)(2)) that EPA must conduct to decide whether to approve the BART Alternative as contained in the Utah SIP:

> "(1) '[a] demonstration that the emissions trading program or other alternative measure will achieve greater reasonable progress than would have resulted from the installation and operation of BART at all sources subject to BART in the State and covered by the alternative program'; (2) '[a] requirement that all necessary emission reductions take place during the period of the first long-term strategy for regional haze'; and (3) '[a] demonstration that the emissions reductions resulting from the alternative

[5] Comments that oppose any use of a BART alternative, like those found in Section I of the "July 8, 2015 Conservation Group Letter to EPA Janet McCabe" (EPA ID No. EPA-R08-OAR-2015-0463-0029) (the "**July 8th Letter**"), are not relevant to the issue of whether the BART Alternative meets applicable requirements. EPA should disregard such comments.

> measure will be surplus to those reductions resulting from measures adopted to meet requirements of the CAA as of the baseline date of the SIP.'" See 81 FR at 2006.

EPA also properly describes applicable requirements (found generally at 40 C.F.R. 51.308(e)(2) and (3)) for use in determining whether the BART Alternative achieves greater reasonable progress:

> "For the first element, the determination that the alternative measure will achieve greater reasonable progress than BART, the State must provide the following: (1) A list of all BART-eligible sources within the State; (2) a list of all BART-eligible sources and all BART source categories covered by the alternative program; (3) an analysis of BART and associated emission reductions; (4) an analysis of the projected emission reductions achievable through the BART alternative; and (5) a determination that the alternative achieves greater reasonable progress than would be achievable through the installation and operation of BART." See 81 FR at 2006.

In addition, 40 C.F.R. 51.308(e)(2) makes clear that it is fully within a ***state's*** discretion whether to adopt a BART Alternative. That is, a "State may opt to implement or require participation in an…other alternative measure [i.e., BART Alternative] rather than require sources subject to BART to install, operate and maintain BART."[6] The CAA and the preamble to the BART Alternative rules also make clear that the elements of cost and energy/non-air quality impacts should be considered in the greater reasonable progress analysis. In taking final action, EPA should rely on the above requirements (which together are referred to as the "**Applicable BART Alternative Requirements**") and approve the Utah SIP.

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[6] Because of this, arguments that Utah should never have considered a BART Alternative are beyond the scope of the Proposed Action and are not relevant. For example, see Section II of the July 8th Letter which argues against the discretion used by Utah in deciding to select a BART Alternative including the following assertions, among others: (i) "Utah eschewed the cost-effective benefits of SCR in favor of a BART 'alternative'… that would require no new emission reductions on any source in the state;" (ii) the Units will "…continue to emit NOx at current high levels while taking credit for emissions reductions that already have occurred;" and (iii) EPA has "never used an alternative program to exempt all of the state's BART units from controls in exchange for wholly past emissions reductions at non-BART units." These assertions do not attempt to explain why the Utah SIP does not meet applicable regional haze requirements and are nothing more than arguing that Utah should never select any BART Alternative. EPA should disregard such comments.

B. The Utah SIP Meets the Applicable BART Alternative Requirements

The following table demonstrates that the BART Alternative meets the Applicable BART Alternative Requirements. Very simply, the table lists the Applicable BART Alternative Requirements in the two left-hand columns, and then notes in the two right-hand columns those parts of the Utah SIP that demonstrate compliance with each requirement. EPA is not required to apply any more complicated analysis than this in approving the BART Alternative under the Utah SIP.

Regulation	Summary	Utah SIP	SIP Proposal
308(e)(2)(i)(A)	List all BART eligible sources	**Meets requirement**: 2015 Utah RH SIP, Sec. XX.D.6 (a)-(e).	**Meets requirement**: 81 FR at 2015, 2021
308(e)(2)(i)(B)	List BART eligible sources covered by BART Alternative	**Meets requirement**: 2015 Utah RH SIP, Sec. XX.D.6 (a)-(e).	**Meets requirement**: 81 FR at 2015, 2021
308(e)(2)(i)(C)	Compare BART Alternative To BART	**Meets requirement**: 2015 Utah RH SIP at XX.D.6(c) (including TSD "Staff Review" dated May 13, 2015)	**Meets requirement**: 81 FR at 2015, 2021
308(e)(2)(i)(D)	Project emission reductions	**Meets requirement**: 2015 Utah RH SIP at XX.D.6(c) (including TSD "Staff Review" Table 2 dated May 13, 2015)	**Meets requirement**: 81 FR at 2015, 2021
308(e)(2)(i)(E)	Use "weight of evidence" to determine greater reasonable progress	**Meets requirement**: 2015 Utah RH SIP at XX.D.6(a), (c) (including TSD "Staff Review" dated May 13, 2015)	**Meets requirement**: 81 FR 2016-19 and 2021-24
308(e)(2)(iii)	Emission reduction timing	**Meets requirement**: 2015 Utah RH SIP at XX.D.6(e)	**Meets requirement**: 81 FR 2019, 2025
308(e)(2)(iv)	Surplus reductions	**Meets requirement**: 2015 Utah RH SIP at XX.D.6(c) (including TSD "Staff Review" Table 2 dated May 13, 2015)	**Meets requirement**: 81 FR 2019, 2025

Regulation	Summary	Utah SIP	SIP Proposal
CAA §7491(g)(1), (2); Preamble BART Alternative rule; Appendix Y[7]	Cost Difference	**Meets requirement** 2015 Utah RH SIP at XX.D.6(c) (including TSD "Staff Review" Table 2 dated May 13, 2015)	**Meets requirement:** EPA proposed to ignore this requirement, but should not have.
CAA §7491(g)(1), (2); Appendix Y	Energy and non-air quality impacts	**Meets requirement** 2015 Utah RH SIP at XX.D.6(c) (including TSD "Staff Review" Table 2 dated May 13, 2015)	**Meets requirement:** EPA proposed to ignore this requirement, but should not have.

Notwithstanding EPA's lengthy Proposed Action (which covers 48 pages in the Federal Register), whether or not EPA ultimately must approve the Utah SIP boils down to whether the BART Alternative in the Utah SIP meets the Applicable BART Alternative Requirements. Because it does as EPA properly proposes to conclude and as demonstrated by the Utah SIP itself, EPA must approve the Utah SIP. It is that simple.

C. Inapplicable Regional Haze Requirements

EPA is not correct in its attempt in the Proposed Action to impose additional requirements on its evaluation of the BART Alternative and Utah SIP that are different than that Applicable BART Alternative Requirements.

1. *Reasonableness Standard* –EPA asserts that Utah "has several options for making the greater reasonable progress determination [and it] elected to use two separate approaches."[8] See 81 FR at 2006. EPA further states that it will evaluate both of those approaches in deciding whether to approve the Utah SIP. EPA then makes the blanket assertion that "the State's discretion in this area is subject to the condition that it must be reasonably exercised and that its decisions be supported by adequate documentation of its analysis." ("**Reasonableness Standard**.") See 81 FR at 2006. Although the use of words like "reasonable" and "adequate" have common sense appeal in the abstract, EPA may not apply this standard in a way that allows EPA to discard the state's discretion and instead impose EPA's own will. (See generally

[7] As explained in more detail below, consideration of the cost difference between the SIP Proposal and the FIP Proposal is another underlying aspect of the Applicable BART Alternative Requirements which EPA fails to acknowledge in the SIP Proposal. See 81 FR at 2024 ("…it is not material to our action whether we agree or disagree with Utah's conclusion that the BART Alternative would have lower cost impact….")

[8] As explained below, EPA is simply wrong in concluding that Utah used two separate approaches to demonstrate greater reasonable progress. Therefore, EPA's stated basis for imposing the Reasonableness Standard does not support EPA's effort to do so.

Paragraphs (2) and (3) of PacifiCorp's written comments dated August 26, 2013 as submitted in EPA Docket ID No. EPA-R08-OAR-2012-0026 and identified in that docket as ID. No. EPA-R08-OAR-2012-0026-0149; a portion of these comments is attached hereto as Attachment 2.)

In addition, the present circumstances regarding the SIP Proposal are far different than those circumstances in which courts have upheld EPA's use of a similar Reasonableness Standard in other regional haze settings. For example, in North Dakota v. EPA, 730 F.3d 750, 760 (8th Cir. 2013), the court allowed EPA's use of the Reasonableness Standard under those circumstances where the state's BART determination contained "data flaws that led to an overestimated costs of compliance." Also, Oklahoma v. EPA, 723 F. 3d 1201, 1212 (10th Cir. 2013) reached a similar conclusion based on "methodological flaws."

In the case of the SIP Proposal, however, EPA proposes to approve the BART Alternative based on compliance with the Applicable BART Alternative Requirements[9] and without also concluding that the BART Alternative contains "data flaws" or "methodological flaws." Therefore, the factual bases for allowing EPA to apply a Reasonableness Standard do not exist in regard to the BART Alternative and EPA should not attempt to apply such a standard here – particularly as a basis for rejecting the BART Alternative.[10]

2. *Complexity of Evaluation Standard* - EPA also is wrong in its attempt to count among applicable requirements the unsupported conclusion that the "complexity of our evaluation" somehow necessitates EPA soliciting comments not only on the SIP Proposal, but also on the competing FIP Proposal. See 81 FR 2006.[11] Even taking at

[9] See generally 81 FR 2021 – 2026.

[10] This is not to say that EPA lacks any role in reviewing and approving the Utah SIP. Indeed, the latest court to weigh in on EPA's review authority makes clear that "Congress intended that EPA, not the states alone, ultimately ensure that state determinations as to regional haze comply with the [Clean Air] Act…." Arizona ex rel. Darwin v. EPA, No. 13-70366, slip op. at 19-20 (9th Cir. Feb. 4, 2016). Although PacifiCorp agrees that EPA has a role to play in making sure the Utah SIP complies with the CAA and applicable requirements, it also notes that EPA must do so in a way that does not undermine the role of states like Utah to which "Section 169A [of the CAA] gives…substantial responsibility in determining appropriate BART [and BART Alternative] controls." The court goes on to make clear that "EPA may not disapprove reasonable state determinations that comply with the relevant statutory and regulatory requirements." Id. at 22. Such is the case with the Utah SIP.

[11] EPA attempts to further support this contrived "complexity" requirement by repeatedly stating that such a requirement exists, as if repetition alone somehow can bring an imaginary requirement into existence (i.e., "In light of the variety of metrics Utah used, this is a complicated analysis…;" "The complexity of our evaluation leads us to propose and solicit comments on two conclusions and two courses of action…;" "Given the complexities in evaluating these co-proposals, EPA wants to ensure that our final

face value the assertion that analyzing the Utah SIP is "complicated" (and what regional haze analysis isn't?), that alone does not require EPA to evaluate the Utah SIP differently than any other regional haze SIP, nor does it justify EPA in presenting dueling co-proposals.[12] In other words, EPA has simply conjured up this new "complexity" requirement[13] out of thin air in an attempt to support its offering of the competing FIP Proposal. EPA is acting arbitrarily and without legal authority by seeking comment on the FIP Proposal based on what EPA calls the "complexity of our evaluation" and for this reason EPA should withdraw the FIP Proposal and approve the SIP Proposal as proposed.

III. PacifiCorp's Response to Certain EPA Comments

In this section, PacifiCorp responds to some of the comments made by EPA in evaluating the Utah SIP in light of Applicable BART Alternative Requirements. PacifiCorp offers these comments in an effort to bolster the record upon which EPA should take final action to approve the BART Alternative and the Utah SIP, while simultaneously not approving the FIP Proposal.

A. Applicable BART Alternative Requirements

EPA properly notes that "Utah has opted to establish an alternative measure (or program) for NOx in accordance with 40 CFR 51.308(e)(2)." As described in the table above, the

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decision is based on the best and most currently available data and information, and is taken with the fullest possible consideration of public input.") See 81 FR at 2006.

[12] The Tenth Circuit Court of Appeals, which considered whether EPA's approval of a BART Alternative for SO2 emissions was appropriate, did not conclude that EPA's analysis of the alternative program was, by its nature, more complicated than a BART analysis. See generally WildEarth Guardians v. EPA, 770 F.3d 919 (10th Cir. 2014).

[13] EPA further attempts to justify its rationale for considering the FIP Proposal by asserting, as explained in footnote 3, the need to "ensure that our final decision is based on the best and most currently available data and information, and is taken with the fullest possible consideration of public input." EPA already is charged with ensuring that any final decision is based on the best current data and information available. See Final Rule, Regional Haze Regulations; Revisions to Provisions Governing Alternative Source-Specific BART Determinations, 71 Fed. Reg. 60612, 60622 (Oct. 13, 2006); see also, 5 U.S.C. § 706(2). EPA already is required to make a decision based on the fullest possible consideration of public input. See 5 U.S.C. §553(c). Re-stating these fundamental principles does not allow EPA to bootstrap itself into also considering a competing co-proposal (the FIP Proposal) when the SIP Proposal already meets all Applicable BART Alternative Requirements as EPA itself has proposed to conclude. Arizona ex rel. Darwin v. EPA, No. 13-70366, slip op. at 22 (9th Cir. Feb. 4, 2016) (stating that "EPA may not second-guess reasoned, legally compliant state decisions.") (internal citations and quotations omitted).

Applicable BART Alternative Requirements are straightforward, and EPA properly proposes to conclude that the Utah SIP complies with them. See 81 FR at 2021-27. Although PacifiCorp supports EPA's proposed conclusion,[14] it disagrees with some reasons applied by EPA in reaching that conclusion. PacifiCorp believes that applying proper reasoning will strengthen EPA's conclusion that the BART Alternative under the Utah SIP demonstrates greater reasonable progress.

1. *Greater Emission Reductions Test* – EPA asserts that Utah applied both[15] the "greater emission reductions" test (40 C.F.R. 51.308(e)(3)) and the "weight of evidence" test (40 C.F.R. 51.308(e)(2)) to conclude that the BART Alternative achieves greater reasonable progress. See 81 FR 2021, 2028. Also, EPA proposes to conclude that Utah failed to satisfy the greater emission reductions test. Id. at 2028. Further, EPA asserts that "[w]hile in the aggregate there are fewer SO2 and PM10 emissions for the BART Alternative, the total NOx emissions are greater under the BART Alternative than the BART Benchmark." Id. EPA, however, is simply wrong in its assertion that Utah applied the greater emission reductions test under 51.308(e)(3) in support of the Utah SIP. Utah, in fact, intentionally did not apply the greater emissions reductions test:

   > "Utah has chosen to use a weight-of-evidence approach under 40 CFR 51.308(e)(2)(i)(E), as described in section VII of the staff review. The separate visibility analysis described in section VIII is part of the weight-of-evidence demonstration and is not intended to provide the type of modeling demonstration that would otherwise be required under 40 CFR 51.308(e)(3)." See Utah SIP Staff Review (Chapter 1) at page 31 (May 13, 2015)

   The Utah SIP could not be any clearer on this point.[16] EPA's proposal to disapprove an assumed "greater emissions reduction test" portion of the Utah SIP is tantamount to setting up a straw man for the sole purpose of knocking it down. EPA should not

[14] As noted above, this conclusion is the end of EPA's authority to review the Utah SIP because 42 U.S.C. §7410(k)(3) requires EPA to approve the SIP Proposal given that it meets all Applicable BART Alternative Requirements.

[15] According to the U.S. Court of Appeals for the 10th Circuit, greater reasonable progress can be demonstrated using *either* one of two methods: (i) "greater emission reductions" than under BART (40 C.F.R. §51.308(e)(3)); or (ii) "based on the clear weight of evidence" (40 C.F.R. §51.308(e)(2)(E)). WildEarth Guardians v. EPA, 770 F.3d 919, 935-37 (10th Cir. 2014). As the court observed, the state is free to choose one method or the other. The court characterized the former approach as a "quantitative" and the later as "qualitative," and specifically sanctioned the use of qualitative factors alone under the clear weight of evidence test to demonstrate greater reasonable progress.

[16] In fact, EPA's May 1, 2015 letter to the Utah Division of Air Quality (noted above) regarding the then-proposed Utah SIP acknowledges that Utah is applying only "its weight-of-evidence analysis" and not the greater emission reductions test.

rely on any conclusion or inference[17] created by asserting that Utah failed to meet the greater emission reductions test, and EPA should erase any such reference from its final action.

2. *Greater Reasonable Progress* – The crux of approving a BART Alternative is determining that it produces greater reasonable progress than BART. See 40 CFR 51.308(e)(2)(i)(e). Indeed, upon evaluating certain evidence[18] in regard to the Utah SIP, EPA properly proposes: (i) "to find that the BART Alternative is likely to achieve greater reasonable progress;" and (ii) "to approve Utah's determination that the Utah BART Alternative would achieve greater reasonable progress than BART…." See 81 FR at 2022 and 2025. EPA should take final action consistent with this proposal.[19]

3. *Annual Emissions Comparison of Visibility Impairing Pollutants* – In proposing to conclude that the Utah SIP demonstrates greater reasonable progress, EPA correctly notes that that the "combined emissions of NOx, SO2 and PM10" under the BART Alternative "will be 2,856 tpy lower" than emissions resulting from the BART Benchmark.[20] See 81 FR at 2022. EPA properly proposes to view these aggregate

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[17] As explained above, EPA goes to great lengths in attempting to paint the Utah SIP as being more complicated than other regional haze SIPs, thus requiring EPA to also consider the dueling FIP Proposal. Because EPA never had the need to consider the greater emission reductions test under 51.308(e)(3) in its review of the Utah SIP, EPA's presumed complexity is reduced and EPA's purported necessity to consider two co-proposals is further diminished.

[18] EPA described the clear weight-of-evidence standard as follows: "'Weight of evidence'" demonstrations attempt to make use of **all available information and data** which can inform a decision while recognizing the relative strengths and weaknesses of that information in arriving at the soundest decision possible. Factors which can be used in a weight of evidence determination in this context may include, but not be limited to, future projected emissions levels under the program as compared to under BART, future projected visibility conditions under the two scenarios, the geographic distribution of sources likely to reduce or increase emissions under the program as compared to BART sources, monitoring data and emissions inventories, and sensitivity analyses of any models used." (Emphasis added.) See 71 FR 60612, 60622 (Oct. 13, 2006); Compare 81 FR at 2011-12.

[19] Similarly, EPA has approved, or proposed to approve, other BART Alternatives that include "inter-pollutant trading" when SO2 levels were lower. 79 FR 33438, 33440-41 (Washington, June 11, 2014); 79 FR 56322, 56328 (Arizona, Sept. 19, 2014).

[20] As noted above, EPA has described the BART Benchmark as "the best system of continuous emission control technology available and the associated reductions for each source subject-to-BART covered by the alternative program…." See 81 FR at 2011. Specifically, EPA considers the BART Benchmark under its Proposed Action to be "the

emissions reductions "as part of the overall weight-of-evidence analysis," to be a materially positive factor in leading to visibility improvement.[21] Id. In every other context and program under the CAA, lower overall emissions are considered a positive result. 42 U.S.C. §7401(c). EPA agrees this is true in the Utah SIP context as well, first by acknowledging that total SO2 and total PM emissions are reduced significantly on an individual pollutant basis under the BART Alternative. In fact, EPA notes that SO2 emissions will be reduced by 8,005 tpy under the BART Alternative. Also, when EPA steps out of the theoretical world of visibility modeling and into the real world of monitored visibility improvements, EPA agrees that aggregate emission reductions under the BART Alternative will have a greater measureable impact on improving visibility during more parts of the year than additional NOx reductions would achieve under the BART Benchmark.[22] 81 FR at 2022. Thus, under the BART Alternative, any potential adverse impact to visibility caused by a smaller decrease of NOx emissions (compared to the BART Benchmark)

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most stringent NOx BART controls, SCR plus new LNBs and SOFA, at the four BART units." Id. at 2015.

[21] EPA is blatantly wrong, however, in taking the opposite approach on this point in its proposal to approve the FIP Proposal and reject the SIP Proposal. See 81 FR at 2029. There, EPA blindly concludes that "a comparison of emissions of multiple pollutant species of emissions [sic] is generally not informative, particularly when the Agency is addressing whether an approach provides for greater reasonable progress towards improving visibility." This conclusion is demonstrably wrong, however, for the very reasons EPA has proposed to approve the BART Alternative in regard to this particular metric. For example, EPA concludes in support of the BART Alternative that, based on this very same metric, "the BART Alternative is likely to achieve greater reasonable progress," particularly in light of CALPUFF modeling results that shows greater SO2 emissions reductions under the BART Alternative improve visibility far more than additional NOx emissions reductions under the BART Benchmark. Id. at 2022. EPA also asserts in the FIP Proposal that, because each pollutant species reacts differently to humidity, chemistry, geography, etc., EPA should not consider the visibility improvement resulting from the collective emissions reductions. This conclusion also is demonstrably wrong for the reasons EPA states in proposing to approve the SIP Proposal. For example, EPA attempts to use the very reasons why EPA should approve the BART Alternative – the significant visibility improvement associated with the SO2 reductions because of humidity, chemistry, geography, etc.—as bureaucratic rationale to not approve the BART Alternative. Id. at 2022. Also, EPA's FIP Proposal holds up as the deciding factor visibility improvements resulting from fewer NOx emission reductions under the BART Benchmark. At the same time, EPA acknowledges that this cannot actually be the case because it is SO2 emission reductions under the BART Alternative – and not NOx emission reductions under the BART Benchmark – that results in the greater visibility improvements during all parts of the year. Id. at 2022-24.

[22] "However, for reasons described later in subsection vii for our evaluation of Utah's IMPROVE monitoring metric, we propose to concur with Utah's finding that SO2 emissions reductions should provide visibility benefits in all seasons and that sulfate is the largest contributor to visibility impairment at the affected Class I areas. Furthermore, we propose to find that these observations suggest that the BART Alternative is likely to achieve greater reasonable progress." See 81 FR at 2022.

is overcome by the increased visibility benefits of combined overall emission reductions.[23] In that case, EPA properly proposes to conclude that such significant aggregate emission reductions should be considered as an important element entitled to substantial weight in determining greater reasonable progress.

4. *Improvement in the Number of Days With Significant Visibility Impairment* – EPA also properly recognizes that, when analyzing the total number of days for the years modeled, fewer days with significant visibility impacts will occur under the BART Alternative as compared to the BART Benchmark. See 81 FR at 2022. EPA describes this metric as "useful in assessing the frequency and duration of significant visibility impacts from a source or small group of sources." *Id.* In fact, EPA's model shows that the BART Alternative will produce 18 fewer days of impact above the causation threshold of 1.0 dv threshold, and 175 fewer days of impact above the contribution threshold of 0.5 dv.[24] *Id.* EPA thus concludes that such modeled improvements are "an indication that the BART Alternative achieves greater reasonable progress."[25] Id.

   EPA's consideration of this type of information is consistent with 40 CFR 51, appendix Y (the "**BART Guidelines**"), where Section IV.D.5 states that, in determining BART, "comparison thresholds can be used in a number of ways in evaluating visibility improvements…."[26] As explained below, PacifiCorp encourages EPA to apply significant weight to this particular metric, including a conclusion that such modeling results show strong evidence of greater reasonable progress.

   In any case, the use of this metric takes a holistic view of visibility improvement, which is deserving of significant consideration by EPA.[27] By comparison, the 98th

[23] This is so even though the visibility improvements associated with NOx assumed under the BART Benchmark are wildly overstated. See Comments on the Use of CALPUFF Model in the EPA Proposed Rule on the Utah Regional Haze SIP, prepared by Gale F. Hoffnagle, TRC Environmental Consultants, dated March 2016, ("**Hoffnagle Report**") and attached hereto as Attachment 3. If the visibility improvements associated with NOx were stated properly, then the modeled visibility improvements under the BART Alternative would be even greater and provide even more reason for EPA to approve the BART Alternative.

[24] EPA summarizes the number of days of impact differently at 81 FR 2024 where it concludes that there are 48 fewer days of impact of 1.0 dv or more, and 154 fewer days of impact of 0.5 dv or more, under the BART Alternative. Under either set of numbers, of course, the BART Alternative produces greater reasonable progress.

[25] EPA also should consider the average number of days above the noted thresholds as contained in Tables 5 and 6 of the Proposed Action (16 fewer days for 1.0 dv, and 58 fewer days for 0.5 dv under the BART Alternative). This additional evidence supports EPA's proposed conclusion that that BART Alternative demonstrates greater reasonable progress.

[26] See 81 FR at 2022, including footnote 84.

[27] Thus, EPA's criticism of this very metric in support of the FIP Proposal – and in particular the 18 days of fewer impacts over 1.0 dv – misses the mark. See 81 FR 2029.

percentile metric (addressed below) presents more of a rifle-shot metric that focuses on a single day[28] of visibility improvement and inherently is less reliable for evaluating the BART Alternative.

5. *98th Percentile Impact (dv)* – EPA asserts that:

> "The 98th percentile visibility impact is a key metric recommended by the BART Guidelines when selecting BART controls. In addition, this is one of the primary metrics that EPA has relied on in evaluating prior regional haze actions that have included BART alternatives. In the BART Guidelines, EPA described this metric as an appropriate measure in determining the degree of visibility improvement expected from controls. Therefore, we propose to find that it is an appropriate metric for assessing the relative benefits of the Utah BART Alternative here." See 81 FR at 2022.

In other words, the core reasons why EPA proposes to rely on the 98th percentile metric in evaluating the BART Alternative are because: (i) this metric is recommended in the BART Guidelines for determining BART; and (ii) EPA has used it in other regional haze actions that have include BART alternatives. Neither reason, however, requires EPA to consider the results of 98th percentile metric to be of more than marginal worth, especially given the flaws inherent in the use of the CALPUFF model.

As explained in the Hoffnagle Report (and in greater detail below), the 98th Percentile metric measures only the 8th highest impact day, and even then, it greatly overestimates the modeled visibility improvement. For example, when correcting for the margin of error rates inherent in the model, EPA's presumed visibility improvement resulting from the BART Benchmark becomes virtually non-existent. This information makes clear that EPA should take into account the inherent weakness of this metric (due to the margin of error rates and other reasons explained

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There, EPA admits that the 175 days of fewer visibility impacts over 0.5 dv holds up even under its trumped-up criticism (and therefore "the results of the 0.5 dv threshold favor the BART Alternative"). EPA goes on, however, to simply change the metric by which it evaluates the visibility benefit resulting from 18 fewer days over 1.0 dv of impact. (Total days across all Class I areas vs. average days at each Class I area.) In addition, EPA unilaterally ignores, under the FIP Proposal, the precedent it cites in support of the metric it uses to evaluate the SIP Proposal. EPA got it right the first time under the SIP Proposal, should stick with those metrics, and conclude that they support approval of the SIP Proposal.

[28] The Proposed Action recognizes the limitations of the 98th Percentile Impact analysis as compared to other metrics by stating that, "the annual average does provide an indication of the modeled visibility impacts for the entire year while the 98th percentile modeled results speak to a particular day (the 8th highest impacted day)." See 81 FR at 2023 (emphasis added).

in the Hoffnagle Report) in regard to the BART Alternative.[29] In this light, EPA should give little to no weight to this metric in evaluating the BART Alternative. This is particularly true because the BART Guidelines make use of the 98th Percentile Impact metric permissive even in the context of evaluating BART: "[T]he following is an approach that you may use to determine visibility impacts...," which includes comparing "the 98th percent days for the pre- and post-control runs." See BART Guidelines at Section IV.D.5 (emphasis added). As a discretionary tool, the result of this metric alone should not determine the outcome of EPA's decision regarding the BART Alternative.[30]

Also, the BART Guidelines make clear that, even in the context of determining BART, states "are free to determine the weight and significance to be assigned" to this factor. In other words, even the BART Guidelines confirm that Utah could "determine the weight and significance" of the 98th Percentile metric, which is exactly what Utah did. This is another reason why, if EPA considers the 98th Percentile metric at all, it should give it only marginal weight to it in evaluating the BART Alternative.

In addition, EPA's conclusion in applying the 98th Percentile Impact analysis is that, "on the whole… the BART Benchmark is better on average across all years and all Class I areas (0.14 dv difference)." 81 FR at 2030. By any candid measure, however, such a small difference is not only too miniscule to be of any value, but falls well within the margin of error of the complex modeling calculations used to reach this conclusion as explained in the Hoffnagle Report. In fact, EPA has determined in other states that visibility improvements even greater than 0.14 are too small or inconsequential to justify additional pollution controls in the BART context. (See 77 FR 24794 (0.27 dV improvement termed "small" and did not justify additional pollution controls in New York); 77 FR ¶ ¶ ← → ☼ └ ¶ ¶ ← ¶ └ ♂ ‼ ◀ ‼ ┤ ┬ └ WR└ improvements considered "very small additional visibility improvements" that did not justify NOX controls in Mississippi); 77 FR18052, 18066 (agreeing with Colorado's GHWHUPLQDWLRQ└ WKDW└ ≥GRZQ└WYL└VLEHSURYHPHQW└ ♂ XQGHU└ ‼ GLG└QRW└ GHWHUPLQH└ 6&5└ for Comanche units)). Tellingly, the "low visibility improvements" that Colorado found at the Comanche units not to justify post-combustion NOX controls -- as agreed to by EPA -- ZHUH└ ‼ ◀ ¶ → └ DQG└ ‼ ◀ ¶ → at 18066. In evaluating the BART Alternative here, EPA should not rely on this tiny modeled dv improvement to

[29] EPA's explanation (above) is that the weight-of-evidence test includes considering "sensitivity analyses of any models used." This makes clear that EPA should take into account the weaknesses of the CALPUFF model in giving this metric little to no weight.

[30] EPA does not explicitly state that use of the 98th Percentile Impact analysis is determinative of its proposal to approve or reject the BART Alternative even though it concludes this metric "favors the BART Benchmark." See 81 FR at 2022. EPA does, however, place a disproportionately great weight on this metric in the co-proposal to approve the FIP Proposal and reject the SIP Proposal. Id. at 2030.

support the conclusion that "this metric favors the BART Benchmark" (81 FR at 2030) when it really does no such thing for the reasons noted above.

6. *Annual Average Impact (dv)* – EPA properly concluded that it should consider the Annual Average Impact metric because it "provides additional useful information." See 81 FR at 2023. EPA also properly focuses on this metric because it provides "an indication of the modeled visibility impacts for the entire year" as compared to the 98th Percentile Impact analysis which focuses on a single day. Id. In other words it provides a wide-angle view of visibility improvement over a long period of time instead of the compressed telephoto perspective of looking at a single day. This is important when considering the BART Alternative under the weight-of-evidence analysis which allows a state, as explained above, to consider the relative strengths and weaknesses of information and data. Although EPA acknowledges the dv impact resulting from "this metric is small (0.009 dv)," EPA still properly proposes to find – because of the more expansive nature of this metric - that it at least marginally "supports a conclusion that the BART Alternative achieves greater reasonable progress." Id.

   In evaluating the FIP Proposal, however, EPA flips all of this rationale on its head and instead proposes to conclude that this metric "does not support a conclusion that the BART Alternative achieves greater reasonable progress than the BART Benchmark." 81 FR at 3030. To support this opposite conclusion, EPA tries to force this wide-angle view into a more compressed form and essentially argues that the metric provides weak data and information because: (i) "this metric shows less or equal visibility improvement at four of the nine Class I areas;" and (ii) "it does not represent the benefits of the BART Alternative on the maximum impact days." Id. The weight-of-evidence test, however, does not allow for such trickery by EPA. EPA cannot change the focus of the metric under its FIP Proposal. In evaluating this metric at face value (without demanding that it be more or different than it is), EPA should stick with its conclusion that it provides some support under the weight-of-evidence analysis for approving the BART Alternative.

7. *90th Percentile Impact (dv)* – As with the Annual Average Impact metric, EPA properly concluded to consider the 90th Percentile Impact metric which "shows that the BART Alternative is better at seven of the nine Class I areas and is slightly better averaged across three years and across nine Class I areas (0.006 dv difference)." EPA uses this metric even though "the use of the 90th percentile impacts to evaluate alternatives has not been EPA's practice for source-specific BART determinations…." See 81 FR at 2023. Because of the expansive weight-of-evidence test which considers "all available information and data" as described above, EPA is correct to take this metric into account and conclude that it somewhat "supports a conclusion that the BART Alternative achieves greater reasonable progress." Id. Use of the 90th Percentile metric actually provides a more useful look at modeled visibility improvement because it evaluates the 10% worst impacted day as opposed to the 2% worst impacted day under the 98th Percentile metric. Because the BART rule partially

targets improving visibility during the 20% worst days, of all the metrics used by Utah and EPA to evaluate the BART Alternative the 90th Percentile metric comes closest to evaluating those targeted days. That alone suggests that this metric should be afforded some weight in evaluating the BART Alternative as EPA has proposed. EPA takes the opposite approach, however, when it comes to the FIP Proposal. There, EPA baldly concludes only that the use of this metric is "questionable" support for the BART Alternative. Id. at 2030. Simply slapping the label "questionable" on this metric without further support does not make it so, nor does it make this metric unavailable to support EPA's analysis under the SIP proposal that it "supports a conclusion that the BART Alternative achieves greater reasonable progress." Id. at 2023. This is particularly true in light of the Hoffnagle Report's comments regarding the 90th Percentile metric.

8. *Timing for the Emissions Reductions* – In considering the Timing of Emissions Reductions metric, EPA notes simply that "the reductions from the BART Alternative will occur before the BART Benchmark." See 81 FR at 2023. Although this is a true statement on its face, EPA does an extreme disservice to Utah, PacifiCorp, its customers and the general public by including such an underwhelming description of the meaningful and large visibility benefits associated with the timing of emissions reductions under the BART Alternative[31] as compared to the BART Benchmark. In approving the BART Alternative, PacifiCorp strongly encourages EPA to more completely describe both the tremendous scope, and the overwhelmingly positive visibility impact, of the timing of emission reductions under the BART Alternative as compared to the BART Benchmark.

   The table below shows the timing of controls installed under the BART Alternative, along with: (i) the total tons of emissions reductions achieved since the date of the installation of the controls; and (ii) the projected emissions reductions to be achieved until the time when the BART Benchmark is expected to be implemented.[32]

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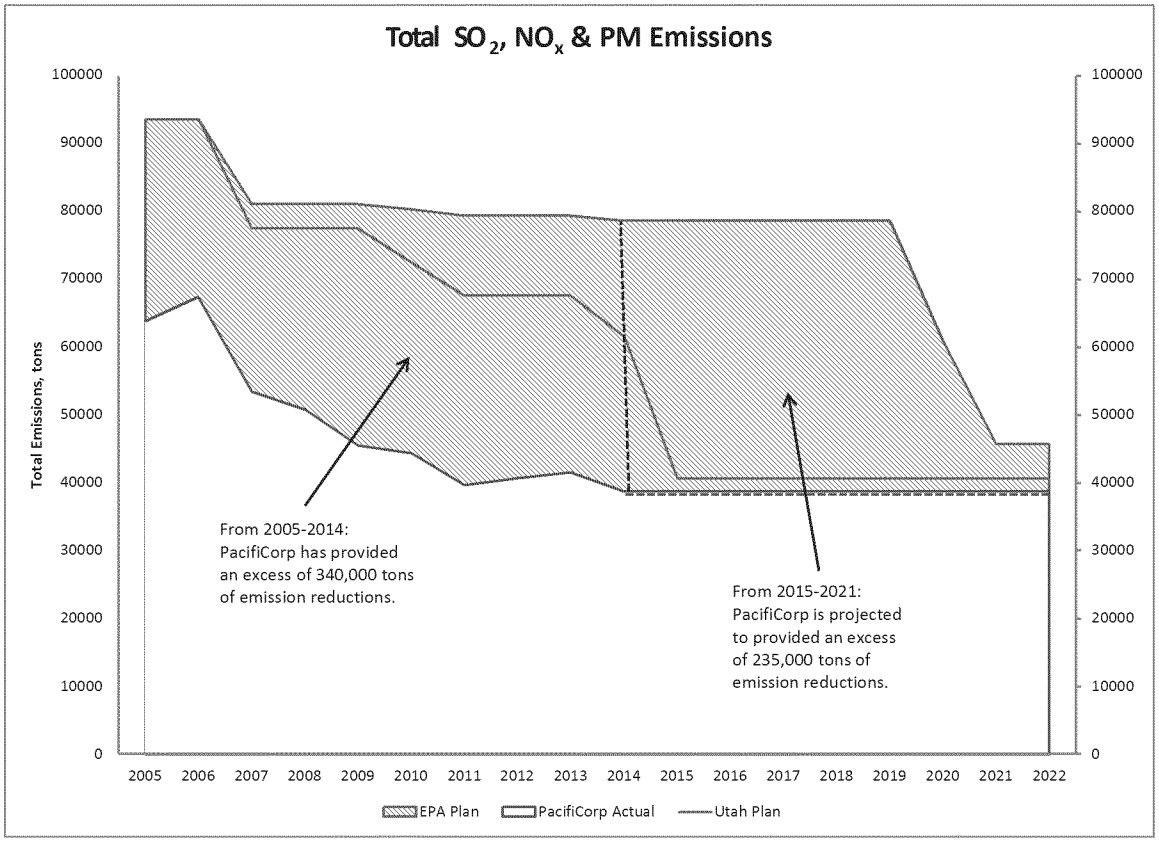
[31] In at least three other portions of the Proposed Action, EPA at least acknowledges that the "reductions under the Utah BART Alternative are required under the State SIP by August 2015, as noted in Table 5, providing an **early and on-going visibility benefit as compared to BART**." (emphasis added) See 81 FR at 2018, 2024, and 2030. In addition, EPA states in the Proposed Action that: "Also notable is that combustion control upgrades at the Hunter and Huntington facilities have been achieving significant NOx reductions **since the time of their installation between 2006 and 2014**." (emphasis added) Id. at 2030. At the critical point of describing in the Proposed Action the timing of reductions as evidence to consider under the Weight of Evidence analysis, however, EPA could not even be bothered to do more than nominally and incompletely describe that evidence, leaving out the importance, scope and impact of the timing of such significant emissions reductions. This, in turn, led to EPA incompletely evaluating the weight of this evidence when considering the SIP Proposal (even though EPA actually reaches the proper conclusion in proposing to approve the BART Alternative).

[32] EPA projects that the BART Benchmark "likely would be fully implemented sometime between 2019 and 2021." See 81 FR at 2030.



As can be seen, the BART Alternative already has produced a total of 340,000 tons of combined emission reductions beginning in 2007 and continuing through 2014. And these emissions reductions have occurred at a time long before the BART Benchmark ever would be implemented. In addition, the BART Alternative is expected to continue to produce significant emission reductions between now and the time of the BART Benchmark (and beyond). EPA should specifically note the significant visibility benefits associated with the timing of these emissions reductions and assign them great weight under the Weight of Evidence test.[33] What EPA should not do, however, is brush over the Emission Reduction Timing metric by failing to adequately describe or consider the significant timing benefits as EPA appears to have done in its tepid conclusions regarding the weight of the Emission Reduction Timing metric in evaluating the BART Benchmark.

Even in evaluating its FIP Proposal, EPA cannot escape acknowledging the benefits of the timing of emission reductions achieved under the BART Alternative as

[33] The U.S. Circuit Court of Appeals for the 10th Circuit explicitly acknowledged that the consideration by EPA of emission reductions occurring at an early point in time is a proper part of a clear weight of evidence approach to determining greater reasonable progress. WildEarth Guardians v. E.P.A., 770 F.3d 919, 938 (10th Cir. 2014).

compared to the BART Benchmark. Indeed, EPA does not, and cannot, offer any criticism to the contrary and instead concludes that: "we recognize that the reductions from the BART Alternative would occur before the BART Alternative." See 81 FR at 2030. Therefore, even though EPA has employed every tactic it can think of criticize other metrics used to evaluate the BART Alternative under its FIP Proposal, EPA makes no such attempt when it comes to the timing metric. This failure is additional evidence that the timing metric should carry great weight in EPA's weight-of-evidence analysis in support of the BART Alternative and this metric in no way supports the FIP Proposal.

9. *IMPROVE Monitoring Data* – EPA properly reaches the following conclusions: (i) "anthropogenic visibility impairment on the Colorado Plateau is dominated by sulfates;" (ii) "sulfate is the largest contributor to visibility impairment at the affected Class I areas;" (iii) "SO2 reductions should provide visibility benefits in all seasons;" and (iv) "visibility benefits associated with NOx reductions are much more likely to occur [only] in the winter months." See 81 FR at 2023-2024. These conclusions properly support the BART Alternative because it requires more significant reductions of SO2 emissions as the primary driver of year round visibility improvements. This is true even though the BART Alternative supports fewer reductions of NOx emissions (compared to the BART Benchmark) because further NOx reductions do not contribute as significantly to visibility improvement, and even when they do, it is only during very limited times of the year with lower visitation rates in affected Class I areas.

   EPA's proposal to disagree with Utah's findings in regard to lower park visitation during the winter season, however, lacks merit. As EPA acknowledges, the BART Guidelines allow for states like Utah to "determine if the time of year is important (e.g., high [visibility] impacts are occurring during tourist season.... States may develop other methods as well." See 81 FR at 2024, footnote 109. EPA's decision to not consider this fact in regard to NOx emissions under the BART Alternative is directly contrary to the cited BART Guidelines. Utah did not assert, as EPA seems to think, that slow-season, winter month visitors are entitled to less visibility protection than visitors during high-season, summer months. But consistent with the BART Guidelines, Utah properly considered this fact among others under the weight-of-evidence analysis. EPA should do the same rather than reject this approach out of hand.

   As with the timing metric discussed above, EPA does not attempt to criticize this metric in regard to its FIP Proposal (except for the winter visitor information described above). See 81 FR at 2031. This alone is additional evidence that the IMPROVE Monitoring Data metric should carry great weight in EPA's weight-of-evidence analysis in support of the BART Alternative and that this metric in no way supports the BART Benchmark.

10. *Energy and Non-Air Quality Benefits* – EPA concludes that the Energy and Non-Air Quality Benefits identified by Utah "do not have a direct bearing on whether the BART Alternative achieves greater reasonable progress" and therefore are not material to EPA's action on the SIP Proposal. See 81 FR at 2024. EPA, however, is not correct in this conclusion. As explained above regarding EPA's own description of the evidence to be considered in the Weight of Evidence evaluation: "'Weight of evidence' demonstrations attempt to make use of **all available information and data** which can inform a decision while recognizing the relative strengths and weaknesses of that information in arriving at the soundest decision possible." (emphasis added) "All available information and data" includes Energy and Non-Air Quality Benefits because they help to inform greater reasonable progress decisions by causing decision-makers to consider concurrent impacts of a particular action. This is especially true given EPA's repeated reliance on the BART Guidelines to evaluate the BART Alternative (specifically the 98th. Percentile metric), and an evaluation of Energy and Non-Air Quality Benefits are an explicit part of those BART Guidelines. See BART Guidelines at Section IV.D.4.i. Additionally, Congress considered this factor as sufficiently important to specifically include it as part of the five-factor BART analysis requirements. 42 U.S.C. §7491(g)(2). Likewise, this factor should be part of EPA's evaluation of the BART Alternative and EPA should consider the impacts identified by Utah as an additional reason to support approval of the SIP Proposal.

    As with the timing and IMPROVE metrics discussed above, EPA does not attempt to criticize this metric in regard to its FIP Proposal. See 81 FR at 2031. This alone is additional evidence that the Energy and Non-Air Quality Benefit metric should carry great weight in EPA's weight-of-evidence analysis in support of the BART Alternative and that this metric in no way supports the BART Benchmark.

11. *Cost* – EPA's decision that "it is not material to our action whether we agree or disagree with Utah's conclusion that the BART Alternative would have a lower cost impact to PacifiCorp than the BART Benchmark" borders on regulatory absurdity.[34] See 81 FR at 2024. As EPA itself acknowledges, the cost of the BART Benchmark is at $400 million more than the cost of the BART Alternative (and PacifiCorp contends the cost is in excess of $700 million more). If the cost difference between EPA's competing co-proposals is not material and worthy of EPA's consideration in taking final action, then what cost information possibly could be?

    EPA's proposal not to consider cost in evaluating the BART Alternative, however, fails for several reasons. First, EPA itself introduced cost as a foundational

[34] This is particularly true because, after announcing that the significantly lower cost of the BART Alternative is not material to its final action, EPA ultimately states that "we do agree" with Utah that the BART Alternative will cost more than $700 million less than the BART Benchmark. See 81 FR at 2024. Such inconsistent reasoning does not support EPA's refusal to consider the cost difference in its BART Alternative analysis.

component of any BART Alternative analysis. In EPA's final Revisions to Provisions Governing Alternative to Source-Specific BART Determinations at 71 FR 60612 (October 13, 2006), EPA lays out the foundation for any state to consider a BART Alternative:

> "The EPA continues to support State efforts to develop trading programs and other alternative strategies to fulfill the goals of the CAA. We believe such strategies have the potential to achieve greater progress towards the national visibility goals than more traditional approaches to regulation, **and to do so in the most cost-effective manner practicable**." 71 FR at 60614. (Emphasis added.)

In other words, in promulgating the BART Alternative rules, EPA recognized that the basis for considering a BART Alternative is twofold: (i) to achieve greater progress towards visibility goals; and (ii) to do so "**in the most cost-effective manner**." EPA cannot pass a rule based on the foundational premise of cost-effectiveness, and then apply that rule with active disregard of the very cost-effectiveness foundation upon which the rule is based.[35] In fact, considering the cost difference of the BART Alternative is consistent with the judicial philosophy which underpinned the U.S. Supreme Court's recent decision in Michigan v. EPA, 135 S.Ct. 2699 (2015). There, the court considered whether it was reasonable for EPA to refuse to consider cost in regard to regulating hazardous air pollutant from power plants. The court noted that:

> "Agencies have long treated cost as a centrally relevant factor when deciding whether to regulate. Consideration of cost reflects the understanding that reasonable regulation ordinarily requires paying attention to the advantages and the disadvantages of agency decisions. It also reflects the reality that 'too much wasteful expenditure devoted to one problem may well mean considerably fewer resources available to deal effectively with other (perhaps more serious) problems.'" Id. at 2707.

Even the dissent in the Michigan v. EPA case agrees on this point: "I agree with the majority—let there be no doubt about this—that EPA's power plant regulation would be unreasonable if '[t]he Agency gave cost no thought *at all*.'" Id. at 2714. As a result, all nine justices of the U.S. Supreme Court sent a clear signal that EPA must consider cost in making agency decisions to achieve emission reduction benefits

[35] EPA acknowledged this principle in arguing to the court in favor of considering "the full structure and function" of the 309 program, which in essence is a BART Alternative: "Petitioners' contention that EPA impermissibly approved the backstop trading program ignores the full structure and function of the 309 program and improperly seeks to narrow the scope of EPA's discretion and this Court's review." See EPA's Primary Brief at page 15 (September 13, 2013), a portion of which is attached as Attachment 4. Likewise, EPA should consider the cost impact of the BART Alternative (including the cost difference as compared to the BART Benchmark) in order to consider "the full structure and function" of the Applicable BART Alternative Rules as described in the preamble to those rules.

(including visibility improvement). Likewise, EPA should consider the cost difference between the BART Alternative and the BART Benchmark as part of the weight-of-evidence analysis instead of actively disregarding that cost difference as EPA has proposed to do.

EPA already has before it as part of this rulemaking docket the very cost saving benefits information it should consider in approving the BART Alternative. These costs savings are material and significant by any stretch of the imagination. EPA's refusal to formally consider the cost information is akin to the position it took in Michigan v. EPA where the court clearly and forcefully ruled that EPA could not "ignore cost." EPA should give up its attempt to do that very thing here.

Second, the CAA requirements and applicable regional haze rules have as one of their foundational components the consideration of cost. See CAA at §7491(g)(1) and (2). Also, see 40 CFR 51.308(d)(1) which states that a core requirement of a regional haze SIP is the inclusion of reasonable progress goals under which "(i)… the State must: (A) consider the costs of compliance"). It is irrational to require the consideration of cost in setting BART and reasonable progress goals, but then assert it is not even a remote consideration when evaluating a BART Alternative. Cost consideration is so fundamental to the fabric of the regional haze statutes and rules that EPA should have little trouble concluding that it must consider those costs in evaluating the BART Alternative (particularly as compared to the FIP Proposal).

Third, EPA's own interpretation of the Weight of Evidence standard is expansive. It includes "all available information and data."[36] All means ***all***. EPA should not now add restrictions to its expansive interpretation in order to prejudicially exclude consideration of material cost impacts and cost differences. In fact, EPA's brief in the SO2 Backstop Trading case explains that the preamble to the applicable regional haze rule allows "all available information and data" to be considered as part of the "weight of evidence" analysis. EPA SO2 Backstop Trading brief at 36, 38, citing to 71 FR at 60621, 60631. Also in its brief, EPA specifically mentioned "lower compliance costs" as "'policy considerations' which EPA may properly assess under the 'clear weight of the evidence' standard when comparing BART to a BART-alternative." EPA SO2 Backstop Trading brief at 42.

Fourth, EPA is wrong to exclude consideration of costs to the extent EPA claims the BART Alternative requirements do not require cost consideration. The Proposed Action offers "two co-proposals" from which "EPA intends to finalize only one proposal." See 81 FR at 2006. The very nature of offering two co-proposals from

[36] In evaluating the Weight of Evidence standard, the U.S. Court of Appeals for the 10th Circuit agreed and stated that EPA itself concluded that the examples EPA listed in the BART Alternative rule described above are "not exhaustive and that the determination should be based on 'all available information and data which can information a decision….'" WildEarth Guardians v. E.P.A., 770 F.3d 919, 935 (10th Cir. 2014).

which to select one is to compare and contrast between them.[37] EPA clearly considers cost to be important in proposing the FIP Proposal.[38] The nature of the Proposed Action as "two co-proposals" requires EPA to consider cost in regard to the SIP Alternative as well, particularly for the purpose of comparing the co-proposals against each other. Also, because EPA relies on non-cost portions of the BART Guidelines in evaluating a BART Alternative, then it also should rely on the BART Guidelines as justification for considering the cost savings of the BART Alternative.

Finally, Utah considered the cost impact of the BART Alternative to be important enough to respond to comments about cost as follows as part of the Utah SIP rulemaking process:

> "PacifiCorp noted in their comments on the proposed SIP revision that the Alternative Measure not only produces greater reasonable progress, including lower emissions and improved visibility, but it does so at a significant capital cost savings to PacifiCorp and its customers as compared to the most stringent NOX technology and limits. While DAQ has not officially determined the cost of installing SCR on the four units, it is clear that it would be a significant cost. On the other hand, the Carbon Plant has already been closed due to the high cost of complying with the MATS rule. The costs to Utah rate payers (and those in other states served by PacifiCorp) to replace the power generated by the Carbon Plant have already occurred; there will be no additional cost to achieve the co-benefit of visibility improvement. ***In other words, the Alternative Measure achieves better visibility improvements than would be achieved by requiring SCR as BART at the four EGUs, and at a significantly lower cost. This presents a classic "win/win" scenario – the Alternative Measure results in greater reasonable progress and that greater reasonable progress is achieved at a much lower price compared to SCR.*** Cost is one of the factors listed in section 169A(g)(2) that should be considered when determining BART." (Emphasis added.) Utah SIP; Staff Review; May 13, 2016 p. 27.

EPA likewise should consider the cost impact and differences in at least a similar manner when evaluating the BART Alternative.

As with the timing, IMPROVE and Energy/Non-Air Quality metrics discussed above, EPA does not attempt to criticize this cost metric in regard to its FIP Proposal. See 81

[37] As explained above, PacifiCorp maintains that EPA is bound to approve the SIP Alternative and is prohibited from even considering the FIP Alternative. Because EPA proposes to consider both, however, PacifiCorp's comments regarding EPA comparing and contrasting the SIP Alternative with the FIP Alternative are applicable.

[38] See 81 FR at 2024: "We do agree" with "Utah's conclusion that the BART Alternative would have a lower cost impact to PacifiCorp than the BART Benchmark…." Also, see Proposed Action at Section VI.D.1.a (Costs of Compliance).

FR at 2031. This alone is additional evidence that the cost metric should carry great weight in EPA's weight-of-evidence analysis in support of the BART Alternative and that this metric in no way supports the BART Benchmark.

B. Evaluation of Weight of Evidence

As explained above, the weight-of-evidence analysis is not the exclusive province of EPA. Rather, in considering whether to approve the SIP Proposal, EPA should give great weight and deference to what evidence Utah selected, how Utah elected to weigh that evidence in evaluating the BART Alternative, and to Utah's conclusions. In other words, it is not EPA's role to apply this test *de novo* as EPA attempts to do here. Because EPA already has properly proposed to find that Utah correctly followed the Applicable BART Alternative Requirements, properly weighed the evidence and available metrics and reached a logical and rationale conclusion, EPA's role should be limited to explaining the foregoing and approving the Utah SIP. This is particularly true given EPA's statement that "it is preferable that the regional haze program be implemented through state plans." See 81 FR at 2006.

PacifiCorp agrees with EPA that the following evidence should carry the most weight: (i) the BART Alternative produces 8,005 fewer tpy of SO2 emissions and 2,856 fewer tpy of combined emissions than the BART Benchmark (see 81 FR at 2024); (ii) the BART Alternative produces 48 fewer days of impact above 1.0 dv, and 145 days of impact above 0.05 dv (*Id.*)[39]; (iii) the IMPROVE monitoring networks shows that a reduction in SO2 emissions (in this case 8,005 tpy) "provides visibility benefits throughout the year" as compared to NOx emission reductions which don't, that "sulfate is the largest contributor to visibility impairment at affected Class I areas," and that the BART Alternative provides for the greatest SO2 reductions (in this case 8,005 tpy more than the BART Benchmark)(*Id.*); and (iv) the BART Alternative produces a far earlier start to emission reductions through earlier installation of emission controls (compared to the BART Benchmark), beginning in 2007 and continuing on through August 2015. (*Id.*) In short, as compared to the BART Benchmark, the above evidence alone (which EPA agrees should carry significant weight) demonstrates that the BART Alternative – as compared to the BART Benchmark -- produces greater reasonable progress in the form or greater SO2 and overall emission reductions, more overall days of improved visibility, better visibility benefits throughout the year, and a significantly earlier start to emission reductions. EPA correctly proposes to conclude that the weight of this evidence produces greater reasonable progress and requires approval of the BART Alternative.

In addition, for the reasons explained above and summarized below, EPA should apply additional weight (or in the case of cost, non-air quality environmental and energy impacts,

[39] Elsewhere in the Proposed Action EPA uses 18 fewer days above the 1.0 dv threshold and 175 fewer days above the 0.5 dv threshold. See 81 FR at 2022, 2029. It is not clear why EPA uses different data here, but the fact is that all of the cited data supports both giving great weight to this metric and EPA's overall conclusion to approve the BART Alternative.

any weight) to the following evidence (or metrics). By doing so, EPA will conclude even more forcefully that it should approve the Utah SIP.

1. *TPY* – As explained above and following Utah's lead in the Utah SIP, EPA has assumed that the SIP Proposal produces a greater reduction in aggregate emission reductions of 2,856 tpy compared to the BART Benchmark. This information, however, presumes that the emission units covered under the BART Alternative have emitted at the maximum amount allowable under applicable permits every minute of every day for 365 days each year. In reality, of course, the units do not function in this manner. Therefore, EPA should also take into account the actual emissions from the affected units in considering the aggregate tpy reductions, at least in considering emissions from 2007 until the present. This information is available above in the chart at page 17. By acknowledging that the SIP Proposal – based on actual emissions data – produced even greater emission reductions than EPA (or Utah) had supposed, this gives EPA even more reason to approve the BART Alternative based on this metric.

2. *Emission Reductions Timing* –Information available above in the chart at page 17 also demonstrates, coupled with accurate emission tonnage reduction amounts, that the BART Alternative provides even greater benefits earlier that EPA has supposed. Having this information in this manner allows EPA to better consider the magnitude of these benefits under the BART Alternative. This, in turn, requires EPA to afford even greater weight to this metric in support of the BART Alternative.

3. *Costs and Energy/Non-Air Quality Impacts* – EPA should consider, as material evidence with significant weight, the cost savings available by approving the BART Alternative as compared to the BART Benchmark. Indeed, EPA will be arbitrary and capricious in its decision-making if it fails to consider this cost difference. This is particularly true if EPA's failure to consider the cost savings under the BART Alternative leads EPA to disapprove the SIP Proposal and instead approve the FIP proposal. This also is true for the energy/non-air quality impacts which EPA should have taken into account.

IV.EPA'S FIP PROPOSAL IS NOT LEGALLY SUSTAINABLE

Not only did EPA improperly reject the Utah SIP Proposal for the reasons described above, it also failed to correctly analyze the five statutory BART factors under its FIP Proposal when it created its NOx BART determinations for the Utah BART Units (Hunter Units 1 and 2, and Huntington Units 1 and 2). In determining BART, EPA recognizes its duty to apply the five statutory BART factors. "In determining BART, the state, or EPA if promulgating a FIP, must consider the five statutory factors in section 169A(g)(2) of the CAA: (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." See 81 FR at 2032.

EPA, however, failed to properly consider and analyze four of the five BART factors in its FIP Proposal: (i) existing NOx controls; (ii) costs of compliance; (iii) non-air quality environmental and energy impacts; and (iv) reasonably anticipated visibility improvement. For these reasons, EPA should not finalize the FIP Proposal and instead should approve the SIP Proposal.

A. **Existing Controls**[40]

EPA incorrectly claims that it properly considered the existing combustion controls (LNB and SOFA) at Hunter Unit 1 as required by the BART statute and BART Guidelines. See 81 F R at 2034. Rather, as EPA begrudgingly admits, it evaluated "control technologies and baseline emissions" from what it mistakenly claims is the "correct starting point, that is, prior to the installation of the combustion controls pursuant to state-law NOx limitations." Id. at 2036.[41] In other words, while EPA may have noted the presence of the existing controls when identifying the types of potential BART NOx controls, **EPA did not take into account the impact of the existing controls** when actually conducting the statutorily-required BART cost and visibility analyses for Hunter Unit 1, including establishing the baseline emissions to be used in the cost and visibility analyses. **EPA made this same mistake for all of the Utah BART Units.** 81 FR at 2038-40, tbls. 19-24, (Hunter Unit 2); 81 FR at 2042-44 tbls. 25-30 (Huntington Unit 1); 81 FR at 2046-48, tbls. 32-36 (Huntington 2).

EPA's refusal to properly account for "existing controls" violates the CAA and BART Guidelines, and skews EPA's BART analysis. As EPA also is well aware, the Eighth Circuit Court of Appeals found that EPA's similar actions in North Dakota (ignoring existing controls when conducting a BART "cost" analysis) violated the CAA. Finally, EPA took a contrary position for one of PacifiCorp's units in Arizona (Cholla Unit 4, which EPA uses as a comparable benchmark here), making EPA's actions here overtly arbitrary and capricious.

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[40] While PacifiCorp uses Hunter Unit 1's BART analysis as an example here, EPA made the same "existing controls" mistake for all four Utah BART Units. In fact, unless otherwise stated, all of the arguments made herein regarding Utah's FIP Proposal apply with equal force to all of the Utah BART Units.

[41] EPA also emphasizes that it "did not approve" the existing NOx pollution controls. However, the courts, see North Dakota, have held this issue is irrelevant. Moreover, here, where EPA did not act on Utah's regional haze SIP for years, it is disingenuous for EPA to claim it did not approve the controls when EPA withheld its approval/disapproval for years beyond the statutory time frame. In 2008, Utah submitted to EPA a RH SIP containing Utah's BART analyses for PacifiCorp's four BART-eligible units located in Utah, identifying the currently-installed "existing controls" as BART. EPA took no formal action with regard to this 2008 RH SIP, or on a minor 2011 revision (which did not materially alter or modify the 2008 BART determinations), until EPA proposed partial disapproval of the 2011 RH SIP revision on May 16, 2012. By then, Utah's RH SIP was legally binding and PacifiCorp was legally required to install the controls.

1. *The CAA and BART Guidelines Require EPA to consider "existing controls."* -- The language of the regional haze statute is unambiguous; a State/or EPA determining BART must take account of "any existing pollution control technology in use at the source[.]" 42 U.S.C. § 7491(g)(2). The statute is clear. It does not allow EPA to consider "existing controls" for some limited purposes, but ignore them for other important analyses. For example, when conducting a five-factor BART determination, the State/or EPA must determine the "realistic" baseline emissions so that accurate BART cost and visibility analyses can be performed. The BART Guidelines state "[t]he baseline emissions should represent a *realistic* depiction of *anticipated* annual emissions for the source. In general, for the existing sources subject to BART, you will estimate the anticipated annual emissions based upon actual emissions from a baseline period." 40 C.F.R. pt. 51, app. Y § IV.D.4.d. (emphasis added).

   Here, despite claiming it considered "existing controls," EPA refused to account for the "existing controls" when setting the baseline emissions, a fundamental part of a BART analysis. Instead, EPA used a baseline emission rate founded on 2001-2003 data which did not account for the "existing controls." Moreover, EPA's use of 2001-2003 emissions data to establish the baseline emissions for the Utah BART Units is neither "realistic" nor provides the "anticipated" emissions as required by the BART Guidelines. Using outdated emissions information is not "realistic;" it does not reflect reality at all. For example, the 2001-2003 NOx emissions rate for Hunter 1 was 0.40 lb/MMBtu. 81 FR at 2004, 2034, tbl. 13. After the installation of pollution control equipment in 2014, the actual NOx emissions rate changed to 0.21 lb/MMBtu, a 48.4% decrease. *Id.* at 2034. Therefore, the old 2001-2003 emissions data is no longer "realistic," and represents approximately half of the actual, realistic emissions rate. Moreover, EPA cannot use outdated emissions data to "anticipate" annual emissions from the Utah BART Units because the NOx emissions rates, in fact, have materially changed. This mistake skews EPA's BART decision-making.

2. *The Eighth Circuit rejected EPA's "existing control" interpretation* -- Not only does EPA's "existing controls" approach in the FIP Proposal violate the BART Guidelines, but courts have rejected EPA's approach as well.In North Dakota, a power company had installed pollution control equipment two years before EPA conducted its BART determination. North Dakota v. EPA, 730 F.3d 750, 760 (8th Cir. 2013). The power company argued EPA should consider the existing controls when calculating cost effectiveness, among other things. EPA refused, unsuccessfully arguing that it "was not required to reconsider cost estimates based on voluntarily installed controls installed after the baseline period." Id. at 762. The Eighth Circuit rejected EPA's actions, and its excuses. The North Dakota court held 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." Id. at 764. The court further held EPA's failure to properly consider the "existing pollution control technology" was contrary to the plain language of the CAA and rejected part of EPA's FIP on this basis. Id. at 762-64.

Here, EPA repeated the same mistake for the Utah BART Units in the FIP Proposal. EPA's NOx BART determinations failed to properly account for the low NOx burners and over-fire air systems ("LNB/OFA") that already had been installed when EPA conducted its BART cost and visibility improvement analyses. Also, EPA refused to consider the existing LNB/OFA for the same reason the court rejected in North Dakota: because EPA did not approve the LNB/OFA installation as BART. See, e.g., 81 FR at 2036.[42] EPA's actions in the FIP Proposal are just as illegal as its actions in North Dakota. EPA must redo its NOx BART determinations in the FIP Proposal to account for the "existing controls" in the baseline emissions, BART cost analyses, and BART visibility improvement analyses for the Utah BART Units.

EPA's "existing controls" mistake has significant consequences and materially skews EPA's NOx BART analyses at the Utah BART Units. For example, using outdated baseline emissions data that did not recognize existing controls, EPA calculated "cost-effectiveness" for NOx BART at Hunter Unit 1 assuming that new LNB/OFA had not been installed. See e.g., 81 FR at 2004, 2,034 tbl. 13, 2036. EPA's failure to consider Hunter Unit 1's existing NOx controls caused EPA to overestimate the cost effectiveness of SCR by crediting SCR with the future removal of NOx emissions that, in fact, are already being removed by the existing LNB/OFA. This mistake was caused in large part by EPA's refusal to consider "existing controls" as part of its baseline emission analysis. "Baseline emissions" are an elemental part of a BART cost-effectiveness calculation. 40 C.F.R. Part 51, App. Y, § IV.D.4.d.

EPA also artificially inflated the calculated visibility improvement from SCR by combining the modeled visibility improvement for SCR (which has not yet been installed) with the modeled visibility improvement of LNB/OFA (which EPA knows has already been installed). See e.g. 81 FR at 2,004, 2035-36. Once the CALPUFF modeled visibility improvements from LNB/OFA are removed from that attributed to SCR (1.55 dv at the most impacted Class I area according to EPA's flawed modeling data), the calculated visibility improvements from SCR shrink to 0.70 -- less than the perceptible level of 1.0 dv. Id. at 2035, tbl 15. Many of EPA's other calculated visibility improvements, once the gains from existing LNB/OFA are removed, shrink to numbers that fall within the margin of error for the CALPUFF model, and that cannot be used to justify EPA's FIP Proposal. Nat'l Parks Conservation Ass'n v. E.P.A., 788 F.3d 1134, 1147 (9th Cir. 2015).

In essence, as a result of EPA ignoring the "existing controls" at the Utah BART Units, EPA's NOx BART analyses ask the wrong question. Instead of asking, "what cost and visibility improvements are associated with the installation of LNB/OFA and SCR, even though LNB/OFA are already installed?" EPA should have asked,"what cost and visibility improvements are associated with the installation solely of SCR?"

[42] Moreover, EPA's decision to ignore the "existing controls" is counter-intuitive. As explained above, the "existing controls" have resulted in emissions reductions and related modeled visibility improvements years before EPA's FIP Proposal.

3. *EPA considered "existing controls" at Cholla Unit 4* -- EPA's refusal to recognize existing NOx controls at the Utah BART Units is contrary to not only the BART statute, BART Guidelines, and existing case law, but is also contrary to EPA's past practice at one of PacifiCorp's other units in Arizona (Cholla Unit 4). In the Arizona regional haze rulemaking, EPA said:

> "The presence of existing pollution control technology is reflected in the BART analysis in two ways: First, in the consideration of available control technologies . . . , and *second, in the development of baseline emission rates for use in cost calculations and visibility modeling*. . . . AEPCO, APS, and SRP used baseline time periods that varied from 2001 to 2007. *The respective baseline emissions and existing pollution control technology used in the BART analyses reflect the levels of control in place at the time.* EPA considers ADEQ's approach to be reasonable and generally consistent with the [Regional Haze Rule] and the BART Guidelines." Arizona Proposed RH Rule, See 77 FR at 42834, 42841 (emphasis added).

Moreover, EPA found that adjusting baseline emissions to account for existing controls was necessary to get a "realistic estimate of current visibility impacts and the effect of BART controls." See 77 FR at 42854. EPA reiterated this position in the Arizona Final RH Rule. See 77 FR at 72512, 72526 ("This provision is consistent with the statutory requirement that each BART determination take into consideration 'any existing pollution control technology at the source' . . . in order to 'represent a realistic depiction of anticipated annual emissions for the source' the baseline can account for controls already installed on the source.").

In Arizona, EPA recognized that since it had disapproved Arizona's BART determinations for NOx, EPA was "obligated to conduct [its] own five-factor BART analyses for NOx" and included "existing" NOx controls in the EPA's BART baseline emissions analysis, including for Cholla. *Id.* Here, contrary to its clear position in Arizona and Colorado (and for the Cholla and Hayden power plants, which EPA cites in the FIP Proposal as BART comparisons for the Utah BART Units),[43] EPA ignored existing controls in the development of baseline emission

[43] In its FIP Proposal, EPA compared the cost and visibility analyses from the Utah BART Units to the analyses from the Cholla power plant in Arizona. See e.g., 81 at 2037. PacifiCorp owns Unit 4 at the Cholla power plant. EPA considered existing controls when setting the baseline emissions data for Cholla Unit 4, but will not consider existing controls when setting the baseline emissions data for the Utah BART Units, which PacifiCorp also owns and operates. The "awkwardness" and inconsistency of this approach can be seen in EPA's own comparison language. For example, for Hunter Unit 1, EPA states, "as with Hayden, the *average* cost effectiveness of SCR at Cholla should be compared with the *incremental* cost-effectiveness of SCR . . . at Hunter Unit 1." Id. (emphasis added). Why does EPA require *average* cost effectiveness numbers at Hayden and Cholla to be compared with *incremental* cost effectiveness numbers at Hunter and Huntington? The reason: EPA is arbitrarily applying a different "baseline emissions"

rates. Due to EPA's inconsistencies in applying the baseline emissions methods, EPA's actions are arbitrary and capricious.

4. *EPA Has Considered Existing Controls in Other Settings in Utah* -- Not only are EPA's actions inconsistent with its BART analyses in Colorado and Arizona, but EPA's FIP Proposal is inconsistent with other EPA actions in Utah. Paragraph 11 of DG&T's settlement agreement with EPA Region 8 provides that "in conducting any reasonable progress analysis under the regional haze rule, EPA Region 8 acknowledges that in calculating Deseret's baseline emissions EPA Region 8 intends to reflect any emission reductions that result from a final LNB/OFA Minor NSR Permit and installation of LNB/OFA." Considering existing LNB/OFA at one power plant in Utah for baseline emissions purposes (particularly one that EPA has allowed to escape any previous regional haze analyses), but not another, is the very definition of arbitrary and capricious.

   EPA's refusal to meaningfully consider the "existing" NOx controls at Hunter and Huntington as a substantive part of its BART cost and visibility improvement analyses is forcibly contrary to EPA's statements and actions in Arizona, Colorado, Utah, the North Dakota decision, and the BART statute and Guidelines. EPA should withdraw its FIP Proposal and approve Utah's SIP Proposal.

B. **Costs**

Any BART determination must include an analysis of cost. 42 U.S.C. § 7491(g)(2). In the FIP Proposal, EPA states that it determined costs "in accordance with the BART Guidelines," the "EPA Air Pollution Control Cost Manual" ("CCM"), "portions of the draft 2015 revisions to the CCM chapters for the post-combustion NOx control technologies" related to SNCR and SCR, and "cost of compliance estimates supplied to EPA by Andover Technology Partners (ATP)" which in turn "rely on the cost estimates that PacifiCorp submitted to Utah in 2012 and 2014, but with those cost estimates adjusted in a number of cases for reasons described in the ATP report." See 81 FR at 2031-33. EPA's SCR cost estimates are flawed, particularly ATP's revisions to PacifiCorp's cost estimates and also because of EPA's departure from the existing CCM. EPA's NOx BART determinations in its FIP Proposal are flawed because they relied on ATP's flawed SCR cost estimates.

To identify and explain these flaws, PacifiCorp retained Sargent & Lundy ("S&L"),[44] a respected engineering firm that engineers and designs NOx pollution control devices,

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method to Hunter and Huntington that skews the "average cost-effectiveness number" and makes it incomparable to the same numbers at Hayden and Cholla. It is arbitrary and capricious to apply to different interpretations of the "existing controls" statutory requirement different power plants within PacifiCorp's system and to BART determinations EPA uses for comparison.

[44] S&L's experience in the electric power industry, as well as its experience working with PacifiCorp, made it uniquely qualified to perform a review of ATP's and EPA's SCR

such as SCRs. S&L generated a report ("S&L Report"), attached hereto as Attachment 5, which is hereby incorporated by reference. S&L identified several material mistakes made by ATP in generating its SCR cost estimates, which estimates EPA then relied on in its BART determinations and FIP Proposal. EPA also made its own independent mistakes in its SCR cost estimates.[45] As a result of ATP's and EPA's cost-estimating mistakes and misapplication of the applicable statutes and regulations, the EPA's BART cost estimates for SCR are vague, confusing, illegal, and wrong, and EPA's FIP Proposal should be rejected, for the following reasons.

1. *EPA's SCR BART cost estimates are missing required information* -- EPA claims that its SCR capital costs were obtained, in part, from PacifiCorp's 2014 BART Analyses. However, PacifiCorp's estimated SCR capital costs are much higher than EPA's estimated SCR capital costs. For example, in PacifiCorp's August 4, 2014 BART analysis, page 2, the estimated SCR capital costs for LNB/OFA/SCR are $180.8 million for Hunter Unit 1. S&L Report at 3, tbl. 1. EPA claims the estimated capital costs for LNB/OFA/SCR are $110.3 million for Hunter Unit 1. See 81 Fed. Reg. 2,004, 2,035 tbl 14. While EPA claims PacifiCorp improperly included certain costs (which claim is wrong), EPA never explains the $70 million difference between its SCR cost estimate and PacifiCorp's SCR cost estimate for Hunter Unit 1.[46] EPA must adequately support and document its BART cost analysis, which includes explaining the differences between PacifiCorp's August 2014 BART analysis costs and EPA's revised costs relied upon in the Proposed Rule. PacifiCorp cannot verify EPA's SCR cost estimates, which are reductions of PacifiCorp's SCR cost estimates, until EPA explains how it reduced PacifiCorp's cost estimates on an item by item basis. EPA's "actions must be reasoned." Nat'l Parks Conservation Ass'n v. E.P.A.,

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cost estimates. S&L has considerable experience with the federal and state environmental regulations affecting power plant operations, as well as the specification, evaluation, selection, and implementation of emission control technologies for both gas- and coal-fueled utility power facilities, including extensive experience with the NO_X control technologies evaluated. For example, since 2000, S&L has provided, or is currently providing, engineering services for the implementation of SCR systems on 68 units, totaling more than 36,000 MW of operating capacity. S&L's first-hand experience with NO_X control technologies, especially SCR systems, provides it with a thorough understanding of both the capital and operating and maintenance (O&M) costs associated with these technologies. In addition, S&L has completed multiple projects for PacifiCorp at both the Hunter and Huntington stations and is familiar with the site constraints and the potential challenges to construct SCR systems at each station.

[45] EPA made several obvious mistakes in its SCR cost estimates. For example, EPA's FIP Proposal rejects PacifiCorp's SCR cost estimates allegedly because they included improper items, such as AFUDC. See 81 FR at 2004, 2034-35. However, EPA's own expert stated "AFUDC is not included in the overnight cost methodology of the CCM and therefore was not allowed. PacifiCorp correctly excluded this from their estimate." ATP Report, page 10.

[46] Again, although PacifiCorp uses Hunter 1 as an example, EPA and ATP made the same SCR cost estimating mistakes at all of the Utah BART units. Therefore, all of the arguments made herein apply with equal force to all Utah BART Units.

788 F.3d 1134, 1141 (9th Cir. 2015). The law requires EPA to "cogently explain why it has exercised its discretion in a given manner." Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983); Gen. Chem. Corp. v. United States, 817 F.2d 844, 857 (D.C. Cir. 1987) (per curiam). Here, EPA has not cogently explained the difference between its SCR BART cost estimates and PacifiCorp's SCR cost estimates.

2. *EPA's cost estimates are contrary to the CCM* -- In the FIP Proposal, EPA states that "cost estimates for control technologies should be based on the CCM, where possible." See 81 FR at 2033. But EPA, and its expert, ATP, ignored certain costs allowed by the EPA Control Cost Manual ("CCM") when calculating SCR costs for the NOx BART determinations. For example, in the ATP Report, pages 7-8, EPA's expert discounted costs from PacifiCorp's SCR cost estimates that the same experts admit are allowed by the CCM. The ATP Report admits "PacifiCorp provided cost estimates that follow the general format of the 2002 CCM. Although the 2002 CCM shows a process contingency of 5% in Table 2.5 in Section 4.2 (page 2-44), this is not necessary today for SCR on coal-fired boilers firing the coals used in Utah." *Id.* In other words, ATP and EPA inappropriately disallowed SCR costs for process contingency that are explicitly authorized by the CCM. S&L estimates that improperly excluding the "process contingency" reduced EPA's SCR cost estimates by approximately $6 million per Utah BART Unit. S&L Report at 23, tbl 2. This cost is material and impacts the BART cost-effectiveness analyses.

But this is not all. ATP and EPA further skewed the SCR cost estimates relied on by EPA by disallowing general facilities costs, catalyst costs, and indirect installation costs -- all of which are specifically allowed by the CCM. It is improper for EPA to ignore SCR costs allowed by the CCM. See 79 FR at 5032, 5135 ("There are only very limited situations in which a state or EPA can depart from the CCM cost methodology. . . . 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.").

If ever this rationale applied to a regional haze plan, it applies to the FIP Proposal. In an attempt to validate its SCR-focused BART determinations in the FIP Proposal for the Utah BART Units, EPA compared the Utah BART Units' cost and visibility data with that from SCR-focused BART determinations for the Cholla power plant in Arizona, Laramie River power plant in Wyoming, and Hayden power plant in Colorado. See e.g., 81 FR at 2037. However, as EPA has admitted, such comparisons are meaningless unless the cost estimates are done in a consistent manner. Therefore, before EPA can make the alleged BART cost comparisons, it will need to show it made the same CCM adjustments to the cost estimates for the Cholla, Laramie River, and Hayden cost estimates. This it cannot do, and EPA should withdraw its FIP Proposal.

a. *"Draft" changes to the CCM Don't Count* -- Additionally, ATP and EPA incorrectly made changes to PacifiCorp's SCR cost estimates based on *draft*

changes to the CCM. See e.g., 81 FR at 2032 ("we have utilized portions of the draft 2015 revisions to the CCM chapters for the post-combustion NOx control technologies," including SCR). For example, ATP rejected S&L's and PacifiCorp's catalyst cost estimates, derived from experience and application of the appropriate cost estimation methods, partially due to ATP's application of the draft 2015 CCM revisions. See e.g., ATP Report at 13 (ATP used the 2015 draft CCM to calculate catalyst costs). EPA's actions are improper. EPA cannot rely on draft CCM changes that are still subject to rulemaking and subject to revision to reduce PacifiCorp's SCR cost estimates. EPA claims it follows the CCM to ensure consistency between BART determinations. See 79 FR at 5032, 5135 ("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."). Using the draft 2015 CCM proposed revisions for the NOx BART determinations in the FIP Proposal when EPA knows those same revisions were not used for other BART determinations is highly inconsistent. Finally, given EPA's historic refusal to consider updated visibility modeling,[47] EPA's reliance on a draft revision to the CCM to formulate its SCR cost estimates for the BART NOx determinations is arbitrary and capricious.

3. *EPA's SCR BART Cost Estimates are Invalid* -- EPA admitted that it relied on the ATP Report for its SCR cost estimate information. See, e.g. 81 FR at 2035 (Hunter 1). However, the ATP Report was incorrect, and these mistakes carried over to EPA's BART cost analyses for the Utah BART Units.

a. *The ATP Report's cost comparisons are incorrect* -- As part of its Report, ATP considered "historical industry cost data . . . to determine if the costs were reasonable in the context of what has been reported at other facilities." ATP Report at 7. However, ATP's analysis was skewed because it relied upon comparisons with SCR units built at a much lower elevation (ignoring the increase in flue gas volume from higher elevation units, like Huntington and Hunter). See S&L Report, at 2-3. ATP also included cost data from the early 2000s, and then incorrectly escalated it using the CEPCI, which is an improper method. See S&L Report at 3-4. When the correct adjustments are made for elevation[48] and outdated cost information, ATP's SCR cost estimates are demonstrably too low, and are not representative of costs actually incurred for

[47] See 79 FR 5032, 5115 ("We did not use CALPUFF Version 6.4 because this version of the model has not been approved by EPA for regulatory use.")

[48] ATP's and EPA's failure to properly consider the impact site elevation has on SCR costs is surprising given that both made this same mistake with SCR cost estimates in Wyoming, and corrected it only after prompting through public comments. See 79 FR 5032, 5039 ("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. . . .").

recent SCR installations. See S&L Report at 4-5. However, PacifiCorp's SCR cost estimates, without ATP's and EPA's improper reductions, are representative of actual SCR costs. Id. at 5, fig. 1. In fact, PacifiCorp's SCR cost estimates, on a $/kw basis, are less than the 2013 SCR cost included in the ATP Report. Id. at 5. All of this information shows EPA's SCR cost estimates are unreasonable and flawed. Therefore, EPA's SCR cost estimates and related NOx BART determinations are likewise flawed.

b. *The ATP Report arbitrarily rejected "process contingency"* -- ATP argues that, although the CCM allowed the "process contingency" identified in PacifiCorp's cost estimates, it is outdated because SCR is a "well proven and well understood technology on a wide range of US coals." ATP Report at 7-8. However, as S&L explains, the lack of experience with western bituminous coals, particularly Utah coals, and the potential for vapor-phase phosphorous poisoning of catalyst for deep-stage burners, such as those at the Utah BART Units, justify the process contingency provided for in the CCM. See S&L Report, at 6-7. Moreover, ATP and EPA are essentially modifying the CCM without putting the same through the required notice and comment process, which neither ATP nor EPA can do. ATP's and EPA's rejection of the "process contingency" in PacifiCorp's SCR cost estimates was inappropriate.

c. *The ATP Report capriciously rejected "project contingency"*-- The ATP Report also rejected PacifiCorp's "15% project contingency" as excessive, and stated "no additional project contingency is allowed." ATP Report at 8-9. ATP claims the project contingency should not be allowed because it results in double counting, and because PacifiCorp's SCR cost estimates were "detailed estimates" instead of "study-level (class 4 or 5) estimates." Id. at 9. ATP essentially admits that a 15% project contingency is proper for certain categories of estimates, but claims that PacifiCorp's SCR cost estimates do not fall within these categories. Id. at 8. ATP is wrong. ATP improperly classified PacifiCorp's SCR cost estimates as "detailed estimates" for which a project contingency is not allowed, ignoring that such "detailed estimates" require completion of at least 30% of the engineering and the SCR system design and construction must have been awarded to a contractor. See S&L Report at 7-9. The level of engineering work done for PacifiCorp's 2014 SCR cost estimates for Hunter and Huntington is below 5% and no SCR system design and construction contract has been awarded. Id. at 8. Therefore, according to the parameters identified in the CCM, PacifiCorp's SCR cost estimates are definitely "study level" estimates and the 15% "project contingency" should be included in EPA's SCR cost estimates. Id. at 9. Moreover, ATP's concerns about "double counting" are misplaced and ATP did not identify any items it claims were double counted. Id. S&L estimates ATP's "project contingency" mistake changed the EPA's SCR cost estimates by approximately $22 million per Utah BART Unit. S&L Report at 23, tbl 2. EPA's and ATP's cost-estimating mistakes regarding the "project contingency" are material, and invalidate EPA's FIP Proposal.

d. *The ATP Report improperly refuses "general facilities costs"* -- In its SCR cost estimates, ATP refused to include a line item for "general facilities" to "avoid double counting." ATP Report at 9. ATP's refusal is incorrect for two reasons. First, S&L and PacifiCorp "correctly followed the example illustrated in Chapter 2 of the Control Cost Manual with respect to General Facilities." See S&L Report at 10. Second, much of the equipment "listed in S&L's estimate to which Andover objects is safety related and included to protect the operating personnel. This equipment is required by the process and contributes directly to the physical capital costs." Id. ATP's example of "double counted" costs are unclear, and confusing. Id. S&L estimates ATP's "general facilities" mistake changed EPA's SCR cost estimates by approximately $6 million per Utah BART Unit. S&L Report at 23, tbl 2. EPA's and ATP's cost-estimating mistakes regarding the "general facilities cost" are material, and invalidate EPA's FIP Proposal.

e. *ATP incorrectly disallowed "indirect installation costs"* -- ATP disallowed certain "indirect installation costs," again alleging that such costs were double counted. ATP Report at 11. ATP is wrong again. PacifiCorp's SCR cost estimates were already adjusted to avoid double counting and PacifiCorp followed the CCM when addressing indirect installation costs. See S&L Report at 12-14. Despite the fact that indirect installation costs are real world costs that PacifiCorp will incur if required to install SCR, PacifiCorp followed the CCM and excluded the required costs. Id. S&L estimates ATP's "indirect installation cost" mistakes changed the EPA's SLR cost estimates by approximately $5.7 million per Utah BART Unit. S&L Report at 23, tbl 2. EPA's and ATP's cost-estimating mistakes regarding the "indirect installation costs" are material, and invalidate EPA's FIP Proposal.

f. *ATP, and EPA by extension, illegally redesigned the SCR and incorrectly underestimated catalyst costs*.ATP illogically adjusted PacifiCorp's SCR cost estimates based on ATP's incorrect analyses of catalyst cost, catalyst volume and life span, SCR reactor design, and use of regenerated catalyst. ATP Report at 14-20. ATP's assumptions lack any proper engineering basis, and are completely incorrect. First, PacifiCorp's catalyst cost estimates were based on the CCM, and as such should be allowed. See S&L Report at 14. Moreover, ATP's claim that PacifiCorp adjusted catalyst costs by improperly using the CEPCI is wrong; ATP misinterprets how PacifiCorp calculated catalyst costs. Id. at 14-15. Additionally, ATP's catalyst cost number is an arbitrary number that omits real world costs, such as freight costs or labor to load the catalyst into the SCR reactors. Id. at 15. EPA cannot rely on such arbitrary numbers. PacifiCorp's catalyst cost numbers were based on S&L's experience with recent catalyst pricing received from industry vendors, which include freight costs and installation. Id. Moreover, PacifiCorp's catalyst costs are lower than those used in the examples in the CCM and in EPA's fact sheet, cited by ATP. Id. S&L's replacement catalyst costs were extremely conservative, and less than the CCM would allow. Id. Therefore, PacifiCorp's catalyst costs estimates are reasonable, and EPA's are not.

Regarding catalyst life and volume, ATP is again wrong. "The amount of SCR catalyst volume required depends on the following design parameters: 1) gas volume, 2) gas temperature, 3) Amount of NOx removed, 4) catalyst life, 5) fuel properties (which dictate the deactivation rate), and 6) SO2 to SO3 oxidation rate. The data included in Andover's report that they use to conclude S&L's catalyst volume is over-estimated contains only one of these variables (catalyst life)." See S&L Report at 16. Therefore, ATP's catalyst volume estimates are based on incorrect assumptions. Also, ATP's catalyst life data did not include units designed with 32,000 hours of life, which is the design life of Hunter and Huntington SCR reactors. Id. Instead, ATP relied on units designed for 16,000 hours of catalyst life. Id. Also, ATP incorrectly included "gross output (MW), which is not directly proportional to gas volume in the case of the Hunter and Huntington units, each of which are over 5,600 feet in elevation, and as previously discussed, have significantly higher gas volumes for equivalently rated units located at sea level. For this reason, gross output (MW) cannot be used to compare catalyst volumes for plants that vary in elevation." Id. Additionally, ATP incorrectly calculates catalyst volume and cost by using a NOx % reduction number, when catalyst volume depends on the gross amount of NOx removed, not the percentage of NOx reduction. Id. ATP also mistakenly estimated that catalyst deactivation rate would be similar to Eastern Bituminous coal, instead of Western Bituminous coal (which is a more conservative assumption given the "unknowns" involved in using Utah coal). Id. at 17. ATP's mistakes have caused it to reject PacifiCorp's correct SCR cost estimates, including catalyst costs, and replace them with ATP's incorrect estimates. Moreover, PacifiCorp's catalyst volume and life estimates were based on the work done by S&L for PacifiCorp's Naughton Unit 3 SCR project in Wyoming, and represent practical, relevant and market-based cost estimation experience. ATP was wrong to ignore this data. Id.

Also, ATP erroneously claims one SCR reactor can be used instead of two, thereby saving significant costs. ATP Report at 16-18. ATP's error is based on its fundamental misunderstanding: SCR design is based on the volume of catalyst. ATP's assumption is completely wrong. Rather, SCR reactor design is primarily based on gas flow and velocity. See S&L Report at 19. ATP's attempted redesign to one SCR reactor is technically infeasible, resulting in inadequate "residence time" to achieve the required NOx reduction and causing the catalyst to erode in a very short time, rendering the SCR useless. Id. EPA cannot base its SCR cost estimates on an SCR system redesign that is technically infeasible, and would defeat the very purpose of the SCR system. Moreover, neither ATP nor EPA provides a supportable engineering basis for ATP's attempted redesigns of the SCR reactors.

Finally, ATP objects to PacifiCorp's SCR cost estimates by claiming that PacifiCorp should have used the costs for regenerated catalyst, instead of new catalyst. ATP Report at 11. S&L has participated "in several catalyst replacement projects in the last year and in each of these projects new catalyst was purchased

for the spare or replacement layer. In addition, due to mechanical degradation of the modules, which cannot be recovered, the mechanical life of regenerated catalyst is much lower than new catalyst and has not been guaranteed to meet the duration which the catalyst is typically expected to remain within the reactor." S&L Report at 20. Therefore, ATP should not have rejected PacifiCorp's SCR cost estimates because it did not use regenerated catalyst.

S&L estimates ATP's SCR design mistake and catalyst cost underestimations changed EPA's SCR cost estimates by approximately $18.5 million per Utah BART Unit. S&L Report at 23, tbl 2. EPA's and ATP's cost-estimating mistakes regarding the SCR redesign and catalyst costs are material, and invalidate EPA's FIP Proposal.

g. *ATP wrongly modified ID fan costs in the SCR cost estimates.* ATP claims that PacifiCorp overestimated the costs of ID fans because a smaller fan could be used. ATP Report at 18-19. ATP estimated the cost of the replacement fan by using an algorithm, rather than obtaining a vendor cost estimate. Id. ATP's ID fan cost estimates are wrong because the new ID fans must handle the entire flue gas flow and be designed to overcome the additional pressure drop from the SCR and the original differential pressure it was designed for (e.g., air preheaters, ESPs, etc.). See S&L Report at 20-21. EPA cannot base its SCR cost estimates on undersized fans.

S&L estimates ATP's ID fan mistake cost underestimations changed EPA's SCR cost estimates by approximately $875,000 per Utah BART Unit.

h. *ATP's and EPA's SCR cost estimation mistakes materially affected EPA's NOx BART determinations.* Each of the cost estimation mistakes discussed above in paragraphs a-g materially impacted EPA's NOx BART cost estimates. For example, ATP's SCR cost estimate errors result in over $70 million in excluded capital costs at Hunter Unit 1. See S&L Report at 23, tbl. 2. ATP's mistakes also resulted in it miscalculating operation and maintenance expenses for the Utah BART Units. Id. As a result, EPA's NOx BART determinations (which rely on ATP's incorrect SCR cost estimates) in its FIP Proposal are flawed and the FIP Proposal should be withdrawn. The cost estimation mistakes identified above in paragraphs a-g materially affect the overall cost of the proposed SCRs, and thereby would also materially affect the "average cost effectiveness" and "incremental cost effectiveness" numbers used by EPA in its justifications for the NOx BART determinations requiring installation for SCR.

4. *EPA's cost comparison numbers are inconsistent and do not support EPA's "cost effectiveness" finding.* As part of an analysis of the "cost" BART factor, a state or EPA needs to determine the "average cost effectiveness" and "incremental cost effectiveness" of the proposed BART control, and then determine if such costs are appropriate given the "reasonable anticipated" visibility improvement. See, e.g., 81 FR at 2037 (Hunter 1). In the FIP Proposal, EPA considered "the costs of compliance

and visibility impacts by generally comparing them with BART determinations that have been made elsewhere." Id. For example, EPA compared the average and incremental cost effectiveness of SCR at Hunter Unit 1 to average and incremental cost effectiveness numbers for SCR at other, purposefully-selected units: Laramie River Station (Wyoming); Dave Johnston Units 3 and 4 (Wyoming); Hayden Units 1 and 2 (Colorado); and Cholla Units 2, 3, and 4 (Arizona).

Using these four facilities, EPA attempts to create a false standard, acting as if the BART determinations for these facilities are reflective of general cost effectiveness and visibility improvement standards everywhere. This simply isn't true for several reasons.

First, EPA ignores its own "cost effectiveness" standards used to create the presumptive BART limits, which EPA still uses when setting BART benchmarks for Better than BART analyses. For example, Appendix Y suggests that BART NOx control costs above $1,500 per ton are not "cost effective." In the Preamble to the Regional Haze Rules, EPA suggested that 75% of the EGUs would have BART NOx 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.[49] 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).[50] Based upon EPA's Preamble, BART NOx control technology that costs more than $1,500 per ton should not be considered "cost effective." Here, EPA found BART NOx controls with a "cost effectiveness" number several times $1,500 per ton to be "cost effective." EPA

[49] "The limits provided were chosen at levels that approximately 75 percent of the units could achieve with current combustion control technology. The costs of such controls in most cases range from just over $100 to $1000 per ton. Based on our analysis, however, we concluded that approximately 25 percent of the units could not meet these limits with current combustion control technology. However, our analysis indicates that all but a very few of these units could meet the presumptive limits using advanced combustion controls such as rotating opposed fire air ("ROFA"), which has already been demonstrated on a variety of coal-fired units. Based on the data before us, the costs of such controls in most cases are less than $1500 per ton." See 70 FR at 39135.

[50] "We also analyzed the installation of SCRs at BART-eligible EGUs, applying SCR to each unit and fuel type. The cost-effectiveness was generally higher than for current combustion control technology except for one unit type, cyclone units. Because of the relatively high NO[x] emission rates of cyclone units, SCR is more cost-effective. Our analysis indicated that the cost-effectiveness of applying SCR on coal-fired cyclone units is typically less than $1500 a ton, and that the average cost-effectiveness is $900 per ton. As a result, we are establishing a presumptive NO[x] limit for cyclone units based on the use of SCR. For other units, we are not establishing presumptive limits based on the installation of SCR. 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." 70 FR 39135-36.

simply ignores its previous statements when attempting to establish its newly-minted cost-effectiveness threshold.

Second, EPA pointed only to BART determinations that support its position. EPA has ruled that NOx BART controls, including SCR, with similar "cost effectiveness" numbers as it found for the Utah BART Units were not justified. For example, EPA approved Florida's BART determination that installing SCR was not "cost effective" when it would cost $3,776/ton of NOx removed. See 77 FR at 73369-01, 73377. Additionally, in Montana, EPA found that where SNCR+SOFA had an average "cost effectiveness" of $3,195/ton and $3,235/ton, the incremental "cost effectiveness" of SCR+SOFA of $5,770/ton and $5,887/ton "is not justified." See 77 FR at 57864-01, 57889. Also, in Nebraska, EPA proposed to agree 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 (as calculated by Nebraska). See 77 FR at 12770, 12779. If EPA had selected these comparisons, or others,[51] it would reject SCR as NOx BART at the Utah BART Units. EPA cannot "cherry-pick" favorable comparisons while ignoring unfavorable comparisons in its attempt to create the illusion of legitimacy for its NOx BART determinations in the FIP Proposal.[52]

EPA attempts to use its "cherry picked" SCR BART determinations as a "metric" that a reader could use to understand how EPA determined BART. Nat'l Parks Conservation Ass'n, 788 F.3d at 1143. But EPA's previous SCR BART determinations and statements cannot serve as a reliable metric: they are too inconsistent. Id. at 1141 (stating that "inconsistent analysis is arbitrary and capricious"). A reader who reviewed all of EPA's prior NOx BART determinations would be left entirely unable to predict at what price point EPA will determine that a control technology is not cost effective, or what amount of modeled visibility improvement will trigger a certain technology, or what combination of cost and visibility numbers would result in the installation of SCR as BART. This stems not only from EPA's inconsistent determinations, but from EPA's stated unwillingness to provide a bright-line test for determining when a control technology is "cost effective." See 77 FR at 57864-01 ("While the Regional Haze Rule may allow us to establish a bright line for some of the factors such as cost-effectiveness and visibility, we are not required to do so, and have not done so for this action."). Further, EPA's BART determinations rely on its previous determinations in an entirely arbitrary and

[51] EPA previously approved Colorado's RH SIP in which Colorado determined that SCR is not cost effective when it "exceed[s] a cost of $5,000 per ton." 77 FR 18052-01, 18061. Though EPA noted some concerns it had with Colorado's reasoning, it ultimately approved its determinations, implicitly approving Colorado's determination that SCR is not cost effective when it exceeds $5,000/ton. Id.

[52] Moreover, comparisons with SCR BART determinations for Cholla and Laramie River are suspect for another reason. In both cases, EPA's SCR BART determinations have been challenged in court and are subject to judicial review. EPA cannot rely on SCR BART determinations that have judicially challenged and have not yet been upheld by a court.

capricious manner, skewing the results by selecting favorable SCR BART comparisons and ignoring unfavorable ones. A metric which conforms to the whims of EPA's current desires is no metric at all. Therefore, EPA should withdraw its FIP Proposal.

Third, EPA's attempted cost and visibility data comparisons between the Utah BART Units, on the one hand, and Cholla, Hayden, and Laramie River, on the other hand, would only work if the SCR cost estimates, visibility analyses, and baseline emissions tests, among other things, were conducted in a similar manner. See e.g., 79 FR at 5032, 5156 ("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*.") (emphasis added) However, that is not the case. As explained above, the baseline emissions for Cholla and Hayden were calculated based upon the emissions reductions from relatively recently installed NOx emissions control equipment; here EPA refuses to calculate baseline emissions based upon emissions reductions from relatively recently installed NOx emissions control equipment at the Utah BART Units. EPA also conducted its CALPUFF visibility modeling differently for the Cholla, Hayden, and Laramie River BART determinations, which could materially impact the outcomes.[53] Also, ATP and EPA refused to consider certain CMM allowed costs and its expert "redesigned" the SCR reactors for Hunter and Huntington. EPA did not take the same SCR cost-estimating approach at Cholla, Hayden, or Laramie River.[54] As a result, EPA cannot compare costs between the Utah BART Units and EPA's "cherry-picked" units because EPA

[53] Given the unique manner in which EPA conducted the CALPUFF visibility modeling for the FIP Proposal, it is highly unlikely that EPA conducted the CALPUFF modeling for SCR at Hayden, Laramie River, or Cholla in this same fashion. If the CALPUFF modeling for Hayden, Cholla, and Laramie River were not completed in the same manner as Hunter and Huntington, using the same background concentrations for ammonia, relative humidity, and other key inputs, as well as the way manner in which the model included other sources, then EPA is unable to make meaningful comparisons between the CALPUFF modeling results. In its FIP Proposal, EPA makes no attempt to explain whether or not the CALPUFF modeling runs were conducted in a similar fashion for the Cholla, Hayden, and Laramie River plants on the one hand and the Utah BART Units on the other hand.

[54] Other material differences exist between the cost estimates EPA attempts to compare. For example, EPA, after prompting from Laramie River's owner, considered the impact site elevation has on SCR cost. 79 FR 5032, 5180. EPA has not properly considered the impact site elevation has on SCR costs at the Utah BART Units.

used different and inconsistent methods to calculate SCR costs and visibility improvement, making comparisons superficial and unpersuasive.

C. **Energy and Non-Air Quality Environmental Impacts.**

Each BART determination, including EPA's, must include a review of the energy and non-air quality related environmental impacts. 42 U.S.C. § 7491(g)(2). EPA's FIP Proposal is defective because EPA failed to properly evaluate the "energy" and "non-air quality environmental" factors for the Utah BART Units. Utah's previous BART determinations found these impacts weighed against SCR as NOx BART; but, without explanation or conducting its own analyses, EPA found these impacts did not prohibit the selection of SCR. This EPA cannot do.

1. *The BART Guidelines require this factor be considered.* The BART Guidelines provide the methods EPA must employ when considering the energy and non-air quality environmental impacts of NOx control options in a BART determination. See 70 FR at 39104-01, 39169. Among other considerations, the BART Guidelines provide that EPA "should identify any significant or unusual environmental impacts associated with a control alternative that have the potential to affect the selection or elimination of a control alternative." Id. The Guidelines elaborate that "these types of environmental concerns become important when sensitive site-specific receptors exist *or when the incremental emissions reductions potential of the more stringent control is only marginally greater than the next most-effective option.*" Id. Given that EPA's FIP Proposal is based on a miniscule, modeled 0.14 dv visibility improvement over the SIP Proposal, based on the 98th percentile test, this provision of the Guidelines is particularly applicable and non-air quality environmental impacts and energy impacts must be closely reviewed as part of EPA's NOx BART determinations for the Utah BART Units. EPA failed to do so here.

2. *EPA did not properly analyze non air quality environmental impacts.* Here, EPA arbitrarily and capriciously failed to adequately address the non-air quality environmental impacts of SCR. See, e.g. 81 FR at 2004, 2035 (Hunter 1).[55] Though EPA admitted that SCR decreases the thermo efficiency (affecting energy use and greenhouse gas emissions) and increases "the quantity of ash that will need to be disposed," EPA conducted almost no analysis. Id. at 2035. EPA did not identify or quantify the "solid, liquid, and gaseous discharges from the control device or devices under review," as required by the Guidelines. See 70 FR at 39104-01, 39169. EPA did not analyze "discharges with potential for causing adverse environmental effects." Id. Nor did EPA "assess the mass and composition of any such discharges and quantify them to the extent possible based on readily available information." Id. Rather, after conducting almost no analysis, EPA concludes that "non-air quality environmental impacts [are] insufficient to eliminate or weigh against any of the

[55] While PacifiCorp uses Hunter 1 as an example of EPA's failure to consider the energy and non-air quality environmental impacts, these arguments apply to EPA's NOx BART determinations for all the Utah BART Units.

BART options." See 81 FR at 2004-01, 2035. This conclusion, lacking sufficient supporting analysis, violates EPA's own rules. By failing to provide any applicable metric, failing to explain why it has exercised its discretion in this manner, and failing to follow the BART Guidelines, EPA's proposed RH FIP is arbitrary and capricious and should be withdrawn. Nat'l Parks Conservation Ass'n, 788 F.3d at 1141.

Moreover, EPA's SCR cost estimates are based upon a complete redesign of the SCR system, and are materially different from that contemplated by PacifiCorp's and Utah's SCR BART analyses. See ATP Report at 11-18. Therefore, EPA cannot rely on PacifiCorp's and Utah's previous SCR BART analyses to determine the non-air quality environmental and energy impacts for EPA's SCR BART determinations. New analyses of this statutory BART factor, in accordance with the BART Guidelines, must be undertaken by EPA to address the proposed SCR reactor design that it proposes.

3. *EPA did not properly consider SCR's energy impacts*. In its FIP Proposal, EPA should have considered three types of energy impacts. 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 the state of Utah 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.[56]

The latter energy impact is of particular concern because the EPA has now proposed SCR controls for the Utah BART Units. Unlike the SIP Proposal, the EPA's FIP Proposal requires controls that may not be justifiable and could 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 Utah that rely heavily on these facilities. If EPA intends to finalize its FIP Proposal that potentially could force the retirement, replacement, or natural gas conversion of the Utah BART Units, its five-factor analysis must include a thorough analysis of the system-wide energy impacts these individual unit compliance requirements will have on the states within which PacifiCorp serves customers. When considering the FIP Proposal, EPA must include in its evaluation of energy impacts and their associated costs the impacts to local jobs and state and local economies surrounding the affected facilities.

With retirement, replacement, or natural gas conversion of individual units a potential outcome due to EPA's FIP Proposal, EPA's assessment must include coordination with state regulators, environmental agencies and elected officials. As a regulated utility, PacifiCorp regularly engages with state regulators and elected officials to ensure that its resource planning and ultimate compliance approaches align with the interests of customers in the states it serves. These same state bodies and elected

[56] 40 CFR 50 Appendix Y D.IV.h.5

officials must be consulted by EPA to ensure that EPA's FIP Proposal is properly assessed in light of the issues described above.

As Powder River Basin Resource Council pointed out in its post-hearing brief filed in April 2013 before the Wyoming Public Service Commission in PacifiCorp's application filing to obtain approval for a Certificate of Public Convenience and Necessity to Construct Selective Catalytic Reduction systems on Jim Bridger Units 3 and 4, "it is evident that considering the cost and risk of these major environmental control projects up front, prior to installation, is a benefit to parties, ratepayers, and the public interest. These projects are significant undertakings – in some cases they are close to the financial equivalent of building new generation sources – and therefore they deserve a high level of scrutiny to ensure that the public's interests, and especially the specific financial interests of PacifiCorp ratepayers, are protected."[57] EPA is expected to obtain the same level of coordinated review.

D. Visibility Improvement

Every BART determination requires an analysis of the "reasonably anticipated" visibility improvements. 42 U.S.C. § 7491(g)(2). EPA's BART visibility improvement analyses for its FIP Proposal fail in several respects, and thus fail to meet the statutory requirements.

When EPA conducted its "reasonably anticipated" visibility improvement analyses for its NOx BART determinations of the Utah BART Units, EPA relied exclusively on computerized modeling results, using the CALPUFF model. See 81 FR at 2033. EPA did not use Utah's previous CALPUFF modeling to support its FIP Proposal,[58] instead EPA

[57] See Powder River Basin Resource Council's Post-Hearing Brief in Wyoming Public Service Commission Docket No. 20000-418-EA-12 (RECORD NO. 13314) at: http://edocs.puc.state.or.us/AD9EAE92-D6A8-4C0E-81D1-DB442CFB2244/FinalDownload/DownloadId-DCE8BAB12B5061CB4017455D76704E32/AD9EAE92-D6A8-4C0E-81D1-DB442CFB2244/efdocs/HBC/ue246hbc75023.pdf

[58] Proper conclusions can be reached when evaluating the results of visibility modeling if one understands the limitations of the models, the characteristics and limitations of the inputs entered into the models, the capabilities of the model versions being used and then applies reasonable judgment to the results. Utah created its SIP Proposal based on the modeling protocols and versions required by EPA. In proposing its SIP Proposal, Utah evaluated the CALPUFF model output with an understanding of the model's limitations. Utah then applied its judgment and experience in comparing the model results to actual monitored data, as encouraged by EPA's guidelines and the CAA. Utah's approach helped mitigate the problems associated with the CALPUFF visibility model's documented tendency to greatly over-predict the visibility improvement associated with BART controls. In fact, Utah analyzed other scientific data to determine the impacts of SO2 and NOx emissions from the BART units, and used that information in determining the amount of weight to give CALPUFF modeling results. Contrary to this approach, EPA interpreted the CALPUFF modeling results as "absolute" and unquestioningly accurate numbers that EPA then relies on to justify costly NOx BART controls that in reality will provide no "reasonably anticipated" visibility benefit.

"developed separate CALPUFF modeling for this purpose." *Id.* In fact, although Utah's CALPUFF modeling assessed the "combined impacts of all of the BART and non-BART sources included in the BART Alternative," EPA mistakenly only modeled "the impacts of the individual BART sources." *Id.* EPA also claims that, beyond "assessing impacts from individual BART sources and evaluating all technically feasible control options," EPA's modeling was "otherwise very similar to that employed by Utah." *Id.* Again, EPA is mistaken.

In short, EPA's NOx BART determinations in its FIP Proposal, particularly the visibility analyses, are fatally flawed because EPA relied on CALPUFF modeling results without considering: (1) the limitations of the CALPUFF v. 5.8 model; (2) the CALPUFF model's related "margins of error;" (3) EPA's mistakes running the CALPUFF model; and (4) actual monitored data and other data that called into question EPA's ability to solely rely on the CALPUFF modeled results without accounting for the model's limitations.

1. *EPA failed to consider the limitations of the CALPUFF model.* In conducting its BART visibility improvement analyses for the Utah BART Units in the FIP Proposal, EPA treats the relative small CALPUFF modeled visibility improvements as concrete and unassailable. See e.g., 81 FR at 2035 tbl. 15; at 2036 tbls. 16, 17, and 18; at 2037 (for the Hunter 1 Unit).[59] EPA relies solely on CALPUFF modeled visibility improvements as the basis for its visibility improvement analyses in the FIP Proposal. See, e.g., 81 FR at 2037. However, EPA's BART visibility analyses in the FIP Proposal fail to recognize the known and documented limitations on the CALPUFF model. Rather, EPA treats the results from the CALPUFF visibility modeling as being capable of accurately predicting visibility improvements down to the tenths or hundredths of a deciview (when one deciview is considered what is humanly perceptible). As applied by EPA here, the CALPUFF model is not that accurate. Also, EPA assumes that a CALPUFF modeled difference of 0.1, 0.2, an even 0.9, deciviews is material in the FIP Proposal. Given the applicable margins of error, it is not. The reality is that computer models predicting visibility impacts from a given source, including CALPUFF, are relatively imprecise and easily influenced by the choice of inputs and parameters.

a. CALPUFF is woefully imprecise. Gale F. Hoffnagle, an expert air quality modeler at TRC Environmental Consultants,[60] summarizes in his report, attached as Attachment 3, the limitations of the CALPUFF model.[61] Mr. Hoffnagle's

[59] EPA treats the CALPUFF modeled visibility improvement results as concrete and unassailable for all the Utah BART Units, and the arguments herein regarding EPA's visibility improvement analyses apply to all of the Utah BART Units.

[60] Mr. Hoffnagle's curriculum vitae is attached as Attachment 6.

[61] Mr. Hoffnagle is a CALPUFF modeling expert. His CALPUFF "margin of error" report was part of the information that the Ninth Circuit Court of Appeals found EPA should have considered and accounted for in Nat'l Parks. In that case, the court stated "it is no answer to respond, as EPA did, that low levels of visibility impairment must be

Report states that the studies EPA relied upon to support the use of CALPUFF (v. 5.8) model for regional haze purposes demonstrate that the CALPUFF results (at 100km) were "35%, 5%, or 250% too high, average 96% too high and has a mean error rate of 96%." See Hoffnagle Report at 6. In other words, some of the studies EPA relied on to justify the use of the CALPUFF v. 5.8 model show CALPUFF grossly overstates visibility improvements. Mr. Hoffnagle further explains that two other studies (Savannah River and Great Plains) used by EPA to justify the use of the CALPUFF v 5.8 model show that "there is an error rate of 79% and always greater than the measured concentration." Id. at 7. "The 'margin of error' identified in the aforementioned studies is hereafter referred to as the 'transport/diffusion margin of error' because these studies measured CALPUFF v. 5.8's accuracy relative to long-range transport and diffusion." Id. Additional studies and reports have also raised questions about the transport/diffusion margin of error for CALPUFF, and a review of all the studies together by Environ suggests the transport/diffusion margin of error "for CALPUFF version 5.8 is around 70% for the maximum observed concentration with many signals that the error is higher. The error is always on the high side and we can say little about the margin of error beyond 100 kilometers." Hoffnagle Report at 8-9. Clearly, EPA cannot, as it did in its FIP Proposal, simply rely on CALPUFF's excessively high, modeled results in light of the transport/diffusion margin of error. Instead, EPA should have made appropriate adjustments in its analysis of the CALPUFF modeled results to account for the transport/diffusion margin of error so that EPA "reasonably anticipates" any visibility improvements associated with EPA's proposed NOx BART determinations. 42 U.S.C. § 7491(g)(2); Nat'l Parks Conservation Ass'n, 788 F.3d at 1147. EPA did not do so here.

b. EPA did not account for "atmospheric chemistry margin of error" .CALPUFF also has severe limitations in modeling the atmospheric chemical changes that are necessary for NOx to become a visibility-impairing particulate. As Mr. Hoffnagle's Report explains, the "margin of error is also affected by the atmospheric chemistry which occurs along the path to the Class I area." See Hoffnagle Report at 9. As an expert in this area, Mr. Hoffnagle has previously "performed and presented to the State of Colorado a comparison of the measured versus modeled nitrate component of the deciview impact from the Craig Station some 98 kilometers to the Mount Zirkel Wilderness Area." Id. Mr. Hoffnagle compared "the daily nitrate concentration measured at the Mount Zirkel Wilderness Area to the CALPUFF modeled daily concentration of nitrate particles at that measurement location." Id. As a result of this study, Mr. Hoffnagle concluded that CALPUFF's atmospheric chemistry margin of error in that study

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addressed even though they are not perceptible to the human eye, or that measures had been taken to minimize the margin of error. The issue is not the *perceptibility* of the proposed improvements, but the model's ability to anticipate improvements at a level allegedly within its margin of error, whether perceptible or not to the human eye. EPA simply offered no response to this objection." Nat'l Parks Conservation Ass'n v. E.P.A., 788 F.3d 1134, 1147 (9th Cir. 2015).

was "at least 1,000% in calculating nitrate contribution to visibility impairment. This is a clear indication that the margin of error increases substantially when the atmospheric chemistry part of the calculation is included." Hoffnagle Report at 10. Again, EPA's FIP Proposal failed to account for either the transport/diffusion margin of error or the atmospheric chemistry margin of error, and EPA blindly relies on overstated CALPUFF modeling results without any adjustments for model inaccuracies. As a result, EPA's FIP Proposal is unsupportable and should be withdrawn. See Nat'l Parks Conservation Ass'n, 788 F.3d at 1147.

c. *The transport/diffusion and atmospheric chemistry margins of error materially change EPA's visibility analyses* . When the appropriate "margins of error" are applied to EPA's CALPUFF modeling results in the FIP Proposal, the alleged "substantial visibility benefits" (81 FR at 2038) EPA relied on to justify its FIP Proposal disappear. For example, EPA's CALPUFF modeled visibility improvement results related to the installation of LNB/OFA/SCR (EPA's NOx BART determination) at Hunter Unit 1 indicate a 1.34 dv improvement at Arches, 1.55 dv improvement at Canyonlands, and a 1.11 dv improvement at Capitol Reef. See 81 FR 2 035, tbl 15. These results lead EPA to conclude the comparisons "show that costs are justified in light of the substantial visibility benefits." Id. at 2038. However, these "substantial visibility benefits" disappear when the proper "margins of error" are applied. In Mr. Hoffnagle's Report, after applying the transport/diffusion margin of error and the atmospheric chemistry margin of error, the CALPUFF modeled visibility improvements shrink to an inconsequential 0.16 dv for Arches, 0.18 dv for Canyonlands, and 0.16 dv for Capitol Reef. See Hoffnagle Report at 19, tbl 8. Likewise, EPA's CALPUFF modeled visibility improvement results related to the installation of LNB/OFA/SCR (EPA's NOx BART determination) for Huntington Unit 1 indicate a 1.49 dv improvement at Arches, 1.88 dv improvement at Canyonlands, and a 1.11 dv improvement at Capitol Reef. See 81 FR 2043, tbl. 27. In Mr. Hoffnagle's Report, after applying the transport/diffusion margin of error and the atmospheric chemistry margin of error, the visibility improvements shrink to an inconsequential 0.15 dv for Arches, 0.19 dv for Canyonlands, and 0.12 dv for Capitol Reef. See Hoffnagle Report at 19, tbl 9. Clearly, these miniscule visibility improvements would not justify the tremendous costs imposed by EPA's FIP Proposal. EPA's FIP Proposal is flawed and unsupportable because it failed to consider the CALPUFF modeled visibility improvement results in light of the proper margins of error, which drastically affect the results.[62] At least one federal

[62] Additionally, the monitored data demonstrates that the SCRs required by the FIP Proposal essentially would have no impact. EPA found in its proposed rulemaking that "visibility benefits associated with NOx reductions are more likely to occur in the winter months because this is when aerosol thermodynamics favors nitrate formation." 81 FR at 2031. Therefore, the SCRs that would be required by EPA's FIP Proposal, which are designed to reduce NOx, would be of greatest benefit in the winter months. However, EPA fails to recognize or consider the monitored data which demonstrates that nitrates have very little impact on visibility impairment during the 20% best days, which often

court has rejected an EPA regional haze FIP because EPA failed to account for the CALPUFF model's limitations (specifically the margin of error) when EPA formulated its BART determinations. Nat'l Parks Conservation Ass'n v. E.P.A., 788 F.3d 1134, 1147 (9th Cir. 2015). Therefore, EPA's FIP Proposal should be withdrawn.

d. EPA should have used the improved CALPUFF version. CALPUFF version 5.8.4, used by EPA to support its FIP Proposal, is not the latest and most accurate version of CALPUFF. As Mr. Hoffnagle explains, the owners of CALPUFF "have prepared more advanced versions of CALPUFF that have not been adopted by EPA. The focus of these advancements have been in providing better atmospheric chemistry based on twenty years of advancement in atmospheric chemistry science. AQMG [EPA] has steadfastly refused to give anything more than acknowledgement to these advancements and yet continuously criticizes CALPUFF for not having advanced chemistry." See Hoffnagle Report at 7.

Air modeling experts have determined that CALPUFF version 6.42, with a variable ammonia background setting, updated chemistry module, and Method 8 of CALPOST is the "best" science when it comes to modeling for regional haze. CALPUFF Version 6.42 produces more realistic and accurate results. *See* Paine, B, Connors, J, "Response to Prehearing Statements: Martin Drake Power Plant Best Available Retrofit Technology Rulemaking Hearing," November 20, 2010, attached as Attachment 7. Version 6.42 contains needed refinements, such as a better "chemistry" module known as ISORROPIA (Version 2.1). Id. Additionally, CALPUFF Version 6.42 has been maintained by TRC and has had many bug fixes and enhancements not included in CALPUFF Version 5.8.4. Id.

Contrary to its own guidance, in support of its FIP Proposal EPA failed to use a more realistic air quality model (CALPUFF version 6.42) than the outdated CALPUFF version 5.8. Appendix W, EPA's modeling guidance, demands that the "best" model should be used. EPA failed to use the "best" model in its FIP Proposal. Therefore, EPA failed to follow Appendix W's requirements. App. W.1.0.e ("(I)n all cases, the model applied to a given situation should be the one that provides the most accurate representation of atmospheric transport, dispersion, and chemical transformations in the area of interest."); App. W.1.0.d ("The model that most accurately estimates concentrations in the area of interest is always sought.") (emphasis added). EPA's outdated modeling approach relying on CALPUFF version 5.8.4, fails to meet the requirements of Appendix W. [63]

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occur in the winter months. See Hoffnagle Report at 11, tbl. 2. EPA should have considered this point in its FIP Proposal, and did not.

[63] Interestingly, EPA has proposed that the BART Guidelines "no longer contain language that requires the use of CALPUFF or another Lagrangian puff model for long-range transport assessments." 80 FR 45340, 45349. In that proposed rulemaking, EPA

In its FIP Proposal, EPA did not use the "best" model (CALPUFF v. 6.42) or account for the flaws and limitations of the model it used. However, EPA claims to use the draft 2015 revisions to the CCM to reflect updated SCR cost analyses. See, e.g., 81 FR at 2032. It is arbitrary and capricious to use a draft, updated cost manual but not use an updated, proven visibility model.

2. *EPA's background ammonia concentration used in its CALPUFF modeling skews EPA's BART visibility improvement analyses* .Regional haze modeling – and the resulting predicted visibility improvement – is greatly influenced by the background ammonia number used in the model.[64] See Hoffnagle Report at 12. EPA improperly used a constant 1 ppb background ammonia number for its CALPUFF modeling for the Utah BART Units,[65] which greatly overestimated the "reasonably anticipated" visibility improvements from SCR. Id. EPA should have used available ammonia monitoring data in its modeling. EPA's failure to use this ammonia monitoring data "is unscientific and not supportable." Hoffnagle Report at 12.

In fact, instead of the constant 1 ppb ammonia number used by EPA, which Mr. Hoffnagle describes as "bad science" due to its failure to account for low winter ammonia levels, the "best" science requires the use of "variable ammonia" background numbers. Id. Given its geographic location and elevation levels, Utah undergoes seasonal swings of dry-hot summers (with higher ammonia levels) and snow-covered ground in the winter (with lower ammonia levels). Id. 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 the overestimation of visibility improvements. (See e.g., July 2, 2010 letter and attachment from Tri-State Generation to Colorado Air Pollution Control Division, discussing Mt. Zirkel area,

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admits the "availability of more appropriate modeling techniques, such as photochemical transport models (which address limitations of models like CALPUFF)." Id. Yet, in its FIP Proposal, EPA failed to use a "more appropriate" model, such as a "photochemical transport model," or to even recognize the "limitations of models like CALPUFF." EPA's NOx BART determinations are invalid as a result.

[64] Sensitivity tests on ambient ammonia concentrations were performed by the Colorado Department of Public Health and Environment for an area in northwest Colorado. See Attachment 8. 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 much more accurate estimates of visibility impacts from the Utah BART Units. EPA's failure to use the "best science," variable background ammonia in its modeling, is arbitrary and capricious.

[65] EPA's refusal to use a "variable ammonia" number in its CALPUFF modeling for the FIP Proposal is very curious given EPA's "required use of monthly average relative humidity and hourly average ozone concentration data" in its model. See Hoffnagle Report at 12. The arguments EPA has used to justify a static, annual average for background ammonia apply with equal force to relative humidity and ozone. Id.

Attachment 8) "This means that exactly when nitrates are expected to form, in the colder months, there is much less (10-50% of the 1 ppb used in the modeling) ammonia available. . . . This wintertime deficit of ammonia is exactly why the EPA annual average ammonia background is bad science. It should be taken into consideration that the sulfur and nitrogen compete for the available ammonia, and in fact the sulfur wins especially during the summer." Hoffnagle Report at 12. EPA should have used the available background ammonia information, such as the information represented in the graphs on page 13 of the Hoffnagle Report, to run the CALPUFF model to determine the true impact of EPA's FIP Proposal.

Moreover, EPA has approved the use of variable gaseous ammonia concentrations in CALPUFF modeling before, including the Addendum to Modeling Protocol for the Proposed Desert Rock Generating Station (ENSR, 2006).

(http://www.epa.gov/region9/air/permit/desertrock/administrative.html). EPA Region 8 admitted the validity of using "variable ammonia" for CALPUFF modeling in its federal implementation plan for Montana, where EPA used "variable ammonia" in its CALPUFF modeling. 77 FR at 57867. ("As a result, we did not assume a constant level of ammonia as asserted by the commenter, and we did represent seasonal variability in ammonia concentrations. Additionally, EPA used the POSTUTIL program " with the Ammonia Limiting Method (ALM) to post-process the CALPUFF output to correct the assumption of constant ammonia availability in the model."). EPA also applied "variable ammonia" amounts when analyzing regional haze and BART issues in Wyoming. EPA Region 8 evaluated background ammonia concentrations for Wyoming in the updated CALPUFF modeling as a result of comments received on EPA Region 8's revised proposal published in June 2013. 79 FR at 5032, 5111. EPA admitted in Wyoming that an "accurate specification" of background ammonia is "critical to the accurate estimation of particulate nitrate concentrations." Id. at 5112. EPA also suggested that an "overestimate [of] the regional background concentration" would also result in the "overestimate [of] the visibility benefit due to NO[x] reductions." Id. at 5113. In fact, EPA claimed in Wyoming that 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." Id. at 5,117.

Given EPA's recognition of the need to properly represent seasonally-variable background ammonia levels in CALPUFF modeling for sources in Wyoming, Montana, and Arizona, EPA should do the same here. In particular, where EPA relies on BART comparisons from power plants in Wyoming and Arizona to justify its FIP Proposal, EPA must ensure the CALPUFF visibility modeling (including the associated impacts of background ammonia) supporting EPA's FIP Proposal is similar to that done in Wyoming and Arizona. Moreover, EPA's failure to use seasonally-variable background ammonia levels in its CALPUFF modeling to support

its FIP Proposal skews the results of EPA's BART visibility improvement analyses. EPA's inconsistent actions in this regard are arbitrary and capricious.

3. *EPA applies the CALPUFF model to Class I areas that are beyond the model's geographic capabilities.* In its FIP Proposal, EPA indicates that it applied the CALPUFF model to 9 Class I areas, some of which are almost 300 kilometers or more distant from Utah's BART Sources. See e.g., 81 FR at 2035-36. EPA relied upon modeled "visibility improvements" in all nine Class I areas to justify its FIP Proposal. Id. at 2036-38. However, as explained above, CALPUFF has a large margin of error at 100 km and the inaccuracy likely grows at greater distances. The CALPUFF model "is not demonstrably valid beyond 100 kilometers and we can judge its margin of error at that distance but not beyond." See Hoffnagle Report at 12. As Mr. Hoffnagle explains, only three of the nine Class I areas addressed in EPA's FIP Proposal are within a distance where we can rely upon the results for gaseous concentrations to be within a range where we know the margin of error. Id. Therefore, EPA's FIP Proposal is invalid because it relies on CALPUFF modeled visibility improvements at Class I areas at distances up to 300 kilometer without making any adjustments or allowances for the impact of distance on these results, or by referring to monitored data to check the validity of the results.

4. *EPA made material, problematic changes in its modeling that prohibit comparisons with other modeling runs.* EPA also claims that, beyond "assessing impacts from individual BART sources and evaluating all technically feasible control options," its modeling was "otherwise very similar to that employed by Utah." 81 FR at 2033. Again, EPA is mistaken. EPA's CALPUFF modeling: (1) modeled different sources than Utah's modeling; and (2) used different assumptions about the amount of sulfate, nitrate, and particulate emissions. See Hoffnagle Report at 15-16.

a. *Modeling only individual BART Units resulted in erroneous modeling results and unsupportable BART visibility improvement analyses.* EPA admits that its CALPUFF model only included the "the impacts of the individual BART sources." See 81 FR at 2033. EPA also admits it determined a "source's" impact (two units at the same facility) by "summing the per unit improvements from Units 1 and 2" of Hunter. See e.g., 81 FR at 2037. This was a mistake. EPA should have modeled all four Utah BART Units together with SCR controls and two units at the same source (power plant) together with SCR controls. "When all the plants are run together the model would show a far smaller deciview impact than any additive result of running them separately. Each plume competes for the relatively small amount of ammonia assumed in the model. Once the ammonia is gone no more nitrate can be produced." See Hoffnagle Report at 15.

EPA claims in its FIP Proposal that a BART analysis must include "consideration of the visibility improvement from BART applied to the subject-to-BART source as a whole." See 81 FR at 2033. However, this is not how EPA conducted its CALPUFF modeling. EPA did not conduct CALPUFF modeling for the "subject-to-BART source as a whole," but rather conducted CALPUFF modeling

individually for each BART unit. EPA cannot simply "add" modeled visibility improvement numbers for each unit at a source to determine the source's impact; CALPUFF modeled results are not linear. Rather, the impact of the combined units' emissions must be considered by the CALPUFF model because of the atmospheric chemistry and the limiting factors (such as ammonia, etc.) on visibility impacts.

EPA also improperly excluded the reductions from the closure of the Carbon plant and reductions from Hunter Unit 3 when it conducted its CALPUFF modeling. "EPA's model runs never include the Carbon Plant and thus miss the reductions in nitrate and, more importantly, sulfate that occur because of those reductions." Hoffnagle Report at 15-16. Refusing to recognize Hunter Unit 3's installed emissions controls "skews the analysis in favor of more visibility improvement for the single unit SCR." Id. EPA's BART visibility analyses are invalid because the CALPUFF model runs did not include all Utah BART Units together, or as sources, or Carbon, or Hunter Unit 3, which skewed the results.

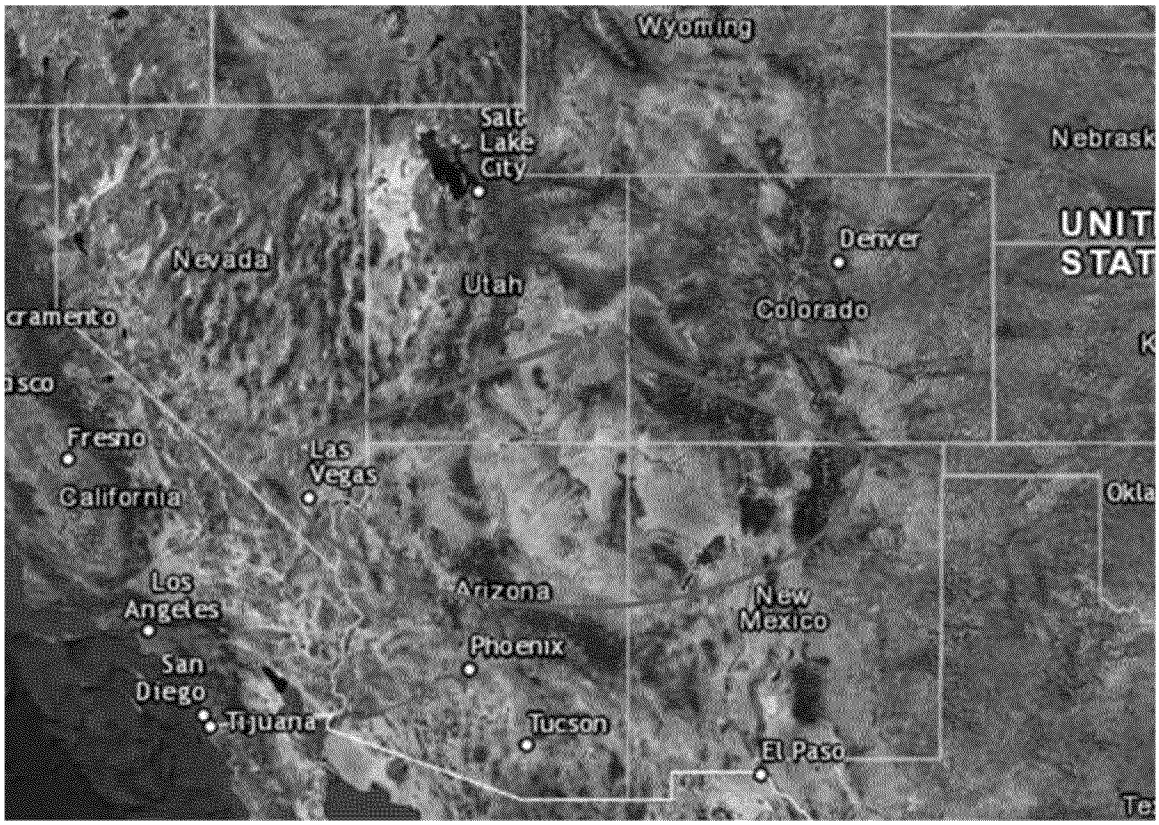
b. *EPA failed to include sulfate and particulate matter emissions from the Utah BART Units when modeling.* For some unknown and unsupportable reason, EPA reduces stack emissions of sulfate and particulate matter to almost zero in the EPA's CALPUFF modeling for the Utah BART Units. See Hoffnagle Report at 16. This modeling mistake "enhances the decrease in deciviews from EPA's model runs attributed to the use of SCR perhaps to a significant extent." Id. EPA also reduces sulfates, particulate matter, and nitrates emissions for Hunter Unit 3. These unexplained changes "are reason to call EPA's benefits from SCR into question." Id. EPA's BART visibility analyses are invalid as a result, as is EPA's FIP Proposal.

5. *When conducting its NOx BART determinations, EPA failed to consider the limited impact of further NOx reductions.* Finally, EPA's BART-related visibility analyses in the FIP Proposal are also flawed because they fail to account for the limited visibility impacts from NOx emissions in the relevant Class I areas. As EPA itself admits in the FIP Proposal, "anthropogenic visibility impairment on the Colorado Plateau is dominated by sulfates . . . sulfate is the largest contributor to visibility impairment at the affected Class 1 areas." See 81 FR at 2031. Additionally, EPA has found that "visibility benefits associated with NOx reductions are much more likely to occur in the winter months because this is when aerosol thermodynamics favor nitrate formation. By contrast SO2 emission reductions should provide visibility benefits in all seasons." Id. More importantly, as EPA is well aware, the State of Utah has determined based on its review of the data that "the visibility improvement during the winter months due to NOx reductions is much more uncertain." Id. EPA further admitted that the State of Utah had presented evidence that "while there has been a reduction in NOx, the ammonia nitrate values do not show similar improvement in the winter months." Id.

At a minimum, in its FIP Proposal EPA should have considered the fact that Utah had determined that NOx reductions did not seem to correlate to visibility improvement during the winter months, that sulfates are the largest contributors to visibility impairment, and that legitimate questions exist about whether or not further NOx reductions in the form of SCR at each Utah BART Unit would in fact improve actual visibility in the subject Class 1 areas. While EPA discussed these matters as part of the SIP Proposal, EPA inexplicably failed to consider these facts as part of its FIP Proposal. Such action was arbitrary and capricious.

Additionally, in its FIP Proposal, EPA also should have considered the relevant visibility data and information Utah provided to EPA in its Progress Report for Utah's State Implementation Plan for Regional Haze, dated September 23, 2014 ("Progress Report), Attachment 9. For example, as a result of the Progress Report, EPA is fully aware that Utah's "2008 BART determination has been fully implemented and significant reductions of NOx, SO2, and PM have already been achieved." Progress Report at 1. Additionally, the Progress Report explains that three Utah Class I areas show visibility improvement on the most impaired days, and for the two that do not show improvement, the "largest contributor to increases at these sites was particulate organic mass which was associated with large fire events." Id. at 3. The Progress Report also finds that generally "the largest contributors to aerosol extinction at Utah sites were particulate organic mass, ammonium sulfate and coarse mass." Id. at 13. The Progress Report contains other information indicating the relatively minor role NOx plays in visibility impairment in Utah's Class I areas, and the Progress Report identifies all of the categories of NOx emission sources (of which the Utah BART Units are but one part of one category). Id. at 25, tbl. 3.8. Unfortunately, EPA's FIP Proposal never discusses or considers the information from the Progress Report, including whether EPA can "reasonably anticipate" visibility improvement from EPA's NOx BART determinations (SCRs) given the impact from fires, the relatively small impact nitrates have on visibility, and the relatively minor contributions the Utah BART Units make towards the total NOx emissions that affect the Utah Class I areas. Without considering these issues, EPA cannot truly fulfill its statutory mandate to determine whether or not EPA can "reasonably anticipate" visibility improvement from its FIP Proposal.

6. *EPA Failed to Consider Wind Direction Data* – The following chart represents the wind direction for the 2001-2003 20% worst days when the nitrate contribution to haze was equal to or greater than 0.5 deciviews. See Attachment 10. The wind direction for these 20% worst days ranged from 115 degrees to 249 degrees. As can be seen, the prevailing winds do not come from the direction of the Utah BART Units. Therefore, EPA cannot "reasonably anticipate" visibility improvement on the 20% worst days resulting from the installation of the BART Benchmark at the Utah BART Units. This failure alone invalidates the FIP Proposal.



In short, EPA's visibility improvement analyses used to support its FIP Proposal are fatally flawed and cannot be used to support the NOx BART determinations.

V. EPA'S FIP PROPOSAL IS UNNECESSARY BECAUSE EPA ALREADY FOUND UTAH IS MAKING THE REQUIRED "REASONABLE PROGRESS."

States and EPA do not make BART determinations in a vacuum but within a framework carefully crafted to make "reasonable progress" towards the statute's national visibility goal. As part of that framework, Congress directed EPA to promulgate regulations "to assure . . . reasonable progress toward meeting" the national visibility goal, § 7491(b)(2), and mandated that EPA's regulations contain "such emission limits, schedules of compliance and other measures as may be necessary" to assure such progress towards meeting that goal, "*including*" a requirement that states make BART determinations. Id. (emphasis added). As EPA has stated, "BART is one component of long term strategies to make reasonable progress." Regional Haze Regulations and Guidelines, 70 FR at 39137.

Indeed, precisely because BART's purpose is to make reasonable progress, EPA adopted regulations exempting states from making BART determinations *at all* if they can show that other measures for large stationary sources, such as a cap- and-trade program, will achieve greater reasonable progress. 40 C.F.R. § 51.308(e)(2) (2012). EPA defended

those regulations in court by arguing that BART is one of a number of "emission limits, schedules of compliance and other measures" that "must" be included in a SIP "'as may be necessary to make reasonable progress toward national visibility goals.'" Ctr. for Energy and Econ. Dev. v. EPA, 398 F.3d 653, 659-60 (D.C. Cir. 2005) (confirming BART is but one measure for achieving "reasonable progress"); Cent. Arizona Water Conservation Dist. v. EPA, 990 F.2d 1531, 1534 (9th Cir. 1993) (same). According to EPA, if other measures better achieved those goals, then BART would not be "necessary to make reasonable progress." Id. The court agreed with EPA's analysis, although it overturned EPA on other grounds. Id. As the court said, "the focus of the Clean Air Act was to achieve 'actual progress and improvement in visibility,' 42 U.S.C. § 7492(b), not to anoint BART the mandatory vehicle of choice." Id. at 660.

Thus, EPA cannot validly judge a state's BART determination outside of its reasonable-progress context. Owasso Indep. Sch. Dist. No. I-011 v. Falvo, 534 U.S. 426, 434 (2002) ("'the words of a statute must be read in their context and with a view to their place in the overall statutory scheme.'"). As EPA recognizes, in some circumstances, no BART controls may be necessary to make reasonable progress. It follows that in other circumstances, depending on a state's reasonable- progress goals and expected non-BART emission reductions, BART controls of varying stringency may be necessary.

Here, EPA already has approved Utah's "reasonable progress" determination for its RH SIP in its entirety. See "Approval, Disapproval and Promulgation of State Implementation Plans; State of Utah; Regional Haze Rule Requirements for Mandatory Class I Areas Under 40 CFR 51.309," published at 77 FR 74355, 74367-68 (Dec. 14, 2012). EPA found that "the State met all reasonable progress requirements for the Class I areas," including by implication any required NOx BART limits. Id. In fact, EPA stated that Utah's 2008 RH SIP, including BART controls identified in that 2008 RH SIP, would result in "a significant decrease in stationary source NOx and SO2 emissions." Id. EPA further found that the NOx BART controls adopted by Utah for the Hunter and Huntington EGUs at issue would decrease NOx emissions by "6,200 tons [annually] between 2002 and 2018." Id. Therefore, EPA acknowledged that Utah's NOx BART limits and controls are all that are required to achieve "reasonable progress," and no further NOx BART requirements should be imposed by EPA through its FIP Proposal.

VI. Conclusion

For all of the reasons stated above, EPA should approve the Utah SIP as stated in the SIP Proposal, and should reject the FIP Proposal. What EPA cannot do, and indeed is not empowered under the CAA to require, is compliance with both the SIP Proposal and the FIP Proposal.

ATTACHMENT 5

PACIFICORP

REVIEW OF ANDOVER'S COST ANALYSIS FOR SCRR ETROFITS FOR HUNTER AND HUNTINGTON STATIONS

MARCH 14,2016

FINAL

PROJECT NUMBER 11792-027

PREPARED BY

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Introduction

Andover Technology Partners (Andover) prepared a report entitled, "Cost of NO_X BART Controls on Utah EGUs," (*Andover Report*) in which Andover claims some of the costs included in PacifiCorp's August 2014 "BART Analysis Update for Hunter Units 1 and 2 and Huntington Units 1 and 2" (*2014 BART Report*) are not consistent with estimating techniques allowed by EPA's Air Pollution *Control Cost Manual* (*Control Cost Manual*).[1] The NO_X technology costs included in the *2014 BART Report* were estimated by Sargent & Lundy, L.L.C (S&L). In particular, Andover claims that the costs included in the *2014 BART Report* to retrofit SCR technology at the Hunter and Huntington stations includes items which were double-counted as well as costs that are not allowed by the *Control Cost Manual*.[2] The *Andover Report* identifies 10 categories for which they recommend adjusting the cost estimates to retrofit SCR technology on each of these units. On behalf of PacifiCorp, S&L has reviewed the Andover report and prepared responses to each of these areas of concern.

S&L's experience in the electric power industry, as well as our experience working with PacifiCorp makes us uniquely qualified to perform this review. S&L has considerable experience with the federal and state environmental regulations affecting power plant operations, as well as the specification, evaluation, selection, and implementation of emission control technologies for both gas- and coal-fueled utility power facilities, including extensive experience with the NO_X control technologies evaluated. For example, since 2000, S&L has provided, or is currently providing, engineering services for the implementation of SCR systems on 68 units, totaling more than 36,000 MW of operating capacity. Our first-hand experience with NO_X control technologies, especially SCR systems, provides us with a thorough understanding of both the capital and operating and maintenance (O&M) costs associated with these technologies. In addition, S&L has completed multiple projects for PacifiCorp at both the Hunter and Huntington stations and we are familiar with the site constraints and the potential challenges to construct SCR systems at each station.

The SCR section of the Andover Report begins by summarizing SCR system costs, in $/kW, reported by a limited number of references.[3] These $/kW costs can be very misleading, especially for plants like

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[1] See, Andover Technology Partners, "Cost of NOx BART Controls on Utah EGUs," (*Andover Report*) October 22, 2015, at pg 9.
[2] *Id.*
[3] *Id.*

Hunter and Huntington, which are located at high elevations of 5,680 feet and 5,790 feet, respectively. At higher elevations the resulting flue gas volumes are higher than a similar sized plant at lower elevations. At the elevation of each of these plants, the flue gas volume would equate to approximately 23 to 24 percent more gas volume than an equivalent MW boiler at sea level. Table 1 compares the capital costs for the SCR systems reported in the 2014 BART Report to the Andover Report and shows the $/kW, corrected for elevation.

Table 1: SCR Total Capital Investment (TCI) of *2014 BART Report* and *Andover Report*

	Hunter 1	Hunter 2	Huntington 1	Huntington 2
Nominal MW (gross)	450	450	450	450
Nominal MW (gross) from *Andover Report*	446	430	461	450
Equivalent MW (gross)[4]	554	554	558	558
***2014 BART Report* LNB/OFA + SCR TCI**	$180,791,743	$177,482,372	$176,287,506	$176,517,450
***2014 BART Report* LNB/OFA TCI**	$11,586,773	$8,872,212	$8,325,049	$8,562,067
***2014 BART Report* SCR Only TCI**[5]	$169,204,970	$168,611,160	$167,962,457	$167,955,383
***2014 BART Report* $/kW (SCR Only)**[6]	**$305**	**$304**	**$301**	**$287**
***Andover Report* LNB/OFA + SCR TCI**[7]	$110,338,801	$108,111,901	$107,805,353	$109,428,725
***Andover Report* SCR Only TCI**[5]	$98,752,028	$99,495,445	$99,720,288	$100,040,436
***Andover Report* $/kW (SCR Only)**[6]	**$178**	**$180**	**$179**	**$179**

Andover claims that, "historical industry cost data were considered to determine if the costs were reasonable in the context of what has been reported at other facilities;"[8] however, the data they analyzed are primarily from the early 2000s, with the most recent data being from a single project in

[4] Increases MW by 23 and 24% to consider elevations of Hunter (5,680 feet) and Huntington (5,790 feet)
[5] *See,* Andover_NOx_control_costs,_October_22,_2015.xlsx worksheet "NOx - SCR_$ton,"at row 56."
[6] Calculated by dividing the "SCR Only TCI" by the Equivalent MW
[7] Calculated by adding Andover costs. *See,* Andover_NOx_control_costs,_October_22,_2015.xlsx worksheet "NOx – LNB," at row 32 and "NOx - SCR_$ton,"at row 56.
[8] See, *Andover Report*, at pg. 7.

2007 and a single project in 2013.[9] Andover then incorrectly used the Chemical Engineering Process Cost Indexes (CEPCI) to escalate all of the project costs from the year reported to 2014.[10]

The CEPCI composite index is updated monthly in Chemical Engineering Magazine. The composite index is built from four sub-indexes (Equipment, Construction Labor, Buildings, and Engineering & Supervision), and seven equipment component sub-indexes (e.g., process machinery, pipe, valves & fittings, electrical equipment, etc.). Although the CEPCI indexes are commonly used in industry to escalate project costs on a year-to-year basis, there are limitations to its use. One of the most important limitations is the general industry standard that the composite CEPCI index should not be used to escalate costs beyond 5-years.[11] Beyond the 5-year window, cost indexes may not accurately reflect changes in relative weighing-factor of the underlying costs, such as fabricated equipment prices, labor costs and productivity, and commodity pricing. Studies have found that beyond a period of 5-years, the differences between actual prices of equipment and labor and those predicted by a cost index become too great to provide meaningful budgetary cost estimates.[12] Therefore, only the 2013 data utilized by Andover can be escalated and used for a meaningful comparison. The 2013 data point was reported by Andover to be $420/kW, which is well above the costs estimated by both Andover and S&L for the PacifiCorp Utah units.

The UARG document, referred to in the Andover Report, includes a much more comprehensive and recent sample of SCR retrofit costs in the United States. Figure 1 reproduces the SCR costs reported in the UARG document, but the graph has been annotated to compare the "SCR only" cost range for PacifiCorp's Utah units, provided by S&L in the *2014 BART Report*, to that provided in the Andover Report, and as summarized in Table 1. The cost ranges identified on Figure 1 for the S&L and Andover costs are based on the equivalent boiler size at sea level and not the actual boiler size (i.e. MW sizes have been increased by ~20% to reflect the higher gas volumes for these units based on their elevations), just as was done above in Table 1. S&L's cost estimates were performed in 2011 and are based on costs from 2011. Andover's costs were developed by adjusting S&L's cost estimates, and are therefore also based on a 2011 dollar basis. When analyzing the most recent UARG reported SCR costs installed between 2008 and 2010, it can be seen that only a single data point from this period is below

[9] *See,* Andover_NOx_control_costs,_October_22,_2015.xlsx worksheet "TVA_SCR Cost,"at column D.
[10] *Id.*, at Column G
[11] *See*, Vatavuk, W., "Updating the CE Plant Cost Index," Chemical Engineering, January 2002, pg. 62, at pg. 66.
[12] *Id.*, at pg. 66.

the Andover costs, while the S&L costs are well within the overall range of this data. In addition, the costs presented in Figure 1 are on a 2008 dollar basis and have not been adjusted to consider escalation of capital costs from 2008 to 2011 which would further increase the discrepancy between the Andover costs to the recent SCR project costs reported by UARG.

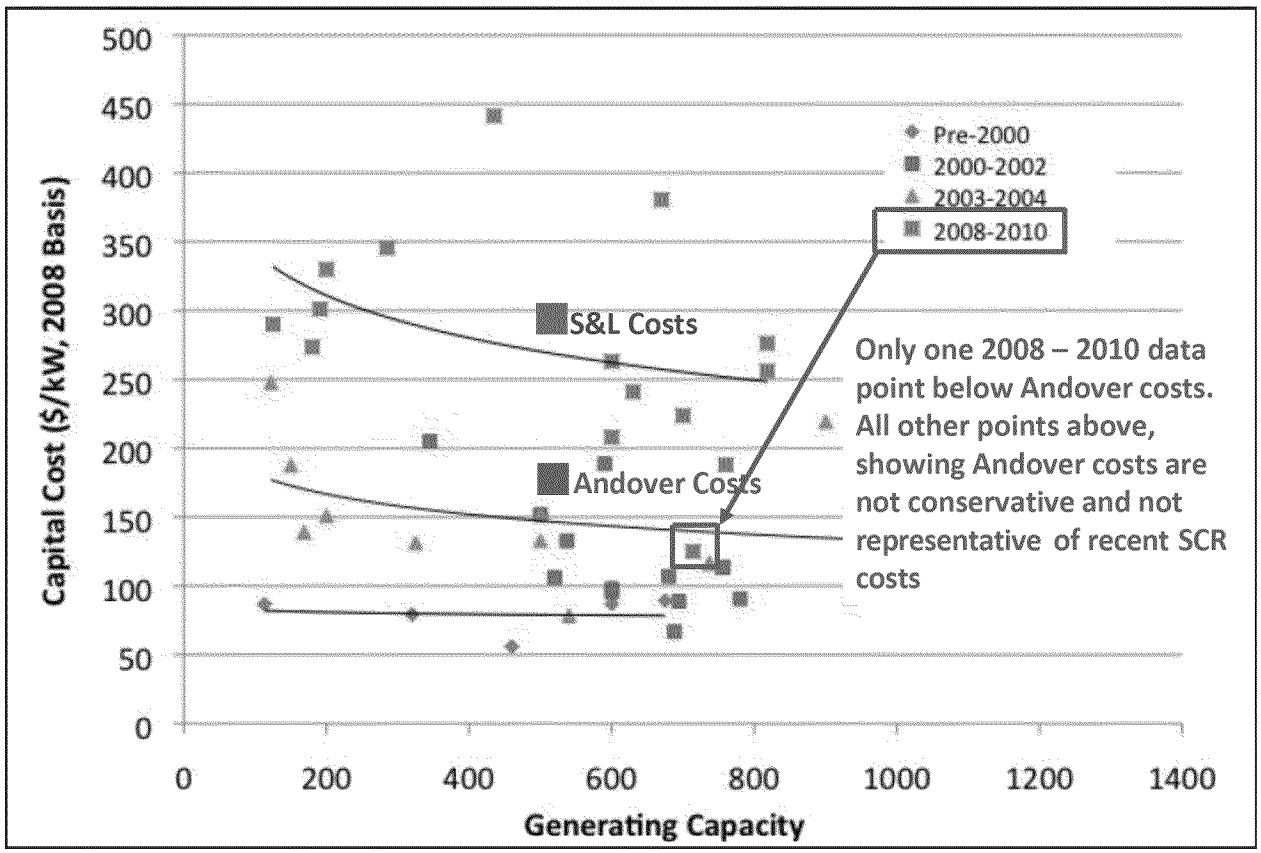

Figure 1: UARG SCR Costs Annotated with S&L and Andover Costs for Hunter / Huntington [13]

Andover claims repeatedly in their report that they made conservative assumptions and that their costs are more reflective of costs to retrofit SCR systems at Hunter and Huntington stations than S&L's estimates.[14] However, Figure 1 clearly shows that Andover costs are neither conservative nor do they compare well to industry data for recent SCR projects.

[13] See, Cichanowicz, J. E., "Current Capital Cost And Cost-Effectiveness Of Power Plant Emissions Control Technologies", Prepared for Utility Air Regulatory Group, January 2013, Figure 6-1, at pg. 6-2.
[14] See, *Andover Report*, at pgs. 14, 16, 17, 18, and 19.

Responses to Andover's Report

The following sections respond in detail to the mistaken and, in some cases, arbitrary assumptions made by Andover in their cost adjustments. Our responses illustrate why the S&L cost estimates included in the *2014 BART Report* are consistent with the study level estimating procedures identified in the *Control Cost Manual*, and shows that majority of the adjustments made by Andover to our estimates are completely inappropriate.

1. Process Contingency

Andover Report: For SCR applications on utility boilers burning US western bituminous coals there should not be a need for process contingency.[15]

S&L Response:

Andover's claims that process contingency is not required are arbitrary and have no basis. We agree with Andover's clarification that commercially available technology process contingency could range from 0 – 10%.[16] In this case, S&L followed the *Control Cost Manual*'s specific SCR example of 5% process contingency[17], which is an intermediate value from the possible range cited in Andover's reference. While Andover is correct that there is significantly more experience with SCR technology in the United States, PacifiCorp's Bridger Station Unit 3, which was commissioned in December of 2015 is, according to S&L's knowledge, the first SCR in the United States to be installed on a unit that fires these unique western bituminous coals. In addition, to date, S&L is not aware of any such SCR systems firing the Utah-specific coals fired at Hunter and Huntington. Later in its analysis, Andover correctly notes that the coal chemistry is different than eastern bituminous, Pennsylvania bituminous, and PRB fuels, which demonstrates the uniqueness of these Utah fuels.[18] Andover also summarizes average deactivation rates provided by one catalyst supplier that do not include deactivation rates for Western Bituminous fuels, further illustrating that there is no current experience with these coals.[19]

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[15] *See, Andover Report*, at pg. 8.
[16] *Id.*, at pg. 7.
[17] *See, Control Cost Manual*, Section 4, Chapter 2, Table 2.5 at pg. 2-44.
[18] See, *Andover Report*, at pg 12.
[19] See, *Andover Report*, Table 3 at pg 15.

There have also been several industry publications citing the potential for vapor-phase phosphorous poisoning of catalyst for deeply staged burners, consistent with the types of Low NO_X burners and over-fired air systems that are in place at the Hunter and Huntington units. [20, 21] Industry data regarding phosphorous poisoning has varied significantly and has been found to depend on the amount of phosphorous that is converted to vapor phase, which is very difficult to measure. Therefore, it was appropriate for S&L to include 5% process contingency, as allowed by the *Control Cost Manual,* to account for the uncertainty associated with the SCR design due to firing these unique western bituminous coals and the potential for vapor-phase poisoning, a recent phenomenon that is not yet fully understood.

2. Project Contingency

Andover Report: Project Contingency of 15% is too high in light of the cost method used and very conservative underlying assumptions. No additional project contingency is allowed.[22]

S&L Response:

We agree with the Andover report that the cost estimating methodology described in the *Control Cost Manual* is designed to provide "study level" cost estimates, which the manual states are "nominally accurate to within ±30%."[23], and are "acceptable for regulatory development."[24] In addition we agree that these were adapted from standards developed by the American Association of Cost Engineers (AACE). However, Andover incorrectly classifies S&L's cost estimates as either Class 1 or Class 2 because they have "hundreds of line items and input parameters." The AACE defines estimate classes based upon the level of project definition, which it states correlates to the percent of engineering and design that is completed.[25] AACE's Class 5 estimates are used for conceptual screenings, have the widest range in accuracy, and have as little as 0 to 2% engineering completed in support of their

[20] See, M Gadgil, "Deactivation of Selective Catalytic Reduction (SCR) Catalyst by Phosphorus: Proposed Mechanism and Solution," Presented at the International Pittsburgh Coal Conference, September 12 – 15, 2011.
[21] See, M Gadgil et al, "Combustion Additives for Control of Phosphorus Effects and Achieving Mercury Reduction," Presented at Power-Gen Europe, June 3 – 5, 2014.
[22] *See, Andover Report*, at pg. 8.
[23] *See, Control Cost Manual*, at pg. 2-3.
[24] *Id.*, at pg 2-4.
[25] AACE International Recommended Practice No. 18R-97, November 29, 2011, at pg. 5.

development.[26] AACE's Class 4 estimates are used for studies and feasibility analyses have between 1 and 15% engineering completed in support of their development.[27] In contrast, Class 2 estimates correspond to between 30 and 75% engineering having been completed while Class 1 estimates correspond to between 60 and 100% of the engineering having been completed to support the development of those estimates.

For Class 2 estimates, even the minimum range of engineering at 30% would require major equipment, including the SCR system, to be awarded to a contractor so that they would have the ability to start the detail design for foundations, structural steel, and ductwork. Further, 60 to 75% engineering would be consistent with the beginning of construction phase, as the contractor prepares the site and installs the foundations. Finally, 100% completion of the engineering on a project is consistent with being well into the construction phase, with most mechanical and structural items being procured, manufactured and delivered to site. None of the above items were conducted to support the estimates generated in the *2014 BART Report*.

The cost estimating procedure described in the *Control Cost Manual* to obtain study level estimates consists of five steps: (1) obtaining the facility parameters and regulatory options for a given facility; (2) roughing out the control system design; (3) sizing the control system components; (4) estimating the cost of these individual components; and (5) estimating the costs (capital and annual) of the entire system.[28] Completing these steps does not require a level of engineering even approaching 30%. In reality, S&L completed well below 5% of the overall engineering to support the development of the Hunter and Huntington cost estimates. The hundreds of line items in our cost estimate reflect our experience with these types of retrofit projects, but do not reflect detailed engineering being conducted. S&L's estimates are consistent with Class 4 estimates which, as stated by Andover, are consistent with the study level estimates that provide the basis of the *Control Cost Manual*.

We could find no reference in the *Control Cost Manual* or AACE that defined the accuracy level or appropriate contingency based upon the number of line items included in a cost estimate. Therefore, Andover's assertion that contingency is not appropriate for a cost estimate that

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[26] *Id.*
[27] AACE International Recommended Practice No. 18R-97, November 29, 2011, at pg. 2.
[28] *Control Cost Manual*, page 2-23.

includes "many cost line items" is completely arbitrary.[29] In addition, Andover claims the contingency is not warranted because it says the S&L estimate "already has substantial contingency built into it through conservative assumptions," yet they fail to indicate which of our assumptions are conservative and why they necessitate the removal of project contingency.[30] Andover continues to describe the "importance of double-counting contingency in multiple places such as retrofit factor and contingency," but no retrofit factor is included in S&L's estimates.[31] Finally Andover states that the *Control Cost Manual* "explicitly anticipates that some analysts may, incorrectly, apply multiple contingencies," and that, "the CCM is clear that such double-counting should be avoided."[32] It appears to us that Andover has merely repeated requirements from the *Control Cost Manual* regarding double-counting to support its claim that S&L's has double-counted costs in its estimates. While we agree that double-counting is not allowed, Andover fails to identify any specific line items in S&L's cost estimate that duplicate project contingency.

In conclusion, S&L's estimates are consistent with Class 4 estimates and do not include items in the estimate that overlap with project contingency. We agree with Andover that 15% contingency is appropriate for Class 4 estimates, which is what was included in our cost estimates.

3. General Facilities

Andover Report: The cost estimate for PacifiCorp on all four units included a number of items that would fall into the category of General Facilities, and in order to avoid double-counting, an additional line item for General Facilities will not be included.[33]

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[29] *See, Andover Report*, at pg. 8 and pg.9.
[30] *Id.*, at pg 9.
[31] *Id.*
[32] *Id.*
[33] *Id.*

S&L Response:

The following is an excerpt from the *Control Cost Manual* that refers to General Facilities:

> "Indirect installation costs are those associated with installing and erecting the control system equipment but do not contribute directly to the physical capital of the installation. This generally includes general facilities and engineering costs such as construction and contractor fees, preproduction costs such as startup and testing, inventory capital and any process and project contingency costs." [34]

Process and project contingency are dealt with separately in this response, and none of the remaining items listed above correspond to items from S&L's cost estimate that Andover highlights in this section of its report. Much of the equipment listed in S&L's estimate to which Andover objects is safety related and included to protect the operating personnel. This equipment is required by the process and contributes directly to the physical capital costs. Andover's objection to S&L's cost estimates related to General Facilities is not clear as S&L correctly followed the example illustrated in Chapter 2 of the *Control Cost Manual* with respect to General Facilities.

4. Allowance for Funds Used Under Construction (AFUDC)

Andover Report: AFUDC is not included in the overnight cost methodology of the CCM and therefore was not allowed. PacifiCorp correctly excluded this from their estimate. [35]

S&L Response:

S&L disagrees that the *Control Cost Manual* describes an overnight approach to calculating capital costs. The *Control Cost Manual* does not once define or even mention the overnight methodology as being the basis for estimating costs. Rather, the *Control Cost Manual* describes a constant dollar approach that annualizes all capital costs and O&M costs (on a constant-dollar basis) over the useful life of the project.

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[34] *Control Cost Manual*, Section 4, Chapter 2, page 2-43.
[35] *See, Andover Report*, at pg. 10.

The term "total capital investment" is defined in the *Control Cost Manual* to include all costs required to purchase the 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, as well as indirect installation costs "such as engineering costs; construction and field expenses (i.e., costs for construction supervisory personnel, office personnel, rental of temporary offices, etc.); contractor fees (for construction and engineering firms involved in the project); start-up and performance test costs (to get the control system running and to verify that it meets performance guarantees); and contingencies.[36] AFUDC is an indirect capital cost that should be included in a capital cost estimates prepared and is in accordance with the methodology described in the *Control Cost Manual*.

AFUDC accounts for the time value of money associated with the distribution of construction cash flows over the construction period.[37] AFUDC can represent a significant cost on large construction projects with long project durations and can be calculated based on a typical construction project cash flow and real rate of interest. EPA's CUECost model includes AFUDC in its calculation of air pollution control technology capital costs using an AFUDC factor and the total plant cost.[38] For SCR projects, the project could be spread over a construction period of 18 months or more.

Although specifically referenced in the *Control Cost Manual*, and more reflective of real-world project costs, the *2014 BART Report* excluded AFUDC in recognition of EPA's opinion that such costs should not be factored into five-factor Regional Haze BART analyses.

5. Sales Tax

S&L has no comment to this section.

6. Property Tax

S&L has no comment to this section.

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[36] *Control Cost Manual*, Section 1, Chapter 2, page 2-5.
[37] *Id.*, at pg. 33.
[38] *Id.*, at pg. 17.

7. Indirect Installation Costs

Andover Report: As a result, several costs cited in PacifiCorp's cost estimate, such as Contractor Construction Management / Field Engineering and Contractor Training Classes, are not allowed because these are included in the 10% Engineering and Home office fees that are already included in the cost. [39]

S&L Response:

We refer Andover to the *2014 BART Report,* which identifies what indirect costs are included in the cost-effectiveness calculations. [40] This information shows that several indirect costs from S&L's estimates were specifically excluded by S&L from the cost-effectiveness calculations, which was done to avoid double counting. Instead of including the costs from S&L's estimates, we followed the example calculations from Chapter 2 in the *Control Cost Manual* to estimate indirect costs due to engineering and home office fees. As indicated in *2014 BART Report*, we did include several items that are not specifically listed in the *Control Cost Manual*'s description of indirect costs due to engineering and home office. Those costs include: 1) Construction Management 2) Spare Parts Required for Startup and 3) Training supplied by the contractor. To clarify these terms, Construction Management is generally provided by a third-party, other than the EPC contractor, to ensure that the construction activities are proceeding according to the contract requirements and that the work is coordinated with other plant activities. Spare parts required for startup are only the spare parts required by the EPC contractor during the commissioning and startup phases, not the spare parts that are included in O&M costs as required for annual maintenance. Training, which is generally conducted by various equipment providers, is conducted to familiarize operators with the new equipment and teaches them how to operate and maintain the equipment. The *Control Cost Manual* does not list these items as included in its description of "indirect costs due to engineering and home office fees," therefore we included them in our total direct costs so that these real costs would not be excluded from the cost-effectiveness calculation.

[39] *See, Andover Report*, at pg. 11.
[40] *2014 BART Report*, Appendix B, pg. 1.

In contrast, there were several indirect cost line items in S&L's cost estimates that were specifically excluded from the cost-effectiveness calculations to avoid double counting, including 1) Engineering services, 2) Startup and Commissioning, 3) Initial Fills and 4) EPC Fee. Although all of these costs are real costs for these types of projects, we excluded them from the cost effectiveness calculations because the description of engineering indirect costs described in the *Control Cost Manual* specifically lists these items, except for initial fills, which we conservatively omitted because we believed these could be interpreted as costs already included in startup and commissioning costs.

Using the Hunter 1 S&L detailed cost estimate and 50% of the S&L detailed common estimate (to illustrate the total Hunter 1 costs), the following table shows the indirect costs due to engineering and home office fees that S&L excluded from the cost-effectiveness calculations to avoid double counting, compared to those that result from using EPA's formula of 0.1 * TDC provided in the *Control Cost Manual (CCM)*.

Item	Indirect Costs Due to Engineering and Home Office Fees	Hunter 1 S&L Estimate	50% of Common Hunter S&L Estimate
1	Engineering Services	$8,170,900	$511,700
2	Startup and Commissioning	$1,021,400	$63,950
3	Initial Fills	$35,000	---
4	EPC Fee	$11,309,900	$718,950
5	Total excluded from *each* S&L estimate[41]	$20,537,200	$1,294,600
6	**Total excluded from *both* S&L Estimates[42]**	**$21,831,800**	
7	**Costs Using 0.1 * TDC (Included in Cost-Effectiveness)**	**$12,487,594**	
8	**Difference Between Excluded and Included Costs[43]**	**$9,344,206**	

From this table, it can be seen that S&L estimated indirect costs due to engineering and home office fees of over $21 million, but to avoid double counting indirect costs identified in the

[41] This is the sum of items 1 through 4 in each column.
[42] This is the sum of the total excluded from the Hunter 1 Estimate and 50% of the Common Hunter Estimate
[43] This is the difference between Items 6 and 9, showing how using the CCM methodology for these indirect costs actually leaves over $9 million of estimated costs out of the cost-effectiveness calculations.

Control Cost Manual, those costs were excluded from the cost-effectiveness calculations. Instead, we followed EPA's formula in Chapter 2 which estimates indirect costs due to engineering and home office fees to be 0.1 * TDC, which for Hunter 1 was approximately $12.5 million. Therefore, the *2014 BART Report* cost-effectiveness calculations are conservative with respect to indirect costs due to engineering and home office fees because, by following EPA's example, the cost-effectiveness calculations for Hunter 1 do not include over $9 million in real costs that would actually be incurred. When considering all four units at Hunter and Huntington, approximately $ 38.8 million in indirect costs due to engineering and home office fees were conservatively not included in the cost-effectiveness analysis.

8. Catalyst and Catalyst Reactor

Andover's lengthy analysis in this section of the report can be sub-categorized into four main areas: a) Catalyst Costs, b) Catalyst Volume, c) SCR Reactor Design and d) Regenerated Catalyst, each of which is discussed in the following sections.

a. Catalyst Costs

Andover Report: Sargent & Lundy arrives at a catalyst cost by escalating a 1998 cost of catalyst using CEPCI, which does not consider what catalyst actually costs today. These costs are at the upper level to well above what catalyst actually costs. [44]

S&L Response:

Andover misunderstands the source of $240/ft^3 ($8,470/m^3) and the $290/ft^3 ($10,200/m^3) by assuming S&L escalated 1998 costs based on CEPCI indices. These two numbers come directly from the *Control Cost Manual* example calculations.[45] The cost-effectiveness comparison worksheets included in Appendix A of the *2014 BART Report* are merely repeating EPA's methodology illustrated in the *Control Cost Manual*. In addition, the right-most column of S&L's cost-effectiveness worksheets include a comment that states the CEPCI indices were not used to escalate catalyst costs included in the capital cost estimates because 2011 cost values were

[44] *See, Andover Report*, at pg. 11.
[45] *Control Cost Manual*, Section 4, Chapter 2, page 2-50.

utilized. Andover subsequently points out that the capital cost included in S&L's detailed cost estimates contained $6,750,000 for 1040 m^3 of catalyst, with additional labor costs, which increase the total catalyst cost to $8,096,100.[46] The labor costs included are required for the installation of the catalyst modules in the reactor. Dividing the total cost by the volume from the capital cost estimate ($8,096,100/1040 m^3) results in a volumetric price of $7,785/$m^3$.

Andover arbitrarily selected $5,500/$m^3$ as a reasonable basis for future catalyst based on a reference plot that does not appear to include freight costs to deliver the modules to site or labor costs to load the catalyst in the reactor.[47] The SCR catalyst capital costs are consistent with S&L's experience with recent pricing received from vendors for actual SCR retrofit projects on coal-fired boilers, including freight costs for delivery as well as installation costs. We note S&L's cost is well below both the 1998 and 2011 costs utilized by EPA in the SCR example calculation in the *Control Cost Manual*. Furthermore, S&L's catalyst cost is well below that reported in EPA's fact sheet, also referenced in Andover's report, which states that the approximate SCR catalyst cost is $10,000/$m^3$.[48] Therefore, S&L's catalyst capital costs are not excessive, reflect current catalyst pricing, and are well within the costs included in the *Control Cost Manual* as well as information available on EPA's website.

With respect to the replacement catalyst costs used in the *2014 BART Report*, S&L expects actual replacement costs to be closer to $10,000/$m^3$ similar to what EPA uses in the *Control Cost Manual* because these replacement costs include the cost of the catalyst itself, the freight cost to deliver the catalyst to site, the labor cost to remove the spent catalyst, the cost to dispose of the spent catalyst modules, and the labor cost to install the new catalyst. However, to be conservative, S&L used only the $240/$ft^3$ ($8,470/$m^3$) from the *Control Cost Manual* as the replacement value of the catalyst.[49] Therefore, the replacement catalyst cost used in the cost-effectiveness worksheets is not excessive, reflects current catalyst pricing, and is well within the costs included in the *Control Cost Manual*.

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[46] *Andover Report*, pg. 11.
[47] *Id.*
[48] US EPA, *Air Pollution Control Technology Fact Sheet* (EPA-452/F-03-032), July 15, 2003, at pg. 1.
[49] *2014 BART Report*, Appendix B, Located in Table labeled, "EPA Cost Manual Inputs / Constants," within the row identified in this table as "Replacement Catalyst Cost."

b. Catalyst Volume

Andover Report: The estimate by Sargent & Lundy of catalyst volume appears to be too great.[50]

S&L Response:

The amount of SCR catalyst volume required depends on the following design parameters: 1) gas volume, 2) gas temperature, 3) Amount of NO_X removed, 4) catalyst life, 5) fuel properties (which dictate the deactivation rate), and 6) SO_2 to SO_3 oxidation rate. The data included in Andover's report that they use to conclude S&L's catalyst volume is over-estimated contain only one of these variables (catalyst life). Notably, none of the catalyst life data presented includes units designed with 32,000 hours of life, which is the design life required for Hunter and Huntington to accommodate their current outage schedules. The data reported by Andover incorrectly includes gross output (MW), which is not directly proportional to gas volume in the case of the Hunter and Huntington units, each of which are over 5,600 feet in elevation, and as previously discussed, have significantly higher gas volumes for equivalently rated units located at sea level. For this reason, gross output (MW) cannot be used to compare catalyst volumes for plants that vary in elevation. In addition, the table lists % NO_X reduction, but catalyst volume depends on the amount of NO_X removed, not the % reduction. For example, consider two SCR systems that are equivalent with respect to all variables with the exception that one SCR system is designed for 90% reduction with an inlet NO_X of 0.4 lb/MMBtu (i.e an outlet NO_X of 0.04 lb/MMBtu) and the other is designed for 90% reduction with an inlet NO_X of 0.5 lb/MMBtu (i.e an outlet NO_X of 0.05 lb/MMBtu). The second plant will require substantially more catalyst because it is removing 0.45 lb/MMBtu of NO_X (0.5 minus 0.05) while the first is removing only 0.36 lb/MMBtu (0.4 – 0.04). Therefore, the data presented by Andover cannot be utilized to conclude anything with respect to how catalyst volumes compare at different locations and has resulted in an incorrect conclusion by Andover that the SCR volume at Hunter and Huntington is excessive.

As noted in the *2014 BART Report* cost-effectiveness worksheets, EPA's empirical formulas from the *Control Cost Manual* are insufficient to predict catalyst volume because they do not include

[50] *Andover Report*, pg. 12.

many of the necessary parameters described above, and most notably do not account for catalyst life. Therefore, we disagree with Andover's methodology to utilize those equations to estimate catalyst volume. Andover calculated catalyst volume by using a second methodology, but this methodology is based on a proposal by EPA in 2015 to revise its *Control Cost Manual.* EPA has not yet responded to comments on this methodology, and S&L has not evaluated its technical validity. We note that while the formulas do include catalyst life, Andover calculated the catalyst volume based on 16,000 hours of catalyst life, instead of 32,000 hours, which is what will be utilized for Hunter and Huntington. Furthermore, Andover arbitrarily selected deactivation rates consistent with Eastern Bituminous even though the Hunter and Huntington fuels are Western Bituminous, which as discussed earlier, have not been utilized before in an SCR system. If Andover's worksheet using this methodology is changed to account for 32,000 hours of life and assuming a more conservative deactivation rate such as 0.65 to coincide with PRB, then the catalyst volume is predicted to be 949 m^3, very close to S&L's estimated 1040 m^3. To be clear, we are not stating that EPA's proposed methodology is valid merely because changing some input parameters resulted in an estimate close to ours; instead, we are saying that flawed assumptions were used by Andover to under-estimate catalyst volumes using a method that has not yet been approved for use in the *Control Cost Manual.*

S&L estimated the catalyst volume at Hunter and Huntington based on contract values for the Naughton 3 SCR project. Andover incorrectly assumes that there was no SCR project at Naughton 3. In fact, S&L supported PacifiCorp during conceptual design and specification development to retrofit a SCR system, and other air pollution control equipment, at Naughton 3. PacifiCorp awarded a final EPC contract for the project, and the Contractor began its engineering effort. Shortly after the SCR contract was awarded, however, the project was canceled due to a later decision to convert the unit from burning coal to burning natural gas. During the conceptual design, S&L used its proprietary methodology (that depend on the 6 parameter listed above) to estimate catalyst volume for Naughton 3 to be 623 m^3, based on 16,000 hours of catalyst life. The final SCR contract was designed to include 810 m^3 of catalyst, based on 32,000 hours. We therefore, concluded that for longer catalyst life while burning Western Bituminous fuels, S&L's method under estimated catalyst volume by approximately 30%. As such, when we applied our proprietary formulas to the Hunter and Huntington design basis, we

predicted 800 m^3, but increased that by 30% to estimate 1040 m^3, to account for the discrepancy we noted on the Naughton 3 SCR project. To be clear, S&L is not saying that in all cases the difference in catalyst volume between 16,000 and 32,000 hours of life is 30%, but we found that our estimating technique was off by this amount for the Naughton example, and we believe that because the Hunter and Huntington fuels have similar characteristics, it was reasonable to adjust the catalyst volume by the same amount for this project.

Andover comments that the 32,000 hours of catalyst life is unusual, and S&L agrees that this catalyst life is not typical in the industry. However, PacifiCorp has committed itself to reducing maintenance outage frequency to every four years; therefore, they intend to replace catalyst outage with that frequency. The UARG reference cited in Andover's report correctly points out that ,"to confine catalyst replacement to major outages," is one strategy to minimize catalyst replacement costs.[51] If PacifiCorp was required to take an extra week long outage every two years in accordance with Andover's presumed 16,000 hours of catalyst life, then the cost-effectiveness calculations would need to include the cost of replacement power for that extra outage, which are currently not included.

In summary, the catalyst volumes estimated by S&L are consistent with an actual SCR project designed to burn Western Bituminous fuels similar to those that would be burned at Hunter and Huntington, and they account for the 4-year maintenance cycle on which these plants operate. In contrast Andover's catalyst volumes are under-estimated because they utilize flawed methodologies developed by EPA that do not account for important design parameters such as catalyst life.

c. SCR Reactor Design

Andover Report: Only one reactor is necessary as opposed to two. This is because only about half as much catalyst is actually necessary.[52]

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[51] See, Cichanowicz, J. E., "Current Capital Cost And Cost-Effectiveness Of Power Plant Emissions Control Technologies", Prepared for Utility Air Regulatory Group, January 2013, at pg. 6-6.
[52] *Andover Report*, pg. 16.

S&L Response:

Although we previously illustrated that Andover under estimated the catalyst volume requirements to retrofit SCR systems at Hunter and Huntington, the number of reactors is not at all dependent on the volume of catalyst. Andover states, "the cross sectional area of the catalyst reactors will be reduced roughly in proportion to the catalyst volume," and concludes that "only one reactor of roughly the same size as one of the two reactors assumed by Sargent & Lundy is necessary." The reactor design is primarily set by gas flow and velocity, not catalyst volume. High velocities, in excess of 20 feet per second, lead to catalyst erosion. The two reactor conceptual design developed by S&L was based on an average velocity at the catalyst face of approximately 16 feet per second (fps), matching other project designs including that of Naughton 3. By changing the design to a single reactor with 50% of the cross-sectional area, twice as much flue gas would need to flow through this reactor, leading to the average velocity at the face of the catalyst doubling to 32 fps. Velocities in this range are technically infeasible for a variety of reasons. For one, the residence time of the flue gas in the reactor would be insufficient to achieve the NO_X reduction required. More importantly, this velocity would erode the catalyst in an extremely short period of time, rendering the SCR system useless.

In conclusion, even if a lower volume of catalyst were acceptable, which it is not, the number of reactors required at both Hunter and Huntington would remain two. Andover's conclusion that only a single reactor with 50% of the original cross-sectional area is acceptable for these units illustrates their lack of experience with SCR retrofit projects. All adjustment made to the estimate to adjust for a single-reactor design are completely inappropriate and technically infeasible.

d. Regenerated Catalyst

Andover Report: Andover makes an unsupported assertion that "most replacement catalyst in the United States is regenerated catalyst."

S&L Response:

The two references cited by Andover do not support this claim, and it is not consistent with S&L's experience in the industry. Neither the first reference, which describes various processes that were used to regenerate catalyst in 2001, nor the second reference, which describes catalyst regeneration experience in Germany (not the United States), present any data indicating that the majority of replacement catalyst in the U.S. is regenerated.

S&L has participated in several catalyst replacement projects in the last year and in each of these projects new catalyst was purchased for the spare or replacement layer. In addition, due to mechanical degradation of the modules, which cannot be recovered, the mechanical life of regenerated catalyst is much lower than new catalyst and has not been guaranteed to meet the duration which the catalyst is typically expected to remain within the reactor (┘ H└ Ú └ □└ U└ ï └ ï └ ï └ hours).

9. Cost of Induced Draft (ID) Fan and Auxiliary Load

Andover Report: Sargent & Lundy over-estimated the cost of the fans used in the PacifiCorp submittal. [53]

S&L Response:

Andover correctly points out that in some cases improvements to the existing ID fans can be sufficient to overcome the differential pressure required by SCR systems retrofitted to existing plants. For those rare cases, the original ID fans were typically designed to accommodate a future SCR system, so they generally already included significant operating margin. Based on the information available when we prepared the study level SCR cost estimates for Hunter and Huntington, new ID fans were determined to be required at all four units at both stations. Andover compared the size of the new motors (two 6000 HP motors for each unit) used to develop capital cost estimates to the additional auxiliary power consumption added by the SCR system (2100 to 2200 kW) used to estimate O&M costs, and mistakenly concluded that the fans included in S&L's estimates were oversized.

[53] *Andover Report*, pg. 18.

Because new ID fans were determined to be required, new ID fans must be designed to handle the entire flue gas flow and designed to overcome, not only the additional pressure drop from the SCR, but also to overcome the differential pressure for which it was originally designed (e.g. air preheaters, ESPs, etc.). For each unit, 2 x 50% ID fans were included in the capital cost estimate.

The lower auxiliary power numbers referenced above were utilized to prepare the O&M costs associated with the SCR systems so that the cost-effectiveness calculations only reflected the incremental increase in auxiliary power costs due to the SCR project. Andover's misunderstanding of the difference between the capital and O&M costs associated with the ID fans led them to make incorrect inferences regarding S&L's assumed fan and motor efficiencies, which further led them to incorrectly adjust the capital costs. Andover's capital cost adjustment is based on sizing the new ID fans for the incremental auxiliary power consumption due only to the SCR differential pressure, which is not technically feasible. Therefore, S&L's capital cost estimates regarding the ID fans are correct and the adjustments by Andover are not appropriate.

10. Operating Cost – Cost of Generating Steam for Hydrolyser

We agree that using fuel costs for steam costs is appropriate. Assuming the fuel costs indicated by Andover are correct, this impacts the cost-effectiveness calculation by less than 0.25%.

11. Additional Andover Adjustments

In addition to the ten main comments highlighted in the *Andover Report*, Andover made additional adjustments to the capital and O&M costs including: a) Revised reagent consumption per 2015 revision to *Control Cost Manual* and b) Removal of Owner's Costs.

a. Revised Reagent Consumption

Andover used equations from the EPA 2015 revision to its *Control Cost Manual* to calculate reagent consumption which impacts both the capital and O&M costs. At this time, EPA has not finalized this revision; even so this revision does not apply to this BART evaluation as it was completed in 2011, prior to the proposed changes. The proposed equations are incorrect and

underestimate the reagent consumption and result in lower O&M costs for the reagent, water, and steam as well as lower inventory capital costs.

b. Removal of Owner's Costs

Andover's report indicates that the "capital cost estimates do not include AFUDC or Owner's costs (beyond the 10% allowed for engineering and home office)."[54] Engineering and home office fees are Contractor costs which cove the detailed engineering for the project as well as the Contractor's home office fees. Owner's costs are outside of the total Contractor cost and are real costs that the Owner will incur during the project such as services procured from third parties, and other project related costs.

[54] *Andover Report*, pg. 24.

Conclusions

For all of the reasons identified above, the capital and O&M costs reported in the *Andover Report* for SCR technology are underestimated. Table 2 summarizes the capital costs incorrectly excluded for each unit by Andover which should be included in the overall SCR control cost.

Table 2: Excluded Costs by Andover from SCR Total Capital Investment (TCI)

Ref	Item	Hunter 1	Hunter 2	Huntington 1	Huntington 2
1	**Process Contingency**	**6,243,797**	**6,147,361**	**6,083,691**	**6,112,941**
2	**Project Contingency**	**22,477,668**	**22,130,498**	**21,901,287**	**22,006,586**
3	**General Facilities**	**6,243,797**	**6,147,361**	**6,083,691**	**6,112,941**
4	**AFUDC**	**0**	**0**	**0**	**0**
5	**Sales Taxes**	**0**	**0**	**0**	**0**
6	**Property Tax**	**2,764,009**	**2,773,612**	**1,864,732**	**1,863,726**
7	**Indirect Installation Costs**	**6,068,143**	**5,748,330**	**5,564,981**	**5,608,258**
	Contractor Construction Management/Field Engineering	1,085,350	1,092,950	1,095,850	1,099,550
	Contractor Training Classes	135,000	135,000	135,000	135,000
	Engineering and Home Office Fees	3,371,711	3,112,193	2,965,375	2,995,130
	G. - Preproduction Costs	1,441,082	1,373,187	1,333,756	1,343,578
	I. - Initial Catalyst and Chemicals (Inventory Capital)	35,000	35,000	35,000	35,000
8	**Catalyst and Catalyst Reactor**	**18,543,185**	**18,578,205**	**18,691,324**	**18,738,385**
	IB. Total SCR Build	11,498,889	11,498,889	11,498,889	11,498,889
	IIB. Total - Other Direct Costs SCR Build	3,469,285	3,504,305	3,617,424	3,664,485
	a. Total - Other (Initial Load Catalyst)	3,575,011	3,575,011	3,575,011	3,575,011
9	**Cost of ID Fan and Auxiliary Load**	**837,649**	**895,820**	**882,108**	**908,889**
	ID Fan Cost (IB. Total SCR Build)	837,649	895,820	882,108	908,889
10	**Operating Cost (Steam)**	**O&M Only**	**O&M Only**	**O&M Only**	**O&M Only**
11	**Additional Andover Adjustments**	**4,934,548**	**4,345,379**	**4,935,661**	**4,344,522**
	H. - Inventory Capital - Urea Consumption	22,547	26,878	23,660	26,021
	a. Total - Other - Owner's Cost	4,912,001	4,318,501	4,912,001	4,318,501
TOTAL EXCLUDED CAPITAL COST ($)		**68,112,796**	**66,766,566**	**66,007,475**	**65,696,248**
Total Delta Annualized Capital ($/yr)		**6,429,848**	**6,302,764**	**6,231,106**	**6,201,726**

Ref	Item	Hunter 1	Hunter 2	Huntington 1	Huntington 2
	Andover Report SCR Only TCI[55]	$98,752,028	$99,495,445	$99,720,288	$100,040,436
	Adjusted *Andover Report* SCR Only TCI	**$166,864,824**	**$166,262,011**	**$165,727,763**	**$165,736,684**

Table 3 summarizes the O&M costs incorrectly excluded for each unit by Andover which should be included in the overall SCR control cost. By incorrectly removing the capital costs as defined in Table 2, Andover also reduced the fixed maintenance O&M costs by nearly $2 million per unit. Andover arbitrarily adjusted the property taxes without proper justification, the adjustment included in Table 3 accounts for the differential between the value included in the *2014 BART Report* and that estimated by Andover. As discussed previously in the response to Andover's comment #8 the adjustments made to the catalyst volume are incorrect and have no basis, therefore the reduction in O&M costs is not justified; the cost in Table 3 represents the differential between the *2014 BART Report* and the *Andover Report*. Per Andover's comment #10, the reduction in steam unit price results in a small reduction in O&M costs and therefore no adjustment was made to the Andover costs. Finally, additional adjustments were incorrectly made by Andover as described in Item #11; these are also included in Table 3.

Table 3: Excluded Costs by Andover from SCR Total Annual O&M Costs

Ref.	Item	Hunter 1	Hunter 2	Huntington 1	Huntington 2
1-9	**O&M Costs Affected by Capital Cost**	**1,985,063**	**1,971,993**	**1,961,003**	**1,959,105**
	Maintenance Cost	2,044,314	2,031,690	2,020,835	2,019,129
	Administrative Charges	(59,251)	(59,697)	(59,832)	(60,024)
6	**Property Taxes**	**1,110,892**	**1,100,579**	**1,092,769**	**1,090,814**
8	**Catalyst and Catalyst Reactor**	**169,530**	**169,530**	**169,530**	**169,530**
11	**Additional Andover Adjustments**	**807,719**	**854,190**	**814,287**	**887,169**
	Reagent Cost	789,106	833,837	797,411	866,996
	Water Cost (For Reagent)	900	1,010	874	1,045
	Steam Cost (For Reagent)	17,713	19,343	16,001	19,128
	TOTAL EXCLUDED O&M COST ($/yr)	**4,073,204**	**4,096,292**	**4,037,588**	**4,106,617**
	Andover Report SCR Only Total Annual Operating Cost (Fixed and Variable)[56]	$3,101,280	$2,960,484	$3,080,187	$2,988,621
	Adjusted *Andover Report* SCR Only Total Annual Operating Cost	**$7,174,484**	**$7,056,776**	**$7,117,775**	**$7,095,238**

[55] *See,* Andover_NOx_control_costs,_October_22,_2015.xlsx worksheet "NOx - SCR_$ton," at row 56.
[56] Calculated by adding Annual Operating and Fixed Operating Costs. *See,* Andover_NOx_control_costs,_October_22,_2015.xlsx worksheet "SC_PacifiCorp Annual_Adjusted," at row 108 and "NOx - SCR_$ton," at row 92.

Exhibit B
PacifiCorp v. EPA, Consolidated Case Nos. 16-9541, 16-9542, 16-9543, 16-9545

Approval, Disapproval and Promulgation of Air Quality Implementation Plans; Partial Approval and Partial Disapproval of Air Quality Implementation Plans and Federal Implementation Plan; Utah; Revisions to Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze, 81 Fed. Reg. 43894 (July 5, 2016) ("Final Rule")

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Part IV

Environmental Protection Agency

40 CFR Part 52
Approval, Disapproval and Promulgation of Air Quality Implementation Plans; Partial Approval and Partial Disapproval of Air Quality Implementation Plans and Federal Implementation Plan; Utah; Revisions To Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA–R08–OAR–2015–0463; FRL–9947–42–Region 8]

Approval, Disapproval and Promulgation of Air Quality Implementation Plans; Partial Approval and Partial Disapproval of Air Quality Implementation Plans and Federal Implementation Plan; Utah; Revisions to Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) is partially approving and partially disapproving a State Implementation Plan (SIP) revision submitted by the State of Utah on June 4, 2015 to implement the regional haze program pursuant to section 169A of the Clean Air Act (CAA or Act). The State's SIP revisions would establish an alternative to best available retrofit technology (BART) controls that would otherwise be required to control nitrogen oxides (NO_X) at PacifiCorp's Hunter and Huntington power plants. The June 2015 SIP revision also includes BART determinations for particulate matter with an aerodynamic diameter of less than 10 micrometers (PM_{10}) at these power plants and provisions for making the NO_X and PM_{10} BART emission limits federally enforceable. The CAA requires states to prevent any future and remedy any existing man-made impairment of visibility in national parks and wilderness areas designated as Class I areas. Air emissions from the four electric generating units (EGUs) at the two plants affected by this action cause or contribute to visibility impairment at nine Class I areas including Grand Canyon, Arches, Black Canyon, Bryce Canyon, Canyonlands, Capitol Reef, Mesa Verde and Zion National Parks and Flat Tops Wilderness Area. The EPA is finalizing the option in our January 14, 2016 co-proposal to partially approve and partially disapprove the June 2015 SIP revision and is promulgating a Federal Implementation Plan (FIP) to address the deficiencies identified in our proposed partial disapproval of Utah's regional haze SIP. The EPA is not taking any final action on a related October 20, 2015 SIP revision. The State retains its authority to submit a revised state plan consistent with CAA and Regional Haze Rule (RHR) requirements. An approvable SIP submission will result in the modification or withdrawal of the FIP.

DATES: This final rule is effective August 4, 2016.

ADDRESSES: EPA has established a docket for this action under Docket ID No. EPA–R08–OAR–2015–0463. 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: Gail Fallon, Air Program, EPA, Region 8, Mailcode 8P–AR, 1595 Wynkoop Street, Denver, Colorado, 80202–1129, (303) 312–6281, *Fallon.Gail@epa.gov.*

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I. Introduction

The purpose of federal and state regional haze plans is to achieve the national goal, declared by Congress, of restoring and protecting visibility at 156 federal Class I areas across the United States, most of which are national parks and wilderness areas with scenic vistas enjoyed by the American public. The national goal, as described in CAA section 169A, is the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I federal areas where such impairment results from man-made air pollution. States are required to submit SIPs that, among other things, ensure reasonable progress toward the national goal of remedying anthropogenic visibility impairment in federal Class I areas. Arizona, Colorado, and Utah have a wealth of such areas that are impacted by the Hunter and Huntington power plants, including Grand Canyon, Arches, Black Canyon,

Bryce Canyon, Canyonlands, Capitol Reef, Mesa Verde and Zion National Parks and Flat Tops Wilderness Area. The four units at the two power plants that are subject to the CAA BART requirements are large sources of NO_X,[1] and the NO_X emissions from these plants affect visibility[2] at some of the countries' most beloved Class I areas that are visited by millions of Americans. The CAA requires that such sources install and operate controls to limit visibility impairing pollutants; in this instance there are very cost-effective controls available for these units, which will operate for many years into the future.

We proposed action on Utah's June 4, 2015 and October 20, 2015 regional haze SIP submittals addressing NO_X and PM_{10} BART requirements on January 14, 2016.[3] The EPA conducted a public hearing for our proposed action in Salt Lake City, Utah on January 26, 2016. Our public comment period closed on March 14, 2016.

In this action, we are partially approving and partially disapproving the SIP submittal submitted by Utah on June 4, 2015, and taking no action on the State's October 20, 2015 SIP submittal. These submittals include actions intended to satisfy the State's obligations for the regional haze program's first planning period, including the obligation to submit a SIP containing emission limitations representing BART for NO_X and PM for each of the four subject-to-BART sources of visibility-impairing emissions. We are also promulgating a FIP to address the deficiencies we have identified in the portions of the SIP submittal that we are disapproving.

Utah's SIP submittal was to address the BART requirements for NO_X in part through reliance on a BART alternative program under 40 CFR 51.308(e)(2), which allows a state to implement such a BART alternative when the clear weight of the evidence demonstrates that it achieves greater reasonable progress than BART.[4] Specifically, rather than installing and operating BART controls for its four subject-to-BART electric generating units (EGUs), Utah's SIP submittal relied on an alternative program, which included the following: (1) The installation of upgraded combustion controls between 2006 and 2014 at the four BART units plus an additional EGU at PacifiCorp's Hunter plant; and (2) the shutdown of the Carbon plant, a non-BART source, to meet the BART requirements for emissions of NO_X. To meet its PM BART requirements, Utah's SIP submittal included the most stringent control technology at each of the four subject-to-BART EGUs. We provided a detailed explanation of the contents of Utah's June and October 2015 submittals along with an overview of earlier Utah regional haze submittals and EPA's actions on these earlier submittals in sections IV and III.E, respectively, of our proposed rule.[5]

EPA takes very seriously a decision to disapprove any state plan. Our intention is to approve a state's exercise of discretion if it can be supported. However, to approve a state plan EPA must be able to find that the plan is consistent with the requirements of the CAA and EPA's regulations. Although these are largely fact-based decisions, we focus strongly on consistently applying the regional haze requirements across this national program. After carefully considering the comments on our proposal, we determined that there is only one permissible outcome. Therefore, for the reasons described in our proposal and in this action, we find that the State's NO_X BART Alternative for the power plants is not consistent with the applicable statutory and regulatory requirements. As a result, EPA has determined that final disapproval is the only path that is consistent with the Act.

Although we are promulgating a federal plan, the State retains its authority to submit a revised state plan consistent with CAA and Regional Haze Rule requirements. If we determine that the SIP revision is approvable, regardless of whether or not its terms match those of our final FIP, we would propose to approve such a SIP revision. An approvable SIP submission will result in the modification or withdrawal of the FIP.[6]

A. Our Co-Proposals

When we reviewed the Utah regional haze SIP, we noted that some of the metrics the State included in its weight-of-evidence analysis presented to support the NO_X BART Alternative appear to support a conclusion that the BART Alternative achieves greater reasonable progress than BART (*i.e.*, selective catalytic reduction (SCR) technology at the four BART units at Hunter and Huntington). However, we also noted that several other metrics in the State's analyses did not appear to support a conclusion that the BART Alternative achieves greater reasonable progress. The collection of information before EPA at the time of proposal presented a close call for us to decide whether to approve or disapprove the State's BART Alternative. Therefore, to allow all interested parties an opportunity to comment on either approach, we proposed and solicited comment on two possible conclusions and courses of action: (1) The State's submittal for NO_X BART meets the test under 40 CFR 51.308(e)(2)(i)(E) and we approve the BART Alternative; or (2) the State's submittal falls short of meeting this test and we disapprove the BART Alternative and promulgate a FIP for NO_X BART. We requested comment on all aspects of each proposal.

1. Summary of Proposed Full Approval of the SIP

In one option of our co-proposal, we proposed to approve the following aspects of the State's June 4, 2015 SIP submittal:

- NO_X BART Alternative, including: NO_X emission reductions from Hunter Units 1, 2, and 3; Huntington Units 1 and 2; and Carbon Units 1 and 2; and sulfur dioxide (SO_2) and PM_{10} emission reductions from Carbon Units 1 and 2.
- BART determinations and emission limits for PM_{10} at Hunter Units 1 and 2 and Huntington Units 1 and 2.
- Monitoring, recordkeeping, and reporting requirements for units subject to the BART Alternative and the PM_{10} emission limits.

We also proposed to approve these elements of the State's October 20, 2015 SIP submittal:

- Enforceable commitments to revise SIP Section XX.D.3.c and State rule R307–150 by March 2018 to clarify emission inventory requirements for tracking compliance with the SO_2 milestone and properly accounting for the SO_2 emission reductions due to the closure of the Carbon plant.

2. Summary of Proposed Partial Approval and Partial Disapproval of the SIP and Proposal of a FIP

In the other option of our co-proposal, we proposed to approve these elements of the State's June 4, 2015 SIP submittal:

- BART determinations and emission limits for PM_{10} at Hunter Units 1 and 2 and Huntington Units 1 and 2.

[1] Annual average NO_X emissions in tons per year for each of the four BART units for the period 2001–2003 were as follows: Hunter Unit 1 [6,380 tons/yr], Hunter Unit 2 [6,092 tons/yr], Huntington Unit 1 [5,944 tons/yr], Huntington Unit 2 [5,816 tons/yr].

[2] Refer to Tables 6 and 7 for visibility impacts.

[3] 81 FR 2004 (Jan. 14, 2016).

[4] For purposes of comparing the proposed BART Alternative to BART, Utah used most stringent NO_X control technology to represent BART, which is referred to as the BART Benchmark.

[5] 81 FR 2004, 2012–2020 (Jan. 14, 2016).

[6] Additionally, as discussed later in section I.B.3, at this time we not taking action on the State's October 20, 2015 enforceable commitment SIP submittal.

• Monitoring, recordkeeping, and reporting requirements for units subject to the PM_{10} emission limits.

We proposed to disapprove these aspects of the State's June 4, 2015 SIP submittal:

• NO_X BART Alternative, including NO_X emission reductions from Hunter Units 1, 2, and 3; Huntington Units 1 and 2; and Carbon Units 1 and 2; and SO_2 and PM_{10} emission reductions from Carbon Units 1 and 2.

We proposed to disapprove the State's October 20, 2015 SIP submittal.

We proposed promulgation of a FIP to address the deficiencies in the Utah regional haze SIPs that were identified in the proposed action. The proposed FIP included the following elements:

• NO_X BART determinations and emission limits for Hunter Units 1 and 2 and Huntington Units 1 and 2.

• Monitoring, recordkeeping, and reporting requirements for NO_X at Hunter Units 1 and 2, and Huntington Units 1 and 2.

B. Summary of the Basis for Our Final Decision

Based upon comments we received on our proposed action and our evaluation of both the State's submittals and those comments, in this final action we are partially approving and partially disapproving Utah's regional haze SIP submitted on June 4, 2015, and we are taking no action on Utah's regional haze SIP submitted on October 20, 2015. We are promulgating a FIP to address the deficiencies we have identified in the portions of the SIP that we are disapproving. Later we present a summary of the major points of our final decision regarding the Utah regional haze SIP submittal that we are acting on today in which we summarize which parts of the Utah regional haze SIP submittal we are approving and disapproving and which parts are cured by our FIP.

1. NO_X BART

As discussed in depth elsewhere in this document and in our separate Response to Comment (RTC) document, we considered the record before us and comments on both of our co-proposals, and have determined that the evidence does not clearly demonstrate that Utah's BART Alternative makes greater reasonable progress than BART; that is, we have determined that the State's Alternative is not clearly better than BART. Therefore, we are disapproving the BART Alternative contained in Utah's June 4, 2015 submittal and promulgating a FIP to satisfy the regional haze program's NO_X BART requirements.

In our co-proposal, to ensure our final decision was based on the best and most currently available data and information, we asked if interested parties had additional information in a number of areas, including: (1) Analysis related to the modeled visibility benefits of the BART Alternative compared to BART; and (2) other BART alternatives or BART control technology options related to what we proposed and that could be finalized as our FIP. We also asked if interested parties had additional information or comments on the proposed timeline of compliance.[7] We explained that any supplemental information we received could lead us to adopt final SIP and/or FIP regulations that differ somewhat from the co-proposals presented in our proposed rule regarding the BART Alternative, BART control technology option or emission limits, or impact other proposed regulatory provisions.[8] We did not receive any modeling analysis related to the benefits of the BART Alternative compared to BART or any suggestions for consideration of other BART alternatives or BART control technology options. However, we did receive extensive comments on our two possible evaluations of Utah's BART Alternative. As a result of these comments, we have revised some of the aspects of our evaluations of the State's BART Alternative metrics. Based on the revisions to our evaluations of the State's metrics, we have reassessed our co-proposed actions on the State's BART Alternative and determined that it does not demonstrate greater reasonable progress than BART. We provide our reassessment of the State's weight-of-evidence metrics in this section, and provide additional detail in our RTC document.

a. Regulatory Framework for BART Alternatives

To demonstrate that a BART alternative measure achieves greater reasonable progress than the BART requirements, EPA evaluates a SIP submittal to determine whether it demonstrates that the alternative will achieve greater reasonable progress toward natural visibility conditions than BART under 40 CFR 51.308(e)(3) or otherwise based on the *clear* weight of evidence.[9] The BART Alternative rule requires that the alternative program must "clearly" be better than BART, which we have explained is "when there is confidence that the difference in visibility impacts between BART and the alternative scenarios are expected *to be large enough*" [10] to ensure that that the alternative is, in fact, better. Therefore, as part of our evaluation of Utah's SIP we evaluated whether the differences in visibility impacts between BART and the State's BART Alternative are "large enough" to satisfy the *clear* weight-of-evidence requirement. The State of Utah opted to develop its SIP under the clear weight-of-evidence standard, and provided its analysis in the "Greater Reasonable Progress than BART" section of the SIP submittal.[11] As explained in our BART Alternative rule, the clear weight-of-evidence test follows these steps: [12]

(1) *Use information and data that can inform the decision.* Collect information that can be used to assess whether the proposed alternative measure will achieve greater reasonable progress than BART. The information is used to

[7] 81 FR 2004, 2007, Jan. 14, 2016.

[8] *Id.*

[9] 40 CFR 51.308(e)(2)(i)(E).

[10] 71 FR 60622 ("In showing that an alternative program is better than BART and when there is confidence that the difference in visibility impacts between BART and the alternative scenarios are expected *to be large enough*, a weight of evidence comparison may be warranted in making the comparison." (emphasis added)).

[11] This section of the State's SIP submittal presents the BART Alternative rule regulatory requirements, including EPA's description that the clear weight of evidence standard uses information to inform a decision while recognizing the relative strengths and weaknesses of that information. The Utah SIP Section XX that was submitted to EPA, was adopted by the Air Quality Board on June 3, 2015, and included the proposed provisions to address the NO_X BART requirements. Footnote 4 in that Section of the SIP referenced the State's greater reasonable progress demonstration. The document referenced in the footnote was titled "Staff Review 2008 PM BART Determination and Recommended Alternative to BART for NO_X, Utah Division of Air Quality, May 13, 2015" ("Utah Staff Review Report" at 11).

[12] 71 FR 60612, 60622 (Oct. 13, 2006). As we explained in adding to our final RHR the "clear weight of the evidence" standard, "'[w]eight of evidence' demonstrations attempt to make use of all available information and data which can inform a decision while recognizing the relative strengths and weaknesses of that information in arriving at the soundest decision possible. Factors which can be used in a weight of evidence determination in this context may include, but not be limited to, future projected emissions levels under the program as compared to under BART, future projected visibility conditions under the two scenarios, the geographic distribution of sources likely to reduce or increase emissions under the program as compared to BART sources, monitoring data and emissions inventories, and sensitivity analyses of any models used. This array of information and other relevant data may be of sufficient quality to inform the comparison of visibility impacts between BART and the alternative program. In showing that an alternative program is better than BART and when there is confidence that the difference in visibility impacts between BART and the alternative scenarios are expected to be large enough, a weight of evidence comparison may be warranted in making the comparison. The EPA will carefully consider the evidence before us in evaluating any [state implementation plans] submitted by States employing such an approach." *Id.*

evaluate whether the *visibility* improvements at the Class I areas will be better under the alternative than under BART. Such information may include, but is not limited to, future projected emissions levels under the BART alternative as compared to under the BART benchmark; future projected visibility conditions under the two scenarios; the geographic distribution of sources likely to reduce or increase emissions under the program as compared to BART sources; monitoring data and emissions inventories; and sensitivity analyses of any models used.

(2) *Recognize the relative strengths and weaknesses of the information.* Evaluate the information and recognize the relative strengths and weaknesses of the metrics used. This process involves assigning weights to each piece of information that indicate the degree to which it supports a finding that the alternative program will achieve greater visibility benefits. Such a weighing system might find that: (i) The information *clearly* shows the alternative will achieve greater reasonable progress than BART; (ii) the information supports the alternative in some way, but not clearly; or (iii) the information does not support the alternative.

(3) *Carefully consider all the information to reach a conclusion.* Collectively consider the weights assigned to the individual pieces of information and consider the total weight of all the information to determine whether the proposed BART alternative will *clearly* provide for greater reasonable progress than BART at the impacted Class I areas.

Additionally, in this document, we occasionally point to the BART Guidelines for authority on the analysis of BART alternatives (*e.g.,* consideration of 98th percentile CALPUFF modeling).[13] We acknowledge that the BART Guidelines are not mandatory for the evaluation of BART alternatives and the Guidelines do not directly address this subject.[14] However, our rules at 40 CFR 51.309 and the preamble for the provisions governing alternatives to source-specific BART determinations[15] do not provide guidance on visibility modeling. We rely on the BART Guidelines here and in other actions involving BART alternatives because they provide a reasonable and consistent approach regarding visibility modeling, as well as other aspects of a BART alternative, conducted as part of a weight-of-evidence analysis.

b. Utah's "Greater Reasonable Progress Than BART" Metrics

The State collected and evaluated information "from a number of different metrics . . . to compare the two scenarios."[16] These nine metrics included: (1) Annual emissions of visibility-impairing pollutants; (2) improvement in the number of days with significant visibility impairment derived from CALPUFF modeling results; (3) 98th percentile modeling impact (deciview [dv]) results derived from CALPUFF modeling; (4) annual average impact (dv) derived from CALPUFF modeling results; (5) 90th percentile impact (dv) results derived from CALPUFF modeling; (6) timing of emissions reductions; (7) results from IMPROVE monitoring data; (8) energy and non-air quality benefits; and (9) costs. The State considered the information from these metrics and concluded that the weight-of-evidence shows that its alternative program will provide greater reasonable progress than BART.[17]

c. EPA's Evaluation of Utah's "Greater Reasonable Progress Than BART" Analysis

We evaluated the information for each of the nine metrics in the State's SIP submittal,[18] as well as additional information submitted by commenters. As part of this evaluation, we assessed the relevance and strength of each metric, that is, we assigned each metric a weight.[19] After determining if, and the extent to which, the information the State relied upon was "of sufficient quality to inform the comparison of visibility impacts between BART and the alternative program,"[20] we assessed the metrics collectively to determine whether the relevant evidence, considered as a whole, clearly demonstrated that the alternative program achieves greater visibility benefits.

Our initial review considered whether each of the nine metrics met the threshold regulatory requirement that information considered in a weight-of-evidence analysis be relevant to an assessment of visibility impacts. We find the State included two metrics, (1) energy and non-air quality impacts and (2) cost, that are inconsistent with the greater reasonable progress analysis in the RHR because the metrics do not evaluate *visibility* benefits at the nine Class I areas impacted by the State's sources. Therefore, as discussed in detail later in sections I.B.1.c.viii and I.B.1.c.ix, we did not give this information any weight in our evaluation of whether the State has demonstrated that its BART Alternative achieves greater reasonable progress than BART.

Additionally, the State included information on the aggregate annual emissions of all three visibility-impairing pollutants emitted by the sources. However, in this particular instance the aggregate emissions data do not provide information on the likely visibility impacts of the State's alternative program as compared to BART. Therefore, as discussed in detail later in section I.B.1.c.i, we found that this information was inconclusive and does not weigh either in favor of or against the BART Alternative.

Next, we evaluated how the State recognized the strengths and weakness of the remaining six metrics. The State placed each metric in one of two categories: The information from the metric supported the BART Alternative, or it did not. The State determined that five of the metrics supported the BART Alternative[21] and one metric, the 98th percentile CALPUFF modeling results, did not support the BART Alternative.[22] However, contrary to the requirement to *weigh* the evidence,[23] which Utah's SIP acknowledged is part of the weight-of-evidence standard,[24] the SIP submittal did not assess the relative strengths and weaknesses of the metrics; that is, it did not explain the *weight* that the State assigned to each of the metrics it found supported the BART Alternative. In evaluating the SIP submittal, we assessed the relative strengths and weakness of each of the State's metrics to determine whether it was reasonable for the State simply to categorize the metrics into the two categories (the metric supported the BART Alternative or did not support the Alternative). In

[13] We also referred to the BART Guidelines as authority in our proposal.

[14] The BART Guidelines are mandatory in this action regarding both the State's determinations of the BART Benchmark pursuant to 40 CFR 51.308(e)(2)(i)(C) and EPA's BART determinations in the FIP pursuant to 40 CFR 51.308(e)(1)(ii)(B).

[15] 71 FR 60612, October 13, 2006.

[16] Utah Staff Review Report at 12.

[17] *Id.* at 27 and Utah's SIP, Section XX, Regional Haze (June 3, 2015) ("2015 SIP").

[18] Utah Staff Review Report at pp. 13–29.

[19] As discussed in this section, Utah did not assign a weight to each metric.

[20] 71 FR 60612, 60622.

[21] See Utah Staff Review Report at p. 27 (listing factors the State suggested to support the BART Alternative in the "Summary of Weight of Evidence" section).

[22] As discussed elsewhere, EPA disagrees with the State's evaluation of the 98th percentile metric.

[23] 40 CFR 51.308(e)(2)(i)(E).

[24] Utah Staff Review Report at 11 (the BART alternative regulatory provisions and EPA's description of the weight-of-evidence standard, including that a demonstration recognize the strengths and weaknesses of the information in arriving at the soundest decision possible, citing 71 FR 60612, 60622).

addition to information in the submittal, we considered suggestions on the amount of ''weight'' that should be given to each of the metrics that were provided by commenters on our proposal, including the State.[25] As a result of our evaluation, we find that the State's assessment of the metrics was inadequate because it did not recognize the relative strengths and weaknesses of the metrics on an individual basis. We also find that a proper recognition of the relative strengths and weaknesses, including the consideration that some metrics are more meaningful than others, shows that the BART Alternative does not achieve greater reasonable progress than BART.

We evaluated each of the State's nine metrics and included: (1) An assessment of whether we agree as a factual matter with the State's conclusion; and (2) the weight we would give to each metric. Our evaluation below includes the two metrics that we find contain information that is not relevant, and the one to which we did not assign any weight.

i. Annual Emissions Comparison of All Visibility-Impairing Pollutants

The State's regional haze SIP submittal determined that the combined emissions of three key visibility-impairing pollutants will be lower under the BART Alternative scenario and that this supported the weight-of-evidence determination that the BART Alternative will provide greater reasonable progress than BART.[26] [27] We proposed to find that, since Utah's BART Alternative provides greater emission reductions for two pollutants (SO_2 and PM_{10}), but that NOX emissions would be greater under the BART Alternative, it is not appropriate to combine all three pollutants in the annual emissions comparison test to support the BART Alternative. Therefore, we further proposed to find that the annual emissions comparison of all three pollutants does not show that the BART Alternative is better than the BART Benchmark.[28]

As a result of the comments received on our co-proposal, we have further assessed the State's evidence for this metric and while we have clarified our assessment, we have not changed our overall proposed findings. Although emissions of two visibility-impairing pollutants are less under the BART Alternative, emissions of one of the pollutants would be greater. Due to differences in visibility impacts and complex interactions between pollutants, it is not possible to discern the overall visibility impacts of the aggregate emission reductions in this case without modeling; as discussed elsewhere, we disagree with comments to the contrary. Therefore, while we consider that aggregate emission reductions is a relevant concept because it relates to visibility impacts, in this particular case we continue to find that it is not appropriate to combine all three pollutants in the annual emission comparison test. We thus find that this metric is inconclusive and does not weigh either in favor of or against the BART Alternative.

ii. Improvement in Number of Days With Significant Visibility Impairment

In its regional haze SIP submittal, Utah provided modeling results comparing the number of days with significant visibility *impairment* relative to natural visibility under the BART Alternative scenario to the number of days under the BART Benchmark. The State presented this information for two different thresholds of visibility impairment: 1.0 dv of impairment compared to natural visibility, and 0.5 dv of impairment. The State determined that the BART Alternative leads to an average of six fewer days per year with a visibility impact greater than 1.0 dv per year and 58 fewer days per year with a visibility impact greater than 0.5 dv at the nine Class I areas.[29] Utah also provided information in its submittal regarding the number of days with visibility *improvement* relative to baseline visibility (visibility conditions in 2001–2003) using a range of deciview thresholds (0.5 to 5.0 dv improvement compared to baseline visibility conditions).[30]

In EPA's review, we considered this metric in our evaluation of the State's weight-of-evidence analysis because the improvement in the number of days with significant visibility impairment relates to assessing the frequency and duration of visibility impacts. It is relevant to look at the results for the Class I areas individually because visibility impacts are location specific. The results for the average number of days with impacts over 1.0 dv show that seven of the nine Class I areas had the same result or were within one day of having the same result under both the BART Alternative and Benchmark. In the context of an entire year, a difference of one day is not particularly significant. Therefore, we find that the results from the average number of days with visibility impacts over the 1.0 dv threshold do not show the BART Alternative is better. We observe that the results for the average number of days with impacts over 0.5 dv show that the BART Alternative is better at five of nine Class I areas, and at four Class I areas the Alternative results in the same number of days with impacts greater than 0.5 dv as the Benchmark or is within two days of the same result (favoring the BART Alternative at each of the four where there is a two-day difference). Therefore, we find that the results from the 0.5 dv threshold show that the BART Alternative is marginally better.

iii. 98th Percentile Modeling Impact (dv)

In its regional haze SIP, the State determined that while the 98th percentile modeling impact showed greater reasonable progress under the BART Benchmark,[31] several considerations led to the State's conclusion that this metric does not give a complete picture of the visibility improvements that will be seen by visitors to Class I areas.[32] Therefore, the State's summary of the weight-of-evidence did not include the results from the 98th percentile modeling impact.[33] We assessed the State's evidence for this metric and proposed to find that on the whole, when using this method, the results from the BART Benchmark are slightly better on average across all years and nine Class I areas

[25] The State's Comment letter suggested the ''weight'' for several of the metrics.

[26] 2015 SIP at 25, and Utah Staff Review Report at 27.

[27] EPA derived the following emissions reductions for the BART Alternative from the Utah Staff Review Report at 10, by subtracting the total annual emissions for the BART Alternative from the total annual emissions for the BART Benchmark for each of the visibility-pairing pollutants: SO_2 8,005 tpy, PM_{10} 573 tpy, and NO_X ¥5,721 tpy (NO_X is negative because NO_X emissions increase under the BART Alternative). This information is also provided in Table 4 of our proposed rule. (81 FR 2004, 2016.)

[28] 81 FR 2004, 2029.

[29] EPA unintentionally created some confusion with regard to this metric in our proposed rule by expressing this information as the *total* number of days with visibility impairment greater than 1.0 and 0.5 dv in Tables 7 and 8, 81 FR 2004, 2017, based on modeling results presented in SIP TSD Ch. 6, Summary of Visibility Modeling. The State did not highlight these particular modeling results in this manner in its Utah Staff Review Report; rather, the State expressed this metric only as the average number of days per year over the three years modeled. We considered these modeling results, and as discussed in our RTC document, find that the results marginally support the Alternative.

[30] See Utah Staff Review Report, pp. 19–22, and Ch. 6, Summary of Visibility Modeling, and 2015 SIP at 25.

[31] Utah Staff Review Report at 24.

[32] *Id.* at 25.

[33] *See id.* at 27 (''Summary of Weight of Evidence'' section does not include 98th percentile modeling impact results).

(0.14 dv average difference). Also, this metric shows greater visibility improvement at five of nine Class I areas for the BART Benchmark. We proposed to find, consistent with the State's evaluation, that this metric favors the BART Benchmark and does not show that the BART Alternative is better.[34]

As a result of the comments received on our co-proposal, we have further assessed the State's evidence for this metric and while we have clarified our assessment, we have not changed our overall proposed finding. We considered this metric in our evaluation of the State's weight-of-evidence analysis because the 98th percentile modeling results relate to assessing visibility impacts. We have considered all information, and consistent with the Agency's approach to assessing visibility benefits in both BART determinations and other determinations of "greater reasonable progress" using the CALPUFF model, have given most weight to the visibility impacts based on the 98th percentile air quality modeling results.[35]

iv. Annual Average Modeling Impact (dv)

The State's regional haze SIP submittal stated that the average deciview impact metric shows the benefit from the BART Alternative will be achieved day in and day out in the Class I areas.[36] This metric shows greater average visibility improvement at five of nine Class I areas for the BART Alternative.

We assessed the State's evidence for this metric and proposed to find that the BART Alternative is only marginally better than the BART Benchmark based on the difference in overall averages between the two scenarios of 0.009 dv and that it shows less or equal visibility improvement than BART at four of the nine Class I areas. Therefore, we proposed to find that the information from the annual average metric does not support a conclusion that the BART Alternative achieves greater reasonable progress than the BART Benchmark.[37]

As a result of the comments received on our co-proposal, we have further assessed the State's evidence for this metric and we have clarified our assessment and finding about the State's evaluation. We considered this metric in our evaluation of the State's weight-of-evidence analysis because the annual average modeling results relate to assessing visibility impacts. Importantly, we find that the annual average metric is less relevant than the 98th percentile because it does not provide information on visibility benefits on the days most impacted by the sources, which has been the focus of prior BART determinations[38] and other determinations of "greater reasonable progress" that relied on CALPUFF modeling.[39] Averaging the modeling results over an entire year dilutes the emission controls' (and BART Alternative emission reductions) potential visibility benefits and is inconsistent with the basis of the CALPUFF modeling approach used by the State. Additionally, the annual average visibility impact metric does not show greater visibility improvements than the Alternative at four of the nine affected Class I areas, and the average difference between BART and the Alternative across all nine of these areas is relatively small (0.009 dv). For these reasons, we find that the annual average impact metric in Utah's weight-of-evidence analysis only marginally supports the BART Alternative.

v. 90th Percentile Modeling Impact (dv)

The State's regional haze SIP submittal determined that the CALPUFF modeling results from the 90th percentile deciview impact show that the BART Alternative will provide greater improvement.[40] We assessed the State's evidence for this metric and proposed to find that although there was greater visibility improvement at seven of nine Class I areas for the BART Alternative, it was questionable if the BART Alternative was better based on the difference in the two scenarios of 0.006 dv. We therefore proposed to find that it is questionable whether the 90th percentile supports a conclusion that the BART Alternative achieves greater reasonable progress.[41]

As the result of the comments received on our co-proposal, we have further assessed the State's evidence for this metric and have clarified our assessment and finding. EPA has never used the CALPUFF 90th percentile results in other RH decisions, and we disapproved the use of the 90th percentile results for subject-to-BART modeling.[42] Here, though, we find it is appropriate to consider the CALPUFF 90th percentile results in evaluating the State's weight-of-evidence analysis because this metric provides some additional information about visibility benefits. However, we note that the 90th percentile metric excludes more than a month's worth of visibility data, which significantly dilutes the overall visibility results achieved from potential control options, and is therefore less relevant than the 98th percentile. Furthermore, while the 98th percentile day reflects visibility benefits on the days on which the sources have the largest impacts, the State has not indicated that the 90th percentile day has any particular significance other than to provide an additional metric to consider. We also acknowledge that the difference between BART and the BART Alternative using the 90th percentile is relatively small (0.006 dv). Additionally, we disagree with commenters that suggested the 90th percentile metric is similar to the 20% worst day metric; the 90th percentile relates to a single value, the 110th highest impact day across three years for the scenario considered (*i.e.*, BART Alternative or BART Benchmark), whereas the 20% worst days metric describes visibility impacts from all sources on the average of the 20% worst visibility days. Therefore, while we considered the results from the 90th percentile to evaluate the State's weight-of-evidence analysis, we placed a very small amount of weight on this metric, and therefore find that this metric only marginally supports the BART Alternative.

vi. Timing of the Emissions Reductions

The State's regional haze SIP submittal included statements in the greater reasonable progress than BART analysis that the NO_X reductions from Huntington Units 1 and 2 and Hunter

[34] 81 FR 2004, 2030.

[35] *See* 81 FR 2004, 2021; 40 CFR part 51, appendix Y, section IV.D.5; 70 FR 39104, 39129 (July 6, 2005). *See, e.g.*, 78 FR 79344 (Dec. 30, 2012) (proposed rule, FIP for Tesoro Refining and Intalco Refinery BART Alternatives); 79 FR 33438 (June 11, 2014) (final rule, FIP for Tesoro Refining and Intalco Refinery BART Alternatives); 79 FR 56322, 56328 (Sept. 19, 2014) (proposed approval of Arizona Apache BART Alternative); 80 FR 19220 (Apr. 10, 2015) (final approval of Arizona Apache BART Alternative). We provide examples of use of the 98th modeling results for BART determinations in the RTC.

[36] Utah Staff Review Report at 23.

[37] 81 FR 2004, 2030.

[38] 40 CFR part 51, appendix Y, section IV.D.5; 70 FR 39104, 39129 (July 6, 2005). We provide examples of use of this information for BART determinations in the RTC.

[39] See, *e.g.*, 78 FR 79344, 79355 (Dec. 30, 2013) (proposed rule, FIP for Tesoro Refining and Intalco Refinery BART Alternatives in Washington), 79 FR 56322, 56328 (Sept. 19, 2014) (proposed approval of Arizona Apache BART Alternative).

[40] Utah Staff Review Report at 23–24, and 2015 SIP at 25.

[41] 81 FR 2004, 2030.

[42] In our North Dakota final action we explained that EPA addressed the appropriate interpretation of CALPUFF modeling results in the BART Guidelines within the context of subject-to-BART modeling and we rejected the use of the 90th percentile because it would be inconsistent with the Act. We explained that the use of the 90th percentile value would effectively allow visibility effects that are predicted to occur at the level of the threshold (or higher) on 36 or 37 days a year. 70 FR 39121.

Units 2 and 3 occurred earlier than was required by the rule, providing corresponding early and ongoing visibility improvement under the Alternative as compared to the BART Benchmark, citing to *WildEarth Guardians* v. *EPA*. 770 F.3d 919, 938 (10th Cir. 2014).[43]

The State further asserted that the timing of emission reductions provided support for the weight-of-evidence determination that the BART Alternative will provide greater reasonable progress than BART. We assessed the State's evidence for this metric and recognized that the reductions from the BART Alternative would occur before the BART Benchmark because the controls at the Hunter and Huntington facilities have been achieving significant NO_X reductions since the time of their installation between 2006 and 2014.[44]

As a result of the comments received on our co-proposal, we have further assessed the State's evidence for this metric. We considered the State's early emission reduction statement in our evaluation of the State's weight-of-evidence analysis because the reductions relate to assessing visibility impacts. We note that the State's weight-of-evidence analysis presents and considers only the early timing of emission reductions from the Hunter and Huntington units at which controls were installed before 2014.[45]

We find that the timing of emissions reductions metric, which considers the early reductions from Hunter Units 2 and 3 and Huntington Units 1 and 2, supports a finding that the BART Alternative is better than BART.

vii. Monitoring Data at the Class I Areas (IMPROVE Network)

The State's regional haze SIP submittal determined that the BART Alternative provides greater reductions of SO_2 [46] and that SO_2 is the most significant anthropogenic pollutant affecting Class I Areas that impacts visibility year-round, including throughout the high visitation seasons at the National Parks in spring, summer, and fall.[47] The State thus concluded, working from assumptions regarding sulfate and nitrate formation based on historical trend data,[48] that the BART Alternative will provide greater reasonable progress than BART.

We assessed the State's evidence for this metric and proposed to concur with one of the State's findings. We proposed to find that visibility benefits associated with NO_X reductions are much more likely to occur in the winter months because this is when aerosol thermodynamics favors nitrate formation, while SO_2 emissions reductions should provide visibility benefits in all seasons. We also proposed to find that, as concluded by the Grand Canyon Visibility Transport Commission (GCVTC), and supported by the IMPROVE monitoring data presented by Utah, anthropogenic visibility impairment on the Colorado Plateau is dominated by sulfates. Therefore, we proposed to concur with Utah's statement that sulfate is the largest contributor to visibility impairment at the affected Class I areas.

We proposed to disagree with the State's findings related to park visitation. While we explained that the BART Guidelines do mention visitation as something that can inform a control decision, EPA proposed to place little weight on the State's correlation of emissions reductions and park visitation because nothing in the CAA suggests that visitors during busy time periods are entitled to experience better visibility than visitors during off-peak periods.

As the result of the comments received on our co-proposal, we have further assessed the State's evidence for this metric and while we have clarified our assessment, our overall findings remain the same. We considered this metric in our evaluation of the State's weight-of-evidence analysis because the monitoring data relate to assessing visibility impacts. We conducted an analysis of 2013 and 2014 IMPROVE monitoring data for Canyonlands, the most impacted Class I area,[49] considering seasonal averages and the 20% best and worst days.[50] Our analysis confirms that sulfate is a large contributor to light extinction year round and that nitrate contributions are highest in the winter season. Nonetheless, overall nitrate extinction at the affected areas is significant, particularly on the 20% worst days. We have taken the strength of the modeling results for winter months into consideration; however, contrary to the State's and other's suggestions that visibility improvements during seasons of peak Class I area visitation should carry more weight, we evaluate the visibility impacts for an entire year, regardless of the season. Therefore, we decided to place little weight on this metric and find that the monitoring data analysis metric in Utah's weight-of-evidence analysis only marginally shows the BART Alternative is better than the BART Benchmark.

viii. Energy and Non-Air Quality Benefits

The State's regional haze SIP submittal indicated in its weight-of-evidence assessment that the BART Alternative would avoid the energy penalty associated with operating the SCR units, *i.e.*, the controls assumed under the BART Benchmark. The State also cited non-air quality benefits of its Alternative, including lower fly ash production and reduced water usage associated with the shutdown of Carbon. However, the State's "Summary of the Weight of Evidence," which presented a summary and short evaluation of each of the metrics, did not reference this assessment.[51]

We assessed the State's evidence for this metric and proposed to find that because the benefits do not have direct bearing on whether the BART Alternative achieves greater reasonable progress, it is not material to our action whether we agree or disagree with Utah's assessment that the Alternative would reduce energy and non-air quality impacts relative to BART.

As a result of the comments received on our co-proposal, we have further assessed the State's evidence for this metric; however, we have decided not to alter our proposed finding. The purpose of a weight-of-evidence analysis is to determine whether a BART Alternative would achieve greater reasonable progress, which is measured in terms of visibility improvement.[52] Thus, only metrics that are indicative of improvements in visibility are relevant in a weight-of-evidence analysis. Energy

[43] Utah Staff Review Report at 11, 27 ("The NO_X reductions at Huntington 1 and 2 and Hunter 2 and 3 occurred between 2006 and 2011, earlier than was required by the rule, providing an early and on-going visibility improvement" and offering in footnote 14 that "[the] U.S. Circuit Court of Appeals for the 10th Circuit explicitly acknowledged that the consideration of early reductions was proper as part of a qualitative or clear weight of evidence approach to determining greater reasonable progress." (citing *WildEarth Guardians* v. *EPA*, 770 F.3d 919, 938 (10th Cir. 2014)). EPA agrees that it is appropriate to consider the timing of emission reductions for the Utah BART Alternative.

[44] 81 FR 2004, 2030.

[45] Utah Staff Review Report at 11.

[46] *Id.* at 27.

[47] *Id.* at 27.

[48] *Id.* at 12–19.

[49] Canyonlands was the most impacted Class I area in the State's BART Alternative modeling that assessed the visibility impacts from all three power plants (*i.e.*, Hunter, Huntington, and Carbon), as well as most impacted in EPA's modeling assessing the visibility impacts for the BART Benchmark for Hunter and Huntington.

[50] See spreadsheet entitled, EPA Analysis of 2013 and 2014 IMPROVE Monitoring Data for Canyonlands, in the docket. More detailed information regarding this analysis is available in section II.E of this document and in our RTC document.

[51] Utah Staff Review Report at 27.

[52] 40 CFR 51.308(d)(1), (e)(2)(i)(E).

and non-air quality impacts do not provide relevant information on the relative visibility benefit of a BART Alternative as compared to BART. We, therefore, did not assign this metric any weight in our evaluation of the State's weight-of-evidence conclusion.

ix. Cost

The State's regional haze SIP indicated in its weight-of-evidence assessment that, although the State had not officially determined the cost of BART, it is clear that the BART Alternative would have significant capital cost savings to PacifiCorp and its customers. The submittal noted that the Carbon Plant has already been closed and the cost to ratepayers of replacing the power generated by that facility have already occurred. However, the State's "Summary of the Weight of Evidence," which presented a summary and short evaluation of each of the metrics, did not reference the cost comparison.[53]

We assessed the State's evidence for this metric and proposed to find that because the described cost difference does not have a direct bearing on whether the BART Alternative achieves greater reasonable progress, it is not material to our action whether we agree or disagree with Utah's conclusion that the BART Alternative would have a lower cost impact to PacifiCorp than the BART Benchmark (*i.e.*, costs provided by PacifiCorp in its BART analyses of August 5, 2014, SIP TSD Chapter 2).

As a result of the comments received on our co-proposal, we have further assessed the State's evidence for this metric; however, we have decided not to alter our proposed finding. The purpose of a weight-of-evidence analysis is to determine whether a BART Alternative would achieve greater reasonable progress, which is measured in terms of visibility improvement.[54] The difference in the capital costs between BART and the BART Alternative does not provide information relevant to the scenarios' relative visibility benefits.[55] We therefore did not assign this metric any weight in our evaluation of the State's weight-of-evidence conclusion.

x. EPA's Evaluation of the State's Conclusions

The State's regional haze SIP submittal suggested that eight of the nine metrics considered by Utah support the BART Alternative, finding that one metric, the 98th percentile CALPUFF modeling metric did not support its BART Alternative. As explained earlier in this section, evidence in the SIP and from commenters demonstrates that four of these metrics have documented weaknesses and only marginally support the BART Alternative: Improvement in the number of days with significant visibility impairment predicted by modeling (analyzed using different thresholds); the annual average visibility impacts predicted by modeling; monitoring data trends collected at the Class I areas; and the 90th percentile impacts predicted by modeling. Additionally, while the timing of emission reductions metric does favor the State's BART Alternative, the emission reductions at issue are only a portion of the overall emission reductions claimed under the Alternative. The timing of these emission reductions does not alter our conclusion that, on balance, the Alternative has not been shown to result in greater visibility benefits than would BART. Finally, we did not assign any weight to three metrics in our evaluation of the State's weight-of-evidence analysis because we determined that the metrics for energy and non-air quality and cost considerations are not related to visibility and have no bearing on whether the BART Alternative achieves greater reasonable progress than the BART Benchmark, and that information from the annual emissions comparison of all visibility-impairing pollutants metric was inconclusive.

When we weighed the State's metrics (excluding the energy and non-air quality and cost metrics) that evaluate visibility collectively, considering the strengths and weaknesses of each metric and the magnitude of the differences in visibility benefit between BART and the Alternative, we find that it was not reasonable for the State to determine that the clear weight of the evidence favors the BART Alternative for the following reasons. We find that the State's characterization of the 98th percentile modeling results, the one metric that did not support its BART Alternative, was contrary to EPA's established interpretation of and reliance on that metric. The 98th percentile CALPUFF modeling metric takes into account peak visibility impacts and carries the most weight. The 98th percentile visibility impact is a key metric recommended by the BART Guidelines and EPA has relied on this metric in evaluating prior regional haze actions that have included BART alternatives.[56] Furthermore, two factors which marginally support the BART Alternative (annual average modeled impact and 90th percentile modeled impact) are given little weight because they are considered to be less relevant metrics and show very small differences between the BART Alternative and the BART Benchmark, while another factor which marginally supports the BART Alternative (results from IMPROVE monitoring data) is also given little weight because of the need to consider visibility impacts during all times of the year, not just during peak visitation periods. Another factor which marginally supports the BART Alternative (improvement in number of days with significant visibility impairment) is given little weight because even though the BART Alternative is favored using a 0.5 dv threshold, the 1.0 dv threshold does not show that the BART Alternative is better. In addition, although a portion of the emission reductions under the Alternative were achieved prior to 2014, this does not diminish our fundamental finding that the quantity of reductions available under the Alternative would not result in greater visibility improvements than the emission reductions under BART. Therefore, the visibility metrics that favor the BART Alternative neither individually nor collectively clearly demonstrate that the BART Alternative will achieve greater reasonable progress at the nine Class I areas when weighed against visibility benefits predicted by the 98th percentile modeling results under BART.

In summary, we have relied on the standards contained in the RHR and the authority that Congress granted us to review SIPs to determine whether the State's SIP submittal complies with the minimum statutory and regulatory requirements. 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

[53] Utah Staff Review Report at 27.

[54] 40 CFR 51.308(d)(1), (e)(2)(i)(E).

[55] We also note that, consistent with our statements in the BART Guidelines, the capital cost of controls would not be a relevant consideration because it does not take into account the degree of visibility improvement associated with those controls. 40 CFR part 51, appendix Y, section IV.D.4.g. Therefore, even if we did consider cost as relevant in a weight-of-evidence analysis, which we do not, the capital cost of controls would not be the appropriate metric.

[56] *See, e.g.*, 78 FR 79344 (Dec. 30, 2012) (proposed rule, FIP for Tesoro Refining and Intalco Refinery BART Alternatives); 79 FR 33438 (June 11, 2014) (final rule, FIP for Tesoro Refining and Intalco Refinery BART Alternatives); 79 FR 56322, 56328 (Sept. 19, 2014) (proposed approval of Arizona Apache BART Alternative); 80 FR 19220 (Apr. 10, 2015) (final approval of Arizona Apache BART Alternative).

discretion when reviewing SIPs.[57] We thus review a state's SIP submittal with the understanding that the state's discretion in developing an alternative measure "is subject to the condition that it must be reasonably exercised and that its decision is supported by adequate documents of its analysis."[58] In the present circumstance—as discussed in more detail in the proposed action and this final action—EPA was not able to find that the weight-of-evidence analysis satisfied the relevant regulatory requirements. Specifically, we find:

(1) The State's assessment of the metrics it found to support its BART Alternative was inadequate because it did not evaluate the relative strengths and weaknesses of the visibility metrics on an individual basis;

(2) The State did not consider the 98th percentile CALPUFF modeling metric, which did not support its BART Alternative, in a manner consistent with EPA's established interpretation of and reliance on that metric;

(3) The State's assessment of the metric that considered aggregate annual emissions of visibility-impairing pollutants was contrary to EPA's established interpretation of and reliance on that metric;

(4) The State's assessment relied on two metrics that are not consistent with the "greater reasonable progress" analysis because they are not related to visibility (energy and non-air quality and cost considerations);

(5) The State did not satisfy the requirement that it assess the collective weight of its evidence in a reasonable and adequately supported manner; and

(6) The SIP submittal lacked an explanation of why the information from all the metrics demonstrated that the difference in visibility impacts between BART and the Alternative was large enough to "clearly" demonstrate that the BART Alternative would achieve greater reasonable progress than BART.[59]

Based on this evaluation, we find that, on balance, the evidence does not show that the Alternative clearly achieves greater visibility benefits than BART. Thus, the State has not satisfied the regulatory requirement in 40 CFR 51.308(e)(2) that a state's submittal of a BART alternative include a "determination . . . based on the clear weight of evidence that the . . . alternative measure achieve greater reasonable progress than would be achieved through the installation and operation of BART at the covered sources." Therefore, we are disapproving the State's NO_X BART Alternative contained in its June 4, 2015 SIP submittal, including the NO_X emission limits for Hunter Units 1, 2, and 3; and the NO_X emission limits for Huntington Units 1 and 2; and the requirements for permanent closure of Carbon Units 1 and 2.[60]

d. Remaining BART Alternative Criteria

The RHR establishes a number of additional regulatory criteria to be included in any demonstration that an alternative will provide for greater reasonable progress than BART. These criteria are set out at 40 CFR 51.308(e)(2)(i)(A)–(D) and (e)(2)(iii)–(v). In both co-proposals, we proposed to find that Utah's SIP submittal addressing the BART Alternative met these requirements.[61] We received adverse and supportive comments on our proposed finding that the State had met these remaining requirements. We respond to these comments in our RTC document.

Having carefully considered the comments received, we have concluded that the State's SIP submittal generally met most of these requirements, as explained in our RTC document. As a result, our partial disapproval of the State's SIP submittal is based on our assessment that Utah failed to demonstrate based on the weight of evidence that the BART Alternative would provide for greater reasonable progress and not on any deficiencies in the state's demonstration that it had met the additional regulatory criteria in 40 CFR 51.308(e)(2).

e. Monitoring, Recordkeeping and Reporting for Utah's BART Alternative

Section IV.B.3 of Utah's June 2015 regional haze SIP included enforceable measures and monitoring, recordkeeping and reporting requirements for the Utah BART Alternative and the State's PM_{10} BART determinations. In our co-proposal we proposed to disapprove (in other words, to not make federally enforceable as part of the SIP) the monitoring, recordkeeping and reporting requirements located in SIP Sections IX.H.22 associated with the BART Alternative. This includes SIP Section IX.H.22, subsections a.ii, a.iii, b.ii, and c.i.[62]

While we did not receive any comments on this element of Utah's regional haze SIP submittal in our co-proposal, the monitoring, recordkeeping, and reporting provisions in the submittal are linked directly to the emission limitations under the Alternative, which we are disapproving.[63] Our partial disapproval of the State's SIP submittal is based on our assessment that Utah failed to demonstrate based on the weight of evidence that the BART Alternative would provide for greater reasonable progress and not on any deficiencies in the State's demonstration that it had met the monitoring, recordkeeping, and reporting requirements under the RHR.

f. Basis for Our NO_X BART Determinations and FIP

Based upon comments we received on our proposed FIP, we revised our analysis of the cost of installing and operating NO_X BART controls at the four subject-to-BART EGUs. In particular, and as discussed at length in our RTC document, we revised the costs in response to comments from PacifiCorp that we incorrectly re-designed the SCR reactors. Having carefully considered the comments received, we concluded it was unnecessary to revise our analysis of visibility improvement or the other statutory BART factors. Our proposed action contains a full description of the five step BART analysis, the five BART factors, and our proposed BART determination. Because we have revised

[57] See, *e.g.*, Connecticut Fund for the *Env't., Inc.* v. *EPA*, 696 F.2d 169 (2d Cir. 1982); *Michigan Dep't. of Envtl. Quality* v. *Browner*, 230 F.3d 181 (6th Cir. 2000); *Montana Sulphur & Chem. Co.* v. *EPA*, 2012 U.S. App. LEXIS 1056 (9th Cir. Jan. 19, 2012).

[58] 71 FR 60612, 60621 (Oct. 13, 2006).

[59] The State's assessment of the overall weight of evidence states only that "[t]he weight of evidence shows that the alternative will provide greater reasonable progress than BART." Utah Staff Review Report at 27.

[60] We are disapproving SIP Sections IX.H.21, subsection (c), IX.H.22, subsections:.a.iii–iii., b.ii. and c. We are also disapproving SIP Section XX,D subsections: 6.a. (the provisions in the "Regional Haze Rule BART Requirements" that cover the NO_X alternative measure); 6.c. ("BART for NO_X," including footnote 4 that references the State's Analysis in a separate document); 6.d. (the provisions in the "BART Summary" that cover NO_X and SO_2 emissions, including the references to use of approval orders and permitted limits to establish the emission limits, the statement that "the four EGUs also met the presumptive emission rates for both NO_X and SO_2 established in Appendix Y independently of the alternative programs", and references in Table 5 to "Permitted" (and the NO_X and SO_2 limits in that column), "Hunter 3", all provisions in the "Presumptive BART Rates" column NO_X and SO_2 emissions); 6.e. (the provisions in "Schedule for Installation of Controls" as the dates refer to emissions for sources that are in the proposed BART Alternative; and the discussion immediately following Table 6 that presents information about the emission limits also appearing in State-issued permits). Additional discussion appears in our RTC document.

[61] 81 FR at 2021, 2025–26, 2027–28, 2032

[62] As explained later, our co-proposal proposed to approve or conditionally approve the remainder of the monitoring, recordkeeping and reporting requirements associated with Utah's PM_{10} BART determinations.

[63] However, we note that we are proposing conditional approval of the following regulations in Section IX.H.21(e), as discussed in section I.B.2.

our cost analysis, we provide updated tables containing the results of the cost analyses, including the summary tables that also show the visibility improvements associated with the controls under consideration (which we did not revise). Following these tables, we provide our final BART determination. Because the Hunter and Huntington BART units are similar, our reasoning for the final BART determination applies to all four units. Table 1 shows the NO_X BART control technologies, associated cost, emission reductions, and the BART emission limitation for each source that is subject to the FIP. The costs in Table 1 reflect EPA's revised cost analysis. Please note that the cost-effectiveness values for SCR with low-NO_X burners and separated overfire air (SCR + LNB/SOFA) were computed using an assumed emission rate of 0.05 lb/MMBtu on an annual basis, but for compliance purposes the NO_X emission limit for each unit is 0.07 lb/MMBtu, 30-day rolling average.

TABLE 1—EMISSION LIMITS, COSTS, AND COST EFFECTIVENESS FOR LNBS/SOFA WITH SCR FOR THE SOURCES SUBJECT TO THE FIP

Source	Technology*	NO_X Emission limit—lb/MMBtu (30-day rolling average)	Total capital cost ($)	Total annualized cost ($)	Average cost-effectiveness ($/ton)
Hunter Unit 1	SCR + LNB/SOFA	0.07	$130.6M	$14.8M	$2,697
Hunter Unit 2	SCR + LNB/SOFA	0.07	128.5M	14.5M	2,774
Huntington Unit 1	SCR + LNB/SOFA	0.07	128.3M	14.6M	2,871
Huntington Unit 2	SCR + LNB/SOFA	0.07	130.0M	14.7M	2,928

*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.

Tables 2 and 3 provide summaries of EPA's NO_X BART analysis of all feasible control options for Hunter Units 1 and 2, including the costs of compliance and visibility impacts. Please refer to our discussion in section I.B.1.f in regard to how we selected BART from among these control options.

TABLE 2—SUMMARY OF EPA'S HUNTER UNIT 1 NO_X BART IMPACTS ANALYSIS

Control option	Annual emission rate (lb/MMBtu)	Emission reduction (tpy)	Total annual costs (million$)	Average cost effectiveness ($/ton)	Incremental cost effectiveness ($/ton)	Visibility impacts*		
						Improvement (dv)	Days > 0.5 dv	Days > 1.0 dv
LNB with SOFA	0.21	3,042	$1.2M	$382		0.846	330 (29)	218 (22)
LNB with SOFA and SNCR	0.16	3,735	3.8M	1,016	3,796	1.041	322 (37)	202 (38)
LNB with SOFA and SCR	0.05	5,500	14.8M	2,697	6,255 (compared to LNB with SOFA and SNCR) 5,561 (compared to LNB with SOFA).	1.545	311 (48)	188 (52)

*At the most impacted Class I area, Canyonlands National Park. The improvement in days over 0.5 and 1.0 dv provided by the control option relative to the baseline is presented in parentheses. See Table H.9. Air Quality Modeling Protocol: Utah Regional Haze Federal Implementation Plan, US EPA Region 8 (Nov. 2015); Docket Id. EPA–R08–OAR–2015–0463–0012.

TABLE 3—SUMMARY OF EPA'S HUNTER UNIT 2 NO_X BART IMPACTS ANALYSIS

Control option	Annual emission rate (lb/MMBtu)	Emission reduction (tpy)	Total annual costs (million$)	Average cost effectiveness ($/ton)	Incremental cost effectiveness ($/ton)	Visibility impacts*		
						Improvement (dv)	Days > 0.5 dv	Days > 1.0 dv
LNB with SOFA	0.20	2,902	$0.9M	$298		0.658	336 (23)	221 (19)
LNB with SOFA and SNCR	0.16	3,562	3.5M	968	3,913	0.822	331 (28)	218 (22)
LNB with SOFA and SCR	0.05	5,230	14.5M	2,774	6,632 (compared to LNB with SOFA and SNCR) 5,861 (compared to LNB with SOFA).	1.250	317 (42)	198 (42)

*At the most impacted Class I area, Canyonlands National Park. The improvement in days over 0.5 and 1.0 dv provided by the control option relative to the baseline is presented in parentheses. See Table H.10. Air Quality Modeling Protocol: Utah Regional Haze Federal Implementation Plan, US EPA Region 8 (Nov. 2015); Docket Id. EPA–R08–OAR–2015–0463–0012.

Tables 4 and 5 provide summaries of EPA's NO_X BART analysis of all feasible control options for Huntington Units 1 and 2, including the costs of compliance and visibility impacts.

TABLE 4—SUMMARY OF EPA'S HUNTINGTON UNIT 1 NO_X BART IMPACTS ANALYSIS

Control option	Annual emission rate (lb/MMBtu)	Emission reduction (tpy)	Total annual costs (million$)	Average cost effectiveness ($/ton)	Incremental cost effectiveness ($/ton)	Visibility impacts*		
						Improvement (dv)	Days > 0.5 dv	Days > 1.0 dv
LNB with SOFA	0.22	2,440	$0.8M	$332		0.851	249 (28)	153 (22)
LNB with SOFA and SNCR	0.17	3,185	3.5M	1098	3,609	1.113	244 (33)	143 (32)
LNB with SOFA and SCR	0.05	5,092	14.6M	2,871	5,830 (compared to LNB with SOFA and SNCR) 5,206 (compared to LNB with SOFA).	1.881	210 (67)	117 (58)

*At the most impacted Class I area, Canyonlands National Park. The improvement in days over 0.5 and 1.0 dv provided by the control option relative to the baseline is presented in parentheses. See Table H.11. Air Quality Modeling Protocol: Utah Regional Haze Federal Implementation Plan, US EPA Region 8 (Nov. 2015); Docket Id. EPA–R08–OAR–2015–0463–0012.

TABLE 5—SUMMARY OF EPA'S HUNTINGTON UNIT 2 NO_X BART IMPACTS ANALYSIS

Control option	Annual emission rate (lb/MMBtu)	Emission reduction (tpy)	Total annual costs (million$)	Average cost effectiveness ($/ton)	Incremental cost effectiveness ($/ton)	Visibility impacts*		
						Improvement (dv)	Days > 0.5 dv	Days > 1.0 dv
LNB with SOFA	0.21	2,576	$0.9M	$365		0.776	254 (23)	153 (22)
LNB with SOFA and SNCR	0.17	3,264	3.5M	1,075	3,730	1.016	244 (33)	149 (26)
LNB with SOFA and SCR	0.05	5,023	14.7M	2,928	6,368 (compared to LNB with SOFA and SNCR) 5,626 (compared to LNB with SOFA).	1.657	220 (57)	126 (49)

*At the most impacted Class I area, Canyonlands National Park. The improvement in days over 0.5 and 1.0 dv provided by the control option relative to the baseline is presented in parentheses. See Table H.12. Air Quality Modeling Protocol: Utah Regional Haze Federal Implementation Plan, US EPA Region 8 (Nov. 2015); Docket Id. EPA–R08–OAR–2015–0463–0012.

In our final BART determinations, we have taken into consideration all five of the statutory factors required by the CAA: Costs of compliance, energy and non-air quality environmental impacts of compliance, any existing pollution control technology in use at the source, remaining useful life of the source, and degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

We received some comments on our proposed consideration of remaining useful life and energy and non-air quality environmental impacts. However, we have not changed our evaluation from the proposal of the energy and non-air quality environmental impacts of compliance and the remaining useful lives of the sources. We find that the remaining useful life of the Hunter and Huntington units of at least twenty years is considerable and does not require us to revise our amortization period for the costs of controls. We also find that the energy and non-air quality environmental impacts of the various control options do not significantly favor one option over another. Please see the proposal action and our RTC document for details.

We also received comments on our proposed consideration of existing pollution control technology in use at the source, in this case LNB/SOFA at all four BART units. For reasons explained later in the preamble and in our RTC document, we continue to use a baseline period for emissions (2001–2003) that predates the installation of LNB/SOFA at the four BART units. We have considered the existing LNB/SOFA in several other ways. First, we considered them in selecting the control options to analyze for BART. Second, we considered them in determining the impacts of the control options, both by taking the LNB/SOFA into account in determining the proper NO_X rates for the post-combustion control options (selective non-catalytic reduction (SNCR) and SCR), and in computing the incremental cost-effectiveness values in the tables earlier. We also consider the existing LNB/SOFA in our discussion of incremental visibility benefits later. As explained later in the preamble and in our RTC document, this is a reasonable approach and consistent with other actions.

We now discuss the remaining factors, the costs of compliance and the degree of visibility improvement, and how we are weighing them in determining BART. At this point in time, EPA and the states have made a number of BART determinations for large coal-fired EGUs. EPA is taking into account the BART decisions made in other states to help frame our assessment of the cost and visibility benefits of control options in this action.[64] Specifically, we have compared the average cost-effectiveness, incremental cost-effectiveness, visibility improvement, and incremental visibility improvement for the selected BART controls, SCR + LNB/SOFA, with BART determinations for coal-fired EGUs where the EPA and states have based those determinations on the same or similar metrics.

The most comparable determination is in EPA's final action on Wyoming's regional haze SIP, in which EPA promulgated a FIP for three units at Laramie River Station and determined NO_X BART to be SCR + LNB/SOFA for the three units.[65] On a per-unit basis, the visibility improvement at the most impacted Class I area from this control option ranged from 0.52 to 0.57 dv, and across all three units the sum of the improvement was 1.62 dv.[66] Thus, applying this control option to all three units of Laramie River Station was estimated to have a visibility benefit

[64] As discussed in our proposal action, in the context of reasonable progress determinations, a comparison with another reasonable progress determination has been upheld by the Ninth Circuit Court of Appeals as a rational explanation for that determination. Nat'l Parks Conserv. Ass'n v. U.S. EPA, 788 F.3d 1134, 1148–49 (9th Cir. 2014).

[65] 79 FR 5032, 5047 (Jan. 30, 2014).

[66] As explained in our proposal, the BART Guidelines require consideration of the visibility improvement from the use of BART controls applied to the collection of emissions units that make up the BART source. Although this requires consideration of the visibility improvement from BART applied to the subject-to-BART source as a whole, states (and EPA) may also include the visibility benefits on a per unit basis as well in their evaluation of the BART factors. In this action we have considered both the per-unit visibility benefits as well as the source-wide visibility benefits. The source-wide visibility benefits of our selected BART control, SCR + LNB/SOFA, at all nine impacted Class I areas are presented and discussed later.

about the same as applying the same control option to just one of the Hunter and Huntington BART units (the visibility benefits in today's action at the most impacted Class I area range from 1.25 dv at Hunter Unit 2 to 1.881 dv at Huntington Unit 1). The visibility benefits of SCR + LNB/SOFA at Hunter or Huntington as a whole (2.948 dv for Hunter, 3.848 dv for Huntington) are significantly greater than at Laramie River Station.

The average cost-effectiveness for SCR + LNB/SOFA at Laramie River Station ranged from $4,375/ton to $4,461/ton, considerably higher than the corresponding values of $2,697/ton to $2,928/ton for the Hunter and Huntington BART units. The incremental cost-effectiveness for SCR + LNB/SOFA at Laramie River Station as compared to SNCR + LNB/SOFA ranged from $5,449 to $5,871/ton, which is generally in line with the corresponding values for the Hunter and Huntington BART units, $5,830/ton to $6,632/ton. Finally, the incremental visibility improvement for SCR + LNB/SOFA at the most impacted Class I area as compared to SNCR + LNB/SOFA for Laramie River Station was significant (0.25 dv to 0.29 dv), but is even more so for the Hunter and Huntington BART units (0.428 dv at Hunter Unit 2 to 0.748 dv at Huntington Unit 1). Thus, the selection of SCR + LNB/SOFA at the Hunter and Huntington BART units is very much in line with the selection of SCR + LNB/SOFA at Laramie River Station. This is particularly true given that Laramie River Station impacts four Class I areas, while the Hunter and Huntington BART units impact nine Class I areas.

In the same Wyoming action, our BART determinations for Dave Johnston Units 3 and 4 also provide a useful comparison. At Unit 3, we selected SCR + LNB/OFA as BART based on an assumed 20-year remaining useful life. Under that assumption, the average cost-effectiveness and incremental cost-effectiveness (as compared to SNCR + LNB/OFA) were $2,635/ton and $7,583/ton, respectively. We found these costs reasonable in light of a 0.51 dv improvement and a 0.12 dv incremental improvement at the most impacted Class I area. The average cost-effectiveness of SCR + LNB/SOFA at the Hunter and Huntington BART units, $2,697/ton to $2,928/ton, is comparable, while the incremental cost-effectiveness of SCR + LNB/SOFA at the Hunter and Huntington BART units, $5,830/ton to $6,830/ton, is less than at Dave Johnston Unit 3. On the other hand, the visibility benefit and incremental visibility benefit of SCR + LNB/SOFA at the Hunter and Huntington BART units is considerably higher than that at Dave Johnston Unit 3, and the Hunter and Huntington BART units impact nine Class I areas as compared to five for Dave Johnston Unit 3. Thus, the selection of SCR + LNB/SOFA for the Hunter and Huntington BART units is very much in line with our BART determination for Dave Johnston Unit 3 (assuming a remaining useful life of 20 years).

In the Wyoming action, at the request of PacifiCorp we also analyzed an alternative compliance scenario for Dave Johnston Unit 3 that assumed a shutdown in 2027 and correspondingly a 9-year remaining useful life. As explained in the BART Guidelines, for BART units with a relatively short remaining useful life—in other words, less than the time period used for amortizing costs, which in this case was 20 years—the shorter time period can be used to amortize costs instead. Effectively, this increases the cost-effectiveness values; in the case of Dave Johnston Unit 3, the average and incremental cost-effectiveness of SCR + LNB/OFA increased to $3,742/ton and $11,781/ton, respectively. Considering these values against the visibility benefits, we found that the incremental cost-effectiveness of SCR + LNB/OFA in this instance was not reasonable. Of course, for the Hunter and Huntington BART units the incremental cost-effectiveness is much lower than this scenario and in line with the previous scenario assuming a 20-year remaining useful life, for which we selected SCR + LNB/OFA as BART. Similarly, for Dave Johnston Unit 4, as for the 9-year remaining useful life scenario for Unit 3, we rejected SCR + LNB/OFA due to a high incremental cost-effectiveness of $13,312. This is again consistent with our determination here, given the much lower incremental cost-effectiveness numbers for SCR + LNB/SOFA at the Hunter and Huntington BART units.

There are other BART determinations in which SCR has been selected as BART (either alone or in conjunction with LNB and SOFA) based on similar metrics, although those determinations may not have explicitly discussed incremental cost-effectiveness and incremental visibility benefits on a per-unit basis. First, the State of Colorado selected, and the EPA approved, SCR as NO_X BART for Public Service Company's Hayden Station, Units 1 and 2.[67] Hayden Units 1 and 2 were equipped with first generation LNB and over-fire air (OFA) installed in 1999 as the result of a consent decree to address other CAA requirements.[68] In its BART determination, Colorado considered these existing controls as given and included them in the baseline emissions, which is consistent with our approach here: Colorado included the Hayden combustion controls in the baseline because they were not installed for a proposed BART determination but for other CAA purposes. In contrast, we do *not* include the combustion controls at Hunter and Huntington because they *were* installed pursuant to a proposed BART determination.[69]

Colorado analyzed as feasible controls upgraded LNB, SNCR, and SCR. Based on an average cost-effectiveness of $3,385/ton and $4,064/ton, incremental cost-effectiveness (as compared with SNCR + the existing LNB/OFA) of $5,326/ton and $7,331/ton, and visibility improvement of 1.12 dv and 0.85 dv at the most impacted Class I area, respectively, Colorado selected SCR (added to the existing LNB/OFA) as BART for Units 1 and 2. The average cost-effectiveness of SCR + LNB/SOFA at the Hunter and Huntington BART units, $2,697/ton to $2,928/ton, compares favorably with the average cost-effectiveness of SCR at the Hayden units, and the incremental cost-effectiveness of SCR + LNB/SOFA at the Hunter and Huntington BART units, $5,830/ton to $6,632/ton, is generally in line with the incremental cost-effectiveness of SCR at the Hayden units. The visibility improvement from SCR + LNB/SOFA at the most impacted Class I area for the Hunter and Huntington BART units, from 1.25 dv to 1.881 dv, compares favorably with the Hayden units. While Colorado appears to have not considered the incremental visibility benefits, these are also favorable for our selection of SCR + LNB/SOFA: 0.428 dv to 0.768 at the Hunter and Huntington units, as compared to 0.37 dv and 0.43 dv at Hayden Units 1 and 2, respectively. We also note that Hayden Station impacts eleven Class I areas, slightly more than Hunter and Huntington; however for six of those areas the impacts from Hayden Station are less than the impacts from Hunter and Huntington at the least

[67] 77 FR 18069 (Mar. 26, 2012) (proposal); 77 FR 76871 (Dec. 31, 2012) (final).

[68] Colorado Department of Health and Environment, Air Pollution Control Division, Technical Review Document, Renewal/Modification of Operating Permit 96OPRO132, Public Service Company—Hayden Station, Colorado, at 2 (2007–2008).

[69] We respond later in this action and in our RTC document about comments that this comparison should not be used because the baseline for Hayden included the existing controls.

impacted Class I area, Zion National Park.[70]

Another comparable determination can be found in EPA's FIP for Arizona Public Service's Cholla Power Plant, Units 2, 3, and 4, in which EPA determined that NO_X BART was SCR for all three units.[71] Similar to Colorado's determination for Hayden, EPA included the existing controls, LNB and OFA, in the baseline for the three units.[72] EPA estimated average cost-effectiveness values for SCR (as added to the existing LNB/OFA) of $3,114/ton, $3,472/ton, and $3,395/ton; and incremental cost-effectiveness values (as compared to SNCR + LNB/OFA) of $3,257/ton, $3,811/ton, and $3,661/ton, respectively, for Units 2, 3, and 4. EPA's modeling showed a source-wide visibility improvement for SCR of 1.34 dv at the most impacted Class I area. In comparison, the source-wide visibility improvements at the most impacted Class I area for Hunter and Huntington from SCR + LNB/SOFA are much larger: 2.948 dv and 3.848 dv, respectively. While the average cost-effectiveness values at Cholla are somewhat higher than those for the Hunter and Huntington BART units, the incremental cost-effectiveness of SCR at the Hunter and Huntington BART units is considerably higher, at $5,830/ton to $6,632/ton. Despite that disparity in incremental cost-effectiveness, this comparison still supports selection of SCR + LNB/SOFA for the Hunter and Huntington BART units, given the much greater magnitude of the visibility benefits and the fact that our other comparisons show the incremental cost-effectiveness of SCR + LNB/SOFA is still reasonable. Finally, Cholla Power Plant does impact somewhat more Class I areas, thirteen as opposed to nine for Hunter and Huntington; however, were we to sum the baseline impacts of Hunter and Huntington, they would be greater than those for Cholla.

Based on these comparisons to Laramie River Station, Hayden Station, Dave Johnston Units 3 and 4, and Cholla Power Plant Units 2, 3, and 4, the selection of LNB and SOFA with SCR as BART for the Hunter and Huntington BART units is fully justified.[73] For these four units, LNB and SOFA with SCR is very cost-effective, at $2,697/ton to $2,928/ton on an average basis (counting the costs and emission reductions from the combination of the three control technology elements), and at $5,830/ton to $6,632/ton on an incremental basis compared to LNB with SOFA and SNCR. Compared to LNB with SOFA, the incremental cost effectiveness of LNB and SOFA with SCR ranges from $5,206/ton to $5,861/ton, which is in line with the incremental cost effectiveness that supported the selection of LNB with SOFA and SCR for Laramie River Station. For the Hunter and Huntington BART units, LNB and SOFA with SCR provides substantial visibility benefits at several Class I areas that are similar in magnitude to those from Laramie River Station. For example, the visibility improvement from that control option installed on a single unit is 1.342 dv at Arches National Park, 1.545 dv at Canyonlands National Park, and 1.113 at Capitol Reef National Park. These comparisons show that costs are justified in light of the substantial visibility benefits, both total and incremental. In addition, for each unit, SCR + LNB/SOFA provides a significant improvement in the number of days over 0.5 dv as compared to the baseline (ranging from 42 days improvement at Hunter Unit 2 to 67 days improvement at Huntington Unit 1).

As mentioned earlier, the BART Guidelines require consideration of the visibility improvement from the use of BART controls applied to the collection of emissions units that make up the BART source. Tables 6 and 7 summarize the source-wide visibility improvements from the installation of SCR + LNB/SOFA at both BART units at Hunter and both BART units at Huntington, as well as the visibility improvements from the installation of SCR + LNB/SOFA at the other impacted Class I areas.

TABLE 6—SUMMARY OF SOURCE-WIDE VISIBILITY IMPACTS AND IMPROVEMENTS FOR HUNTER

Class I area	Baseline visibility impacts			BART (SCR + LNB/SOFA) Impacts (Improvements over baseline shown in parentheses)		
	Impacts (dv)	Days > 0.5 dv	Days > 1.0 dv	Impacts (dv)	Days > 0.5 dv	Days > 1.0 dv
Arches National Park (NP)	4.601	293	170	1.981 (2.62)	158 (135)	71 (99)
Black Canyon NP	1.097	68	22	0.481 (0.616)	14 (54)	1 (21)
Bryce Canyon NP	1.833	42	22	0.811 (1.022)	20 (22)	6 (16)
Canyonlands NP	5.356	359	240	2.408 (2.948)	223 (136)	111 (129)
Capitol Reef NP	4.606	175	118	2.171 (2.435)	114 (61)	55 (63)
Flat Tops Wilderness	1.281	77	31	0.537 (0.744)	22 (55)	1 (30)
Grand Canyon NP	1.891	49	32	0.730 (1.161)	25 (24)	9 (23)
Mesa Verde NP	1.327	82	32	0.514 (0.813)	21 (61)	4 (28)
Zion NP	0.963	29	14	0.369 (0.594)	10 (19)	4 (10)

Note: The baseline impacts are the combined impacts from all three units at Hunter, while the BART source is comprised of only units 1 and 2. EPA's evaluation of visibility under BART relies only on the visibility benefits associated with controls on the two BART units.

[70] See BART CALPUFF Class I Federal Area Individual Source Attribution Visibility Impairment Modeling Analysis for Public Service Company of Colorado Hayden Station Units 1 and 2, Colorado Department of Public Health, at 48 (Nov. 1, 2005).

[71] 77 FR 42834 (July 20, 2012) (proposal); 77 FR 72512, 72514–15 (Dec. 5, 2012) (final).

[72] In response to a comment about the use of this baseline, EPA explained that the three Cholla units had installed LNB/OFA and switched to a new source of coal with a much higher potential for NO_X emissions. Thus, the LNB/OFA had not been installed pursuant to a proposed state BART determination; instead they appear to have been installed to accommodate the use of the new coal. This is again distinguishable from the situation for Hunter and Huntington.

[73] As explained later and in our RTC document, we reject the comparisons to BART determinations in Montana, Florida, and Nebraska.

TABLE 7—SUMMARY OF SOURCE-WIDE VISIBILITY IMPACTS AND IMPROVEMENTS FOR HUNTINGTON

Class I area	Baseline visibility impacts			BART (SCR + LNB/SOFA) impacts (improvements shown in parentheses)		
	Impacts (dv)	Days > 0.5 dv	Days > 1.0 dv	Impacts (dv)	Days > 0.5 dv	Days > 1.0 dv
Arches NP	3.887	237	146	0.848 (3.039)	67 (170)	18 (128)
Black Canyon NP	0.773	45	16	0.196 (0.577)	1 (44)	0 (16)
Bryce Canyon NP	1.221	36	19	0.326 (0.895)	4 (32)	0 (19)
Canyonlands NP	5.130	277	175	1.282 (3.848)	89 (188)	31 (144)
Capitol Reef NP	3.389	131	91	0.986 (2.403)	42 (89)	9 (82)
Flat Tops Wilderness	0.926	64	17	0.216 (0.710)	2 (62)	0 (17)
Grand Canyon NP	1.107	40	19	0.190 (0.806)	4 (36)	0 (19)
Mesa Verde NP	1.115	63	22	0.261 (0.854)	0 (63)	0 (22)
Zion NP	0.820	21	11	0.211 (0.609)	3 (18)	0 (11)

As can be seen from these tables, the baseline visibility impacts in dv at all nine Class I areas are large: Even at the least impacted Class I area, Zion National Park, Hunter and Huntington are each above the 0.5 dv threshold for contributing to visibility impairment. For Hunter, at the three most impacted Class I national park areas, Arches, Canyonlands and Capitol Reef, the baseline visibility impacts range from 4.601 dv to 5.356 dv. At these three Class I areas, the number of days with impacts over 0.5 dv and 1.0 dv range from 175 to 359, and from 118 to 240, respectively. The visibility benefits of BART (SCR + LNB/SOFA) at the three Class I areas are correspondingly large, ranging from 2.435 dv to 2.948 dv. The improvement in the number of days over 0.5 dv and 1.0 dv at these three Class I areas are large as well, ranging from an improvement of 61 to 136 days in the number of days over 0.5 dv and 63 to 129 days in the number of days over 1.0 dv. Even at the least impacted Class I area, Zion National Park, the visibility benefits of BART are significant, 0.594 dv, and 19 and 10 days in the number of days over 0.5 dv and 1.0 dv, respectively. Consideration of these source-wide visibility benefits confirms that SCR + LNB/SOFA at Hunter is fully justified in light of its reasonable costs.

For Huntington, at the three most impacted Class I national park areas, Arches, Canyonlands and Capitol Reef, the baseline visibility impacts range from 3.389 dv to 5.130 dv. At these three Class I areas, the number of days with impacts over 0.5 dv and 1.0 dv range from 131 to 271, and from 91 to 175, respectively. The visibility benefits of BART (SCR + LNB/SOFA) at the three Class I areas are correspondingly large, ranging from 2.063 dv to 3.538 dv. The improvement in the number of days with impacts from Huntington over 0.5 dv and 1.0 dv at these three Class I areas are similar to those of Hunter. Huntington has 89 fewer days with impacts over 0.5 dv at Capitol Reef, 170 fewer days with such impacts at Archers, and 188 fewer days at Canyonlands. The number of days Huntington has impacts over 1.0 dv at these areas falls by 82 to 144 days. Even at the least impacted Class I area, Zion National Park, the visibility benefits of BART are significant. BART is projected to result in a 0.609 dv improvement at Zion the number of days with impacts over 0.5 dv and 1.0 dv fall by 18 and 11 days, respectively. Consideration of these source-wide visibility benefits confirms that SCR + LNB/SOFA at Huntington, as at Hunter, is fully justified in light of its reasonable costs.

Accordingly, for the Hunter and Huntington BART units, we find that BART for NO_X is SCR + LNB/SOFA, represented by an emission limitation of 0.07 lb/MMBtu (30-day rolling average). The BART emission limitation of 0.07 lb/MMBtu allows for a sufficient margin of compliance for a 30-day rolling average limit that would apply at all times, including startup, shutdown, and malfunction.[74] We are also finalizing our proposed monitoring, recordkeeping, and reporting requirements in our regulatory text for 40 CFR 52.2336; these requirements will ensure that the BART emission limitation is enforceable.

Under 40 CFR 51.308(e)(1)(iv), "each source subject to BART [is] required to install and operate BART as expeditiously as practicable, but in no event later than five years after approval of the implementation plan revision." In light of the considerable effort involved to retrofit SCR, we determine that five years is as expeditiously as practicable. Therefore, the compliance deadline for the BART requirements will be five years from the date our final FIP becomes effective.

2. PM_{10} BART

We are finalizing our proposed approval of Utah's PM_{10} BART determinations for Hunter Units 1 and 2 and Huntington Units 1 and 2. We have determined that Utah's PM_{10} BART determinations, emission limitations, and associated monitoring, recordkeeping and reporting for Hunter Units 1 and 2 and Huntington Units 1 and 2 meet the requirements of 40 CFR 51.309(d)(4)(vii) and the linked BART requirements in 40 CFR 51.308(e)(1).[75] We are approving SIP Section IX, Part H.21 subsections a through d and f (related to applicability, definitions, recordkeeping, and stack testing), and conditionally approving Subsection e (emission limitations shall apply at all times). We are approving SIP Section IX, Part H.22 subsections a.i and b.i. We considered and rejected comments on the validity of the State's BART analyses for PM_{10} and the State's emission limitation of 0.015 lb/MMBtu on a 30-day rolling basis for the Hunter and Huntington BART units. For PM_{10} reporting, we are finalizing our proposed conditional approval of this element in accordance with CAA section 110(k)(4), based on Utah's commitment to submit specific measures to address the reporting requirement.[76] Utah's letter commits to adopt and submit rule language that would require sources to report any deviation from the requirements of the regional haze SIP provisions, which would include the PM_{10} emission limitations. The specific language is

[74] Emission limits such as BART are required to be met on a continuous basis. *See* 70 FR 39104, 39172 (July 6, 2005) (stating that emissions limits including BART are to be met on a "continuous basis" in the BART Guidelines, section V); 42 U.S.C. 7602(k) (noting that emission limits are to be on "a continuous basis").

[75] As discussed elsewhere, while we are approving the PM_{10} emission limits in SIP Section IX, Part H.21, we are not approving into the SIP the "approval orders" (*i.e.*, State-issued permits) that are referenced in SIP Section XX.D.6.d at 25 and 29).

[76] Letter from Department of Environmental Quality, State of Utah to EPA, DAQP–120–15 (Dec. 10, 2015).

detailed in Utah's commitment letter. We did not receive any adverse comments on our conditional approval of the recordkeeping requirements for the PM_{10} emission limitations.

Pursuant to CAA section 110(k)(4), the State has one year from the date of this action to adopt and submit the necessary SIP revisions for SIP Section IX.H.21.e. If the State does not meet its commitment within the one year period, the conditional approval is treated as a disapproval. EPA finds that the necessary SIP revisions meet EPA's criteria for conditional approvals,[77] as the revisions appear to involve a limited amount of technical work, are anticipated to be non-controversial, and can reasonably be accomplished within the length of time for the State's adoption process.

3. Enforceable Commitment SIP

We are taking no action on Utah's enforceable commitment SIP, submitted on October 20, 2015. In its enforceable commitment SIP submittal, the State resolved to address double counting certain emissions reductions from the Carbon power plant closure under both the Utah BART Alternative and the SO_2 backstop trading program under 40 CFR 51.309. As we explained in our proposal, we interpret our authority to enable us to approve enforceable commitment SIPs under section 110(a)(2)(A) of the Act and other applicable sections as relevant (for our NO_X BART action, this is section 169A). However, since we are not approving the State's NO_X BART Alternative SIP submittal, which included emissions reductions from the Carbon power plant, there is no need for the elements of the enforceable commitment SIP. Additionally, because we are not taking action on the enforceable commitment SIP package submitted on October 20, 2015 we are not responding to comments on that SIP in this action.

II. Summary and Analysis of Major Issues Raised by Commenters

We received both written and oral comments at the public hearings we held in Salt Lake City. We also received comments by the Internet and mail. The full text of comments received from these commenters is included in the publicly posted docket associated with this action at *www.regulations.gov*. Our RTC document, which is also included in the docket associated with this action, provides detailed responses to all significant comments received. In total, we received approximately 4,900 pages of significant comments. Later we provide a summary of the more significant comments received and a summary of our responses to them. Our RTC document is organized similarly to the structure presented in this section (*e.g.*, Cost of Controls, BART Alternative CALPUFF Modeling, etc.). Therefore, if additional information is desired concerning how we addressed a particular comment, the reader should refer to the appropriate section in our RTC document.

PacifiCorp, conservation organizations (HEAL Utah, National Parks Conservation Association, and Sierra Club) and the National Parks Service (NPS) submitted detailed comments that include new cost and visibility modeling information.[78] Several government, tourism and industry organizations also submitted comments. Many general comments were made at the public hearing. We received approximately 400 comments through email and the *www.regulations.gov* Web site. We also received approximately 70,000 mass mailer comments from private citizens.

A. General Comments

Comment: Several commenters expressed concern over the accommodations provided at the public hearing. Several commented on the large number of attendees, and how this made it difficult for them to make their comments as well as hear those who were speaking. Commenters noted that many attendees were intimidated by the size of the hearing and by some of the other attendees, and suggested that many attendees left the hearing without commenting on the issues. There was concern that these departures may have led to an imbalance in opinions presented. Some commenters noted that some of the attendees at the hearing were not being cordial with the others and were unkind to those who expressed different opinions. Several commenters made requests for additional hearings, suggesting that additional hearings be located closer to the affected Class I areas and at locations that could accommodate a larger number of attendees.

Response: Several commenters expressed their dissatisfaction with EPA's public hearing arrangements. As required by section 307(d)(5) of the CAA the EPA provided an opportunity for the public to submit written comments and voice concerns at the public hearing. In arranging the logistics for the public hearing, EPA's intent was to provide an opportunity for all members of the public to voice their opinions about the proposed rulemaking. The Salt Lake City library was chosen as the public hearing site because: (1) The library had reasonable accommodations to hold approximately 100 attendees; (2) the library was centrally located, and would be convenient for many members of the public to access; and (3) the library did not require a fee. The size of the venue was consistent with other hearings the EPA has conducted across the country.[79] Based on these considerations, the EPA had no reason to believe the venue could not accommodate the anticipated level of public participation or that it would not fulfill the purposes of and the Act's requirements for the hearing.

While the number of individuals attending the public hearing exceeded what we anticipated, we made adjustments throughout the day to accommodate the large numbers. For example, the library staff worked with us and set up broadcast speakers in the hallway so that those in the hallway could hear what was said during the hearing. The EPA could not allow the meeting room used for the public hearing to exceed its capacity limit in order to comply with the library's policies to comply with the fire code occupancy requirements. In response to the unkind statements made by some participants, the Hearing Officer reminded the crowd that the purpose of the meeting was to allow people to testify comfortably without being intimidated, and that people causing distractions would be asked to leave. In fact, some attendees who were causing distractions were asked to leave. Additionally, even though the turnout was larger than expected, EPA scheduled the opportunity for the public to speak based on their arrival time (with those arriving first, first allowed to speak); and the EPA accommodated all the potential speakers at the end of the scheduled hearing time, by extending the hearing until everyone who was present at that time and wanted to speak had done so. As a result the hearing was extended by approximately 20 minutes.

[77] *See* Memorandum from John Calcagni to EPA Regional Directors. "Processing of State Implementation Plan (SIP) Submittals" (July 1992), available at *http://www3.epa.gov/ttn/oarpg/t1/memoranda/siproc.pdf*.

[78] On May 19, 2015, PacifiCorp submitted late comments. These comments are included in the docket for this action and we address them in our RTC document.

[79] Examples include: (1) The public hearing on FIP proposal on May 1, 2012 at the Lewis and Clark Library in Helena, MT; (2) the public hearing on FIP proposal on July 27, 2013 at the Laramie County Library in Cheyenne, WY; and (3) the public hearing on FIP proposal on October 13–14, 2011 at the North Dakota Department of Health Training Center in Bismarck, ND.

The EPA determined that additional hearings were unnecessary, because the written comment period continued for approximately seven weeks after the public hearing, allowing for additional comments to be submitted. As explained in the proposed rule,[80] in addition to the public hearing, the EPA accepted written comments provided those comments were received on or before March 14, 2016. Therefore, while some of the members of the public may have left before they had an opportunity to speak at the hearing, they still had the opportunity to submit their comments either online or via mail to EPA for approximately seven weeks after the public hearing, as demonstrated in 81 FR 2004. The EPA gives just as much consideration to comments we receive in writing as we do to those we receive at public hearings.

B. EPA Authority and State Discretion

Comment: The State of Utah commented that EPA should approve its BART Alternative because it meets all of the current requirements of the CAA and the RHR found at 40 CFR 51.300 through 51.309. EPA is obligated to approve a SIP that meets all of the applicable requirements of the CAA. See 42 U.S.C. 7410(k)(3) (''In the case of any submittal on which the Administrator is required to act under paragraph (2), the Administrator shall approve such submittal as a whole if it meets all of the applicable requirements of this chapter.''). The Section 308 regulation grants states full discretion as to whether to adopt the BART Alternative. In the current proposed rule, EPA also acknowledges a state's discretion in approving alternative measures: Finally, in . . . responding to concerns regarding ''impermissibly vague'' language in §51.308(e)(3) that would allow a State to ''approve alternative measure that are less protective than BART,'' we explained that ''[t]he State's discretion in this area is subject to the condition that it must be reasonably exercised and that its decision be supported by adequate documentation of its analyses.'' 81 FR 2004, 2012 (quoting 71 FR 60612, 60621 (Oct. 13, 2006)). Therefore, the alternative measure is within the state's discretion, as long as it is adequately supported.

Response: We agree that states have discretion to adopt BART alternatives; however, as the commenter explains, the state's discretion is subject to a number of requirements, including that it be reasonably exercised and adequately supported and that the state's Alternative clearly provides greater reasonable progress than BART. The CAA requires that states submit SIPs that contain such measures as may be necessary to make reasonable progress toward achieving natural visibility conditions, including the BART requirements. As EPA explained when promulgating the regional haze regulations, ''[t]he overarching requirement of the visibility protection provisions of section 169A is to make reasonable progress toward the national goal of eliminating visibility impairment. If greater reasonable progress can be made through an approach that does not require source specific application of BART, EPA believes that approach would comport with this statutory goal.''[81] States have the opportunity to adopt alternative measures in lieu of BART where the agency *reasonably concludes* that more reasonable progress will thereby be attained toward the national visibility goal.[82] We explained these requirements in our co-proposal as follows: ''[a]s described in our 2006 revisions to the RHR, concerning BART alternatives, '[t]he State's discretion in this area is subject to the condition that it must be reasonably exercised and that its decisions be supported by adequate documentation of its analyses.''' [83]

While states have discretion to decide whether to adopt a BART alternative in a SIP, such discretion does not extend to the authority to adopt SIPs that will not ensure reasonable progress toward the national visibility goal of preventing any future and remedying of any existing visibility impairment in Class I areas. Such an interpretation is also inconsistent with the legislative history, which stresses the importance of the ''national goal''[84] of clear air quality in Class I areas and ''preventing impairment of visibility,'' noting that ''the millions of Americans who travel thousands of miles each year to visit Yosemite or the Grand Canyon or the North Cascades will find little enjoyment if . . . upon reaching the Grand Canyon it is difficult if not impossible to see across the great chasm.''[85]

Thus, we do not agree that Congress assigned states full discretion in developing SIPs, because it is not clear how EPA's limited role under such a scenario would assure attainment of the national goal or imposition of the [better than] BART requirements where a state's BART alternative demonstration does not demonstrate that the alternative achieves greater reasonable progress. In view of the statutory requirements, it is logical that EPA would evaluate the reasonableness of the State's BART Alternative analysis in light of the purpose of the regional haze program.

As detailed in the sections in our co-proposal and based on our evaluation and findings as detailed in Section I.B.1 of this document and in our RTC document, we determined that, on balance, the evidence does not show that the Alternative clearly achieves greater visibility benefits than BART. Because the State's BART Alternative is not approvable, we are obligated to disapprove it, develop BART analyses, and then arrive at our own BART determinations for the four EGUs that are subject-to-BART.

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 Alternative analyses, 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 a specific numeric value by which to measure visibility improvement; instead, it established a reasonable progress standard and required that EPA assure that such progress be achieved via implementation, *inter alia,* of the Act's BART requirement. Here, we are exercising judgment within the parameters laid out in the CAA and our regulations.

Our evaluation of the State's BART Alternative is presented in section I.B.1 and in our RTC document.

Comment: The State commented that EPA mistakenly imposes additional inapplicable requirements in its evaluation of Utah's regional haze SIP. Greater reasonable progress under Section 308(e)(2) can be demonstrated using either one of two methods: (1) Greater emission reductions than under BART (Section 308(e)(3)); or (2) the weight-of-evidence test, consisting of a number of requirements that the state weighs to conclude which option achieves greater reasonable progress (section 308(e)(2)). *See* 40 CFR 51.308(e)(2) and (3). The state has discretion to choose one method over the other. *See WildEarth Guardians* v. *E.P.A.,* 770 F.3d 919, 935–37 (10th Cir.

[80] 81 FR 2004 (Jan. 14, 2016).

[81] 64 FR 35714, 35739 (July 1, 1999).

[82] *Id.* (emphasis added).

[83] 81 FR 2004, 2006 (Jan. 6, 2016) (citing 71 FR 60612, 60621 (Oct. 13, 2006)).

[84] 42 U.S.C. 7491(a)(1).

[85] H.R. Rep. No. 95–294, at 137 (1977).

2014). The Tenth Circuit characterized the former approach as "quantitative" and the latter as "qualitative," ultimately ruling that EPA can properly rely on qualitative factors in applying the "weight-of-evidence test." *See id.* at 934–35 (EPA's choice of qualitative standard was "permissible under the EPA's interpretation of its regulations.").

Utah submitted its BART Alternative under Section 308(e)(2), purposefully electing to make its determination that the alternative program achieves greater reasonable progress under the "weight-of-evidence" test. EPA analyzed Utah's BART Alternative in both co-proposals under the section 308(e)(3) "greater emissions reductions test" in addition to the "weight-of-evidence" analysis. See 81 FR 2004, 2021, 2028. EPA proposed that Utah's BART Alternative does not result in greater emission reductions because "the total NO_X emissions are greater under the BART Alternative than the BART Benchmark," even though "in the aggregate there are fewer SO_2 and PM_{10} emissions for the BART Alternative . . . ." *Id.* at 2028. EPA erroneously imposed Section 308(e)(3) requirements on Utah's BART Alternative in addition to the Section 308(e)(2) weight-of-evidence test. EPA must withdraw its analysis of Utah's BART Alternative under the greater emissions reductions test because, as Utah clearly explained, the State never intended its data to satisfy this test.

Response: We agree in part and disagree in part with this comment. In developing a BART Alternative SIP, we agree that a state has the discretion to choose between the "greater emission reduction" test (section 308(e)(3)) and the "weight-of-evidence" test (section 308(e)(2)). Utah's comments clarify that they elected the weight-of-evidence test, and so we clarify and modify our evaluation of the State's SIP submittal. We therefore clarify that we are not disapproving the SIP under the elements of the section 308(e)(3) test as we had proposed.[86]

The State's submittal, however, asserted that the BART Alternative is better than BART based in part on the metric that compared annual emissions of the three visibility impairing pollutants in the aggregate. There is no requirement in section 308(e)(2) for the State to compare annual emissions of visibility pollutants in the aggregate. Rather, as we explained in our proposal, we have addressed this issue under section 308(e)(3); our interpretation under that provision also applies under section 308(e)(2). Specifically, if under section 308(e)(2) a state compares annual emissions of visibility in the aggregate to determine whether a BART alternative "results in greater emission reductions," we examine whether each of the visibility causing pollutants is less under the alternative. For the reasons explained in our proposal and in section I.B.1.c.i of this document, we have not approved a BART alternative where one or more of the specific pollutants under the BART alternative is greater than it would be under the BART benchmark.[87]

Therefore, as we did in our proposal, it is reasonable to apply our interpretation of the section 308(e)(3) "greater emission reductions" element under section 308(e)(2) as well, because the same concerns regarding the relationship between reductions of multiple pollutants and visibility improvements are also relevant in the weight-of-evidence context.

Comment: PacifiCorp asserted that EPA is not empowered under the CAA to require compliance with both the SIP proposal and the FIP proposal. As a practical matter, that is precisely what EPA proposes to do to the extent it approves the FIP proposal. This is because PacifiCorp already has implemented the SIP proposal as required by Utah law. If EPA were to select the FIP proposal, it would do so knowing[88] that PacifiCorp would be required to implement both the SIP proposal and the FIP proposal. Nothing in CAA or regional haze rules allows EPA to require such a result when the proposed action itself states that EPA "intends to finalize only one proposal." See 81 FR 2004, 2006.

For all of the reasons stated earlier, EPA should approve the Utah SIP as stated in the SIP proposal, and should reject the FIP proposal. What EPA cannot do, and indeed is not empowered under the CAA to require, is compliance with both the SIP proposal and the FIP proposal.

Response: We disagree with this comment. As explained elsewhere, the CAA requires that states submit SIPs that contain such measures as may be necessary to make reasonable progress toward achieving natural visibility conditions, including the BART requirements. EPA is acting under its authority pursuant to the CAA in disapproving portions of the SIP submittal and promulgating the FIP. We have the duty to ensure that regional haze SIP submittals meet the requirements of the Act and the RHR.[89] While states have the opportunity to adopt alternative measures in lieu of

[86] 81 FR 2004, 2028 ("Therefore, we propose to disapprove Section XX.D.6.c. of the Utah SIP under the test in 40 CFR 51.308(e)(3).").

[87] EPA's interpretation of the requirement under 40 CFR 51.308(e)(3) that the alternative measure "results in greater emission reductions" has been that the emission reduction comparisons are pollutant specific. We have applied this interpretation in evaluating BART alternatives and we have not looked at a total emissions profile that combines emissions of multiple pollutants to determine whether a BART benchmark or a BART alternative is "better," except where every visibility impairing pollutant is reduced by a greater amount under the BART alternative. See 79 FR 9318, 9335 (Feb. 18, 2014) (proposed approval of Arizona BART Alternative for Sundt Unit 4); 79 FR 52420 (Sept. 3, 2014) (final approval of Arizona BART Alternative for Sundt Unit 4); 77 FR 18052, 18073–75 (Mar. 26, 2012) (proposed approval of Colorado BART Alternative, no modeling required where the 40 CFR 51.308(e)(3) test was met); 77 FR 76871 (Dec. 31, 2012) (final approval of Colorado BART Alternative). EPA has not relied on a total emissions profile that combines emissions of multiple pollutants together to determine that either BART or a BART alternative is "better," because visibility modeling is the most appropriate method to assess the overall improvements in visibility impacts from control scenarios where reductions of multiple pollutants are considered, except where every visibility impairing pollutant is reduced by a greater amount under the alternative. As we have explained, "[e]ach of the five pollutants which cause or contribute to visibility impairment has a different impact on light extinction for a given particle mass, making it therefore extremely difficult to judge the equivalence of interpollutant trades in a manner that would be technically credible, yet convenient to implement in the timeframe needed for transactions to be efficient. This analysis is further complicated by the fact that the visibility impact that each pollutant can have varies with humidity, so that control of different pollutants can have markedly different effects on visibility in different geographic areas and at different times of the year." See 64 FR 35714, 35743(July 1, 1999). As other Agency actions on BART alternatives have explained, modeling assesses "both pollutants' chemical aerosol formation mechanisms and impacts on visibility," (see 78 FR 79344, 79355; Dec. 30, 2013) which allows evaluation of the "relative visibility impacts from the atmospheric formation of visibility impairing aerosols of sulfate and nitrate." See 79 FR 33438, 33440 (June 11, 2014).

[88] EPA is well aware that the Utah SIP, as it has been implemented over time, became binding state law in regard to the Utah BART Units and ultimately the other units covered by the BART Alternative. This makes it particularly egregious that, even though EPA knew that PacifiCorp was required to expend hundreds of millions of dollars to fully implement the BART Alternative under state law, EPA said nothing about its intention to issue a competing co-proposal until after PacifiCorp had completed all of the emission reductions required under the Utah SIP. *See* Letter from Carl Daly to Bryce Bird, Re. EPA Region 8 Comments on Utah's February 2015 Draft Regional Haze SIP Revision, at 1 (May 1, 2015) (commenting on the then-proposed Utah SIP including the BART Alternative). This secretive approach by EPA also caught the Utah Division of Air Quality off guard as explained in their oral comments during the January 26, 2016 hearing: "Throughout the SIP development process, we worked as regulatory partners, closely and extensively with EPA staff to ensure that Utah's Alternative to BART SIP revision met all the requirements of the Clean Air Act and was approvable by EPA. The EPA should approve the option that Utah developed while in close consultation with EPA and not the option that Utah was not even aware was being prepared or under consideration until it was proposed in the **Federal Register**."

[89] *See* CAA sections 169A and 110(k)(3).

BART, their discretion in this area is subject to the condition that it must be reasonably exercised and that their decisions be supported by adequate documentation of its analyses.

Therefore, we do not agree that we are prohibited from identifying deficiencies in the Utah SIP submittal after the State rulemaking process is complete, and the commenter cites nothing in the Act to the contrary. While a state may adopt regulations that are effective as a matter of state law before EPA goes through its rulemaking process to evaluate the proposed SIP elements, those state rules are not federally enforceable because any SIP submittal "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). The State's and EPA's roles in this process were understood in PacifiCorp statements. For example, in response to a question provided during rebuttal testimony that asked whether the regional haze rules are final, the Company explained that the 2011 Utah and Wyoming SIP submittals "are final insofar as state action is considered" and recognized that "these submittals have not yet been approved by the Environmental Protection Agency." [90]

The commenter suggests that measures in Utah's SIP submittal became "binding state law in regard to the Utah BART Units" and "the other units covered by the BART Alternative" prior to EPA's final action. The commenter merely suggests there are state law provisions but does not provide citations to any state law specific provisions.[91] It appears, however, that the commenter may be referring to measures established pursuant to the State's permit process. If this is, indeed, what the commenter is referring to, both the CAA and our regulations require that emission limits be established pursuant to a BART or BART alternative determination, and be contained in an EPA-approved SIP.[92] The fact that Utah chose to use its permit process to establish emission limits for its BART sources before EPA completed its review of the State's SIP submittal has no bearing on EPA's authority and obligation to conduct this review and to approve or, if necessary, disapprove the State's submittal.

Finally, EPA's comment letter on the State's proposed SIP clearly explained that "we will only come to a final conclusion regarding the regional haze program for Utah when we take action on the program through our own public notice-and-comment rulemaking." [93] Our letter further explained to the State that, "we are working towards meeting our legal obligations that have resulted from our January 2013 partial disapproval action for Utah's May 2011 regional haze SIP." EPA comment letters are intended to help improve any SIP revision that is under development, but they do not constitute agency action on that SIP revision or constitute any assurance of positive action on that revision upon submission and review. Instead and always, EPA has to formally discharge its responsibilities to review any SIP submittal. Moreover, the CAA does not require EPA to participate in state proceedings related to a state's SIP submission, nor does it preclude EPA from carrying out its statutory duty to disapprove an inadequate SIP if EPA does not voice concerns during state proceedings. The CAA requires EPA to issue a FIP when states have not met their obligations under the CAA. Therefore, EPA is promulgating this FIP to fill the regulatory gap created by the partial disapproval of Utah's SIP submittals. Despite the existence of a 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.

C. Reasonableness Standard

Comment: One commenter asserted that EPA arbitrarily and capriciously applies two inappropriate standards to the Utah SIP proposal. The commenter stated that, in an attempt to replace Utah's determination with its own, EPA imposes a "Reasonableness Standard" without concluding the Utah SIP contains data or methodological flaws—the limited circumstances under which courts have upheld use of this standard—and also imposes a "Complexity of Evaluation" standard which finds no support in the CAA or applicable regulations.

The commenter also asserted that EPA is prohibited from imposing additional requirements upon its approval/disapproval of a SIP that do not qualify as "applicable requirements." EPA is not correct in its attempt in the proposed action to impose additional requirements on its evaluation of the BART Alternative and Utah SIP that are different than the applicable BART alternative requirements.

1. Reasonableness Standard –EPA asserts that Utah "has several options for making the greater reasonable progress determination [and it] elected to use two separate approaches." [94] See 81 FR at 2006. EPA further states that it will evaluate both of those approaches in deciding whether to approve the Utah SIP. EPA then makes the blanket assertion that "the State's discretion in this area is subject to the condition that it must be reasonably exercised and that its decisions be supported by adequate documentation of its analysis." ("Reasonableness Standard.") See 81 FR at 2006. Although the use of words like "reasonable" and "adequate" have common sense appeal in the abstract, EPA may not apply this standard in a way that allows EPA to discard the state's discretion and instead impose EPA's own will.

In addition, the present circumstances regarding the SIP proposal are far different than those circumstances in

[90] Rebuttal Testimony of Cathy S. Woolums, at 26. (June 30, 2011). (Available in the docket at *https://www.regulations.gov/#!documentDetail;D=EPA-R08-OAR-2015-0463-0167*).

[91] Utah's Effective rule explains that "[w]hile Utah has chosen to meet the NO_X BART requirement through alternative measures . . . the enforceable emission limits for both NO_X and SO_2 established in the approval orders and in the SIP for the four EGUs also met the presumptive emission rates for both NO_X and SO_2 established in Appendix Y independently of the alternative program." Effective Rule at page E–12, Section XX, p. 168 (adopted by the Board on June 3, 2015), available in the docket at *https://www.regulations.gov/#!documentDetail;D=EPA-R08-OAR-2015-0463-0002*. The presumptive emission limits in the BART Guidelines are rebuttable. The presumptive emission limits apply to power plants with a total generating capacity of 750 MW or greater insofar as these sources are required to adopt emission limits at least as stringent as the presumptive limits, unless after considering the five statutory factors, the State determines that the presumptive emission limits are not appropriate.

[92] Congress required EPA to promulgate regulations to assure "reasonable progress" toward meeting the national goal and compliance with section 169A. The regulations require the submission of regional haze SIPs for states with Class I areas within their borders and states whose emissions "may reasonably be anticipated to cause or contribute to any impairment of visibility" in a Class I area outside their borders. 42 U.S.C. 7491(b)(2), 7491(e)(2). All SIPs must include "enforceable emission limitations and other control measures, means, or techniques . . . as well as schedules and timetables for compliance, as may be necessary or appropriate to meet the applicable requirements of [the Act]." CAA section 110(a)(2)(A). Regional haze SIPs must include emission limits, compliance schedules, and other measures "as may be necessary to make reasonable progress toward meeting the national goal." 42 U.S.C. 7491(b)(2).

[93] Letter from Carl Daly to Bryce Bird, Re. EPA Region 8 Comments on Utah's February 2015 Draft Regional Haze SIP Revision, at 1 (May 1, 2015). (Available in the docket at *https://www.regulations.gov/#!documentDetail;D=EPA-R08-OAR-2015-0463-0160*).

[94] As explained below [referring to PacifiCorp's comment document], EPA is simply wrong in concluding that Utah used two separate approaches to demonstrate greater reasonable progress. Therefore, EPA's stated basis for imposing the Reasonableness Standard does not support EPA's effort to do so.

which courts have upheld EPA's use of a similar Reasonableness Standard in other regional haze settings. For example, in *North Dakota* v. *EPA,* 730 F.3d 750, 760 (8th Cir. 2013), the court allowed EPA's use of the Reasonableness Standard under those circumstances where the state's BART determination contained "data flaws that led to an overestimated costs of compliance." Also, *Oklahoma* v. *EPA,* 723 F. 3d 1201, 1212 (10th Cir. 2013) reached a similar conclusion based on "methodological flaws."

In the case of the SIP proposal, however, EPA proposes to approve the BART Alternative based on compliance with the applicable BART alternative requirements[95] and without also concluding that the BART Alternative contains "data flaws" or "methodological flaws." Therefore, the factual bases for allowing EPA to apply a Reasonableness Standard do not exist in regard to the BART Alternative and EPA should not attempt to apply such a standard here—particularly as a basis for rejecting the BART Alternative.[96]

2. Complexity of Evaluation Standard—EPA also is wrong in its attempt to count among applicable requirements the unsupported conclusion that the "complexity of our evaluation" somehow necessitates EPA soliciting comments not only on the SIP proposal, but also on the competing FIP proposal. See 81 FR 2006.[97] Even taking at face value the assertion that analyzing the Utah SIP is "complicated," that alone does not require EPA to evaluate the Utah SIP differently than any other regional haze SIP, nor does it justify EPA in presenting dueling co-proposals.[98] In other words, EPA has simply conjured up this new "complexity" requirement[99] out of thin air in an attempt to support its offering of the competing FIP proposal. EPA is acting arbitrarily and without legal authority by seeking comment on the FIP proposal based on what EPA calls the "complexity of our evaluation" and for this reason EPA should withdraw the FIP proposal and approve the SIP proposal as proposed.

Response: We disagree with most of these comments. First, we disagree that we have used a "reasonableness standard" in a manner that is inconsistent with our prior actions or as a way to limit the State's discretion. As discussed elsewhere, EPA has a duty to review Utah's regional haze SIP, including its BART Alternative, for compliance with the applicable requirements of the CAA and the RHR. Based on our review of the SIP, we proposed to determine that certain elements of Utah's regional haze SIP met the applicable requirements, and we proposed to approve those elements. However, for the reasons explained in detail in our proposed action and elsewhere in this document, we have concluded that, with regard to other elements, the State did not exercise its discretion in a reasonable manner, *i.e.,* in a manner consistent with the requirements and goals of the CAA and RHR. Based on these findings, we are required to partially disapprove Utah's regional haze SIP submittal.

As discussed in detail elsewhere, the CAA provides EPA with the authority to review and reject an inadequate regional haze SIP submittal. *Oklahoma* v. *EPA,* 723 F.3d 1201, 1207–08 (10th Cir. 2013) (EPA may not approve a submittal that does not adhere to applicable statutory and regulatory requirements). Contrary to the commenter's assertions, our analysis and decision here is entirely consistent with the *North Dakota* and *Oklahoma* decisions. The RHR requires a state to demonstrate that its BART alternative achieves greater reasonable progress than BART, 40 CFR 51.308(e)(2), and Utah chose to make this demonstration using a weight-of-evidence analysis. In our review, EPA found a number of flaws in this analysis. Based on this evaluation and findings as detailed in Section I.B.1 of this document and in our RTC document, we determined that, on balance, the evidence does not show that the Alternative clearly achieves greater visibility benefits than BART.

Second, we disagree with the assertions regarding creation of a new complexity standard. The commenter misunderstands and misconstrues our proposed action. We did not create a new complexity standard, rather we explained that we were considering complex information and that it was a close call for EPA to decide whether the evidence presented by the State clearly demonstrated that the BART Alternative would achieve greater reasonable progress than BART (the complexity of our evaluation leads us to propose and solicit comment on two conclusions and courses of action because several of the metrics *appear to* support the State's analyses, while others do not appear to support the Alternative).[100] Contrary to the commenter's assertions, we merely explained that the information in the State's SIP submittal was complex; we did not create a new standard by which to evaluate SIP submittals. Our proposed action clearly explained that some metrics appeared to support approval, while others metrics appeared to support a disapproval.

Therefore, given that EPA's evaluation of the information before us presented a close call, and in order to provide a fair and meaningful process for *all* members of the public, we used the co-proposal approach. This approach provided an opportunity for the public to comment on both potential courses of action, *i.e.,* approval or disapproval of the State's BART Alternative. Recognizing the

[95] *See* generally 81 FR 2004, 2021–26.

[96] This is not to say that EPA lacks any role in reviewing and approving the Utah SIP. Indeed, the latest court to weigh in on EPA's review authority makes clear that "Congress intended that EPA, not the states alone, ultimately ensure that state determinations as to regional haze comply with the [Clean Air] Act. . . .." Arizona ex rel. Darwin v. EPA, Nos. 13–70366, 13–70410, 2016 U.S. App. LEXIS 3196, at *19–20 (9th Cir. Feb. 24, 2016). Although PacifiCorp agrees that EPA has a role to play in making sure the Utah SIP complies with the CAA and applicable requirements, it also notes that EPA must do so in a way that does not undermine the role of states like Utah to which "Section 169A [of the CAA] gives. . .substantial responsibility in determining appropriate BART [and BART Alternative] controls." The court goes on to make clear that "EPA may not disapprove reasonable state determinations that comply with the relevant statutory and regulatory requirements." *Id.* at *22. Such is the case with the Utah SIP.

[97] EPA attempts to further support this contrived "complexity" requirement by repeatedly stating that such a requirement exists, as if repetition alone somehow can bring an imaginary requirement into existence (*i.e.,* "In light of the variety of metrics Utah used, this is a complicated analysis. . . ;" "The complexity of our evaluation leads us to propose and solicit comments on two conclusions and two courses of action . . . . ;" "Given the complexities in evaluating these co-proposals, EPA wants to ensure that our final decision is based on the best and most currently available data and information, and is taken with the fullest possible consideration of public input.") See 81 FR 2004, 2006.

[98] The Tenth Circuit Court of Appeals, which considered whether EPA's approval of a BART Alternative for SO_2 emissions was appropriate, did not conclude that EPA's analysis of the alternative program was, by its nature, more complicated than a BART analysis. See generally WildEarth Guardians v. EPA, 770 F.3d 919 (10th Cir. 2014).

[99] EPA further attempts to justify its rationale for considering the FIP proposal by asserting, as explained in footnote 3, the need to "ensure that our final decision is based on the best and most currently available data and information, and is taken with the fullest possible consideration of public input." EPA already is charged with ensuring that any final decision is based on the best current data and information available. See 71 FR 60612, 60622 (Oct. 13, 2006) (final rule on revisions to provisions governing alternative source-specific BART determinations); see also 5 U.S.C. 706(2). EPA already is required to make a decision based on the fullest possible consideration of public input. See 5 U.S.C. 553(c). Re-stating these fundamental principles does not allow EPA to bootstrap itself into also considering a competing coproposal (the FIP proposal) when the SIP proposal already meets all Applicable BART Alternative Requirements as EPA itself has proposed to conclude. Arizona ex rel. Darwin at *22 (stating that "EPA may not second-guess reasoned, legally compliant state decisions") (internal citations and quotations omitted).

[100] 81 FR 2004, 2006 (Jan. 14, 2016) (emphasis added).

information before the Agency was possibly susceptible to both interpretations, our two proposed conclusions and courses of action were as follows: "(1) The State's submittal meets the test above and we approve the BART Alternative; or (2) the State's submittal falls short of meeting this test and we disapprove the BART Alternative and promulgate a FIP for NO_X BART."

We exercised our rulemaking discretion and structured the action using the co-proposal approach so that our action would enable all interested parties to have the opportunity to provide meaningful and timely comment on either or both approaches. In structuring the action in this way, the interested public had notice of the proposals under consideration and whether they had interests at stake. This balanced approach was fair in that it provided all interested parties with the options EPA contemplated in taking final action, as well as providing an opportunity to comment on the full range of potential actions. The commenter cites to no CAA provision that restricts EPA's authority to present co-proposals. EPA often provides alternative approaches for final Agency action in our SIP rulemaking proposals, as we did here. Additionally, even assuming that EPA's proposed action on the Utah regional haze SIPs articulated new "complexity" grounds for evaluating a regional haze SIP, the proposed action provided the public with the opportunity to comment. As evidenced by the commenter's submission, the commenter had the opportunity to provide input on this purported new standard to evaluating the Utah regional haze SIP and to identify any concerns associated with the statements at issue. Therefore, even if we had created a new complexity standard, which we did not, it would have been properly proposed and applied in this instance.

As explained above, the EPA proposal identified several weaknesses and flaws in the State's SIP submittal in the proposed rulemaking,[101] and as explained in this final action, other commenters have made us aware of additional weaknesses and uncertainties in the SIP submittal.[102] Therefore, EPA is finalizing our co-proposal to disapprove the BART Alternative and promulgate a FIP for NO_X BART, which this commenter recognizes EPA has a role and authority to do.

Furthermore, as explained elsewhere, we appreciate and clarify in this final action that the State did not intend to have its BART Alternative evaluated under both the 40 CFR 51.308(e)(2) and section 308(e)(3) tests. We, therefore, based our final action on our evaluation of the State's submittal under §51.308(e)(2)'s weight-of-evidence test.

Finally, regarding the commenter's cross-reference to comments dated August 26, 2013, we explained in our final action in the Wyoming regional haze rulemaking that we disagreed with the comments in that context and we continue to disagree here.[103]

D. Compliance With 40 CFR 51.308

Comment: Two commenters noted that EPA's FIP proposal is unnecessary because EPA already found Utah is making the required "reasonable progress." The goal of the RH program is to make "reasonable progress" towards the statute's national visibility goal. Accordingly, EPA promulgated regulations "to assure . . . reasonable progress toward meeting" the national visibility goal, section 7491(b)(2), and mandated that EPA's regulations contain "such emission limits, schedules of compliance and other measures as may be necessary" to assure such progress towards meeting that goal, "including" a requirement that states make BART determinations. Id. As EPA has stated, "BART is one component of long term strategies to make reasonable progress." Regional Haze Regulations and Guidelines, 70 FR 39137.

Because BART's purpose is to make reasonable progress, EPA adopted regulations exempting states from making BART determinations if they can show that other measures for large stationary sources will achieve greater reasonable progress. 40 CFR 51.308(e)(2) (2012). EPA defended those regulations in court by arguing that BART is one of a number of "emission limits, schedules of compliance and other measures" that "must" be included in a SIP "'as may be necessary to make reasonable progress toward national visibility goals.'" *Ctr. for Energy and Econ. Dev.* v. *EPA,* 398 F.3d 653, 659–60 (D.C. Cir. 2005) (confirming BART is but one measure for achieving "reasonable progress"); *Cent. Arizona Water Conservation Dist.* v. *EPA,* 990 F.2d 1531, 1534 (9th Cir. 1993) (same). If an alternative can better achieve those

[101] Our proposal evaluated the State's use of the information from the metrics and identified weaknesses and flaws, for example: (1) The State's characterization of the 98th percentile modeling results that did not support its BART Alternative, was inconsistent with EPA's interpretation of and reliance on that metric; (2) the comparison of the results from the total annual emissions reductions was inconsistent with how we have interpreted our regulations; (3) the results from the modeling for the number of days the Alternative provided significant visibility impairment showed mixed results, with some results favoring the Alternative, while other results did not support the Alternative; (4) the annual average metric only marginally supported the Alternative, and showed less or equal visibility at four of nine Class I areas; and (5) the energy and non-air quality and cost metrics do not have a direct bearing on whether the Alternative achieves greater reasonable progress.

[102] Our RTC document provides details on the additional weaknesses and uncertainties that commenters brought to our attention.

[103] "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 the 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." 79 FR 5032, 5098, 5099 (Jan. 30, 2014).

goals, EPA has stated that BART would not be "necessary to make reasonable progress." *Id.* The court agreed with EPA's analysis, although it overturned EPA on other grounds. *Id.* As the court said, "the focus of the Clean Air Act was to achieve 'actual progress and improvement in visibility,' 42 U.S.C. 7492(b), not to anoint BART the mandatory vehicle of choice." *Id.* at 660.

As EPA recognizes, in some circumstances no BART controls may be necessary to make reasonable progress. It follows that in other circumstances, depending on a state's reasonable-progress goals and expected non-BART emission reductions, BART controls of varying stringency may be necessary. Consistent with this goal, EPA has approved Utah's "reasonable progress" determination for its RH SIP in its entirety. *See* "Approval, Disapproval and Promulgation of State Implementation Plans; State of Utah; Regional Haze Rule Requirements for Mandatory Class I Areas Under 40 CFR 51.309," published at 77 FR 74355, 74367–68 (Dec. 14, 2012). EPA found that "the State met all reasonable progress requirements for the Class I areas," including by implication any required NO_X BART limits. In fact, EPA stated that Utah's 2008 RH SIP, including BART controls identified in that 2008 RH SIP, would result in "a significant decrease in stationary source NO_X and SO_2 emissions." *Id.* EPA further found that the NO_X BART controls adopted by Utah for the Hunter and Huntington EGUs at issue would decrease NO_X emissions by "6,200 tons [annually] between 2002 and 2018." *Id.* Therefore, EPA acknowledged that Utah's NO_X BART limits and controls are all that are required to achieve "reasonable progress," and no further NO_X BART requirements should be imposed by EPA through its FIP proposal.

Thus, EPA cannot validly judge a state's BART determination outside of its reasonable progress context. *Owasso Indep. Sch. Dist. No. I–011* v. *Falvo,* 534 U.S. 426, 434 (2002) ("the words of a statute must be read in their context and with a view to their place in the overall statutory scheme.").

Response: EPA disagrees with these comments. The commenters appear to be asserting that, since EPA approved Utah's 2011 SIP submission as meeting the reasonable progress requirements of 40 CFR 51.309 with regard to SO_2, no further controls are necessary to meet the RHR's requirements for NO_X and PM. However, this assertion ignores our statements in the BART Alternatives rulemaking that an EPA determination that a backstop trading program satisfies a state's reasonable progress obligations for SO_2 under 40 CFR 51.309 does not satisfy that state's obligation to address NO_X and PM requirements under 40 CFR 51.308(e)(1) or (2). In this rulemaking, EPA proposed amendments to the stationary source NO_X and PM provisions within §51.309 precisely in order to "clarify that if EPA determines that the SO_2 emission reductions milestones and backstop trading program in the §51.309 SIPs 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." [104] The final rulemaking reinforced that a reasonable progress determination for SO_2 under §51.309's backstop trading program does not satisfy the emission reductions requirements for non-SO_2 pollutants.[105]

We also took this position in another recent regional haze action, in which we found that the state's approved SO_2 alternative under §51.309 did "not provide the adequate level of visibility improvement to meet the [non-SO_2] BART requirements." [106] We then reiterated that "BART is an independent requirement of the statute and the RHR." [107] Our statements in both the national and regional contexts make it clear that a reasonable progress determination for an SO_2 backstop trading program under §51.309 does not relieve a state of its obligation to satisfy NO_X and PM BART. EPA thus *can* judge a state's BART determination outside the reasonable progress context, as they are independent requirements.

The commenters' claim that EPA's approval of Utah's §51.309 program in our December 2012 final action means that the State met its reasonable progress requirements "in its entirety" is thus clearly incorrect. In that action we determined that the State met the requirements of §51.309 and therefore satisfied its reasonable progress obligation *with regard to the particular pollutants covered in the State's alternative, i.e.,* SO_2. This determination has no bearing on the State's independent NO_X and PM obligations. To comply with the RHR, the state must still address any BART obligations for pollutants not included in the BART alternative analysis and therefore not covered by the "better than BART" determination.

EPA similarly disagrees that it acknowledged that the NO_X controls in Utah's 2011 SIP submission are all that are required to achieve reasonable progress and that EPA should therefore not require further NO_X BART requirements. As explained earlier, EPA's determination that Utah's 2011 submission satisfied reasonable progress requirements does not constitute implicit evaluation and action on Utah's NO_X and PM SIP submittal as meeting the BART requirements. Furthermore, the commenter overlooks EPA's explicit disapproval of Utah's NO_X and PM BART determinations in our December 2012 partial approval/disapproval.[108] EPA's disapproval of Utah's NO_X and PM control determinations necessarily precludes finding that these same controls are all that are required to satisfy the RHR's requirements. EPA is thus required to promulgate a NO_X BART FIP, which we are now doing. Commenters also take EPA's statements regarding the quantity of anticipated NO_X reductions from Utah's rejected BART determination out of context. These statements were offered as reasons why Utah satisfied the RHR's requirement to address impacts on Class I areas in other states by achieving previously agreed upon emission reductions, which is a separate consideration from whether the State has satisfied its independent NO_X and PM BART obligations.

EPA also disagrees that the statements in the cited cases have any bearing on this action. In *Center for Energy and Economic Development* v. *EPA* (*CEED*),[109] the issue was whether EPA's BART alternative provisions in §51.309 were consistent with CAA section 169A(b)(2) given that they used a methodology for establishing the BART benchmark that the D.C. Circuit had previously vacated in *American Corn Growers Ass'n* v. *EPA.*[110] As part of its challenge to EPA's BART alternative provisions, CEED argued that section 169A(b)(2) requires all states' SIPs to include BART, meaning EPA could not allow BART alternatives in place of source-specific BART. EPA argued that section 169A(b)(2) allows either BART or an alternative to BART submitted pursuant to §51.309 if that alternative would achieve greater reasonable progress than BART, *i.e.,* if the alternative is "better than BART." The statements the commenter cites express EPA's view on the narrow issue of whether and when we may allow states to substitute an SO_2 trading program for

[104] 70 FR 44154, 44169 (Aug. 1, 2005) (emphasis added).

[105] 71 FR 60612, 60626 (Oct. 13, 2006).

[106] 79 FR 5032, 5099 (Jan. 30, 2014) (final partial approval/partial disapproval of Wyoming regional haze SIP submission).

[107] *Id.*

[108] 77 FR 74355, 74357 (Dec. 14, 2012).

[109] 398 F.3d 653 (D.C. Cir. 2005).

[110] 291 F.3d 1 (D.C. Cir. 2002).

source-specific BART under §51.309. Because these statements address only the relationship between BART and BART alternatives for SO_2 under §51.309; they have no bearing on whether we believe a state's submission of an SO_2 trading program satisfies its independent obligation to address NO_X and PM, as these obligations were not at issue in this case.

In our December 14, 2012 action we approved Utah's BART Alternative for SO_2 under 40 CFR 51.309, finding that it achieved greater reasonable progress than SO_2 BART. As explained earlier, this determination has no bearing on Utah's outstanding NO_X and PM BART obligations. We, therefore, disagree that today's action to address these obligations is unnecessary.

Comment: Several commenters asserted that Utah's BART Alternative does not achieve greater reasonable progress based on the "clear weight-of-evidence." Utah's Regional Haze SIP also must be rejected under 40 CFR 51.308(e)(2)(i)(E) because it does not achieve "greater reasonable progress" based on the "clear weight-of-evidence." [111]

At the outset, Utah's proposed reliance on the "clear weight-of-evidence" test is improper. In promulgating regulations allowing for the test, 40 CFR 51.308(e)(2)(i)(E), offered the following example of when the test might be appropriate: "(1) The alternative program achieves emissions reductions that are within the range believed achievable from source-by-source BART at affected sources, (2) the program imposes a firm cap on emissions that represents meaningful reductions from current levels and, in contrast to BART, would prevent emissions growth from new sources, and (3) the State is unable to perform a sufficiently robust assessment of the programs using the two pronged visibility test due to technical or data limitations." [112] None of those conditions are met here. Most importantly, Utah's BART Alternative does not drive any meaningful reductions from "current levels" and does not prevent emissions growth from new sources, and Utah is not hindered by any technical or data limitations preventing a sufficiently robust visibility assessment. EPA further noted that "a weight-of-evidence comparison may be warranted" "when there is confidence that the difference in visibility impacts between BART and the alternative scenarios are expected to be large enough." [113] Here, as EPA correctly observed, even Utah's flawed modeling demonstrated the superiority of BART using the most relevant visibility metric and only minimal benefits of the BART Alternative compared with BART using other metrics.

Several commenters also raised concerns regarding emission shifting from the power plants covered by the SIP to existing sources that are not included in this SIP. They suggested that due to the nature of the electrical generation market, with the adjustments to the overall system to add capacity elsewhere to accommodate the Carbon power plant shutdown (and perhaps also to accommodate the emission limit reductions at the Hunter and Huntington power plants), those shifts in capacity could result in increases in emissions at power plants outside the BART Alternative. The commenters further suggested that if those emission increases had been considered in the State's weight-of-evidence analysis, the BART Alternative may not provide greater reasonable progress than BART if the emission reductions assessment under the Alternative are not permanent and were to shift to other power plants. As an example, one of the commenters provided an analysis for a Utah power plant (not covered by the BART Alternative) that based on its proximity to the nine Class I areas analyzed under the BART Alternative, if emission increases were to occur at that plant the increases could impact visibility impairment at the Class I areas. Other commenters expressed concern that the lost capacity from the BART Alternative sources could shift to new sources, and explained that the emissions from new sources are not evaluated in the State's weight-of-evidence analysis. One commenter suggested that this Alternative appears to be more like a "trading" program and that other regulations apply. One commenter expressed concern that a non-BART source is included in the BART Alternative, and further, that not all the sources in the State that are part of this source category are included.

Response: We agree in part and disagree in part with these comments. First, as explained elsewhere, we agree with the commenter that the State's analysis for the BART Alternative does not show that the Alternative clearly achieves greater visibility benefits than BART. Second, the four examples cited by the commenter from our RHR preamble were *examples,* rather than an exclusive list of circumstances under which a state may use a weight-of-evidence analysis. Therefore, the State was not required to fall into one of these categories in order to select the weight-of-evidence approach to support its BART Alternative. Third, we disagree that emission reductions must occur from current levels, because, consistent with the RHR, the baseline date for regional haze SIPs is 2002.[114]

Next we respond to the commenters' concerns about potential shifting of production and emissions from the sources in the BART Alternative to sources outside the BART Alternative. We acknowledge that the State's BART Alternative has the following characteristics: (1) It includes all the BART sources in the State; (2) it accounts for emission reductions from a non-BART source; and (3) it includes some, but not all, sources in the source category within the State. The RHR provides that BART alternative programs may include non-BART sources.[115] We disagree with commenters that suggested the RHR trading requirements apply to the Utah BART Alternative.[116] The RHR trading provisions apply to SIPs that establish a cap on total emissions from sources that are subject to the BART program, and further require the owners and operators of the sources to hold allowances to purchase, sell, and transfer allowances. Utah's SIP contains rate-based emission limits on the sources that are subject to the BART Alternative and therefore does not include a cap on emissions or trading provisions. Therefore, the Utah SIP does not contain the elements of a trading program as described in the RHR, which include provisions to prevent significant emission shifting.[117]

Although the State's SIP explained that the Carbon power plant had already closed and electricity generated from the Carbon power plant has been replaced (and the associated costs already have been absorbed by Utah rate payers and those in other states served by PacifiCorp),[118] the SIP submittal neither identified what electrical generating facilities increased capacity

[111] 40 CFR 51.308(e)(2)(i)(E).

[112] 71 FR 60612, 60621 (Oct. 13, 2006).

[113] *Id.* at 60622.

[114] *See* Memorandum from Lydia Wegman and Peter Tsirigotis, 2002 Base Year Emission Inventory SIP Planning: 8-hr Ozone, $PM_{2.5}$, and Regional Haze Programs (November 18, 2002).

[115] The preamble to the RHR provides for inclusion of BART and non-BART sources in a BART alternative. 64 FR 35714, 35743 (July 1, 1999).

[116] 40 CFR 51.308(e)(2)(E)(v) (containing requirements for a state to demonstrate that a trading program prevent any significant, potential shifting within the state of production and emissions from the sources in the program to sources outside the program).

[117] *Id.*

[118] Utah Staff Review Report at 27.

to accommodate the Carbon shut down, nor did it provide an analysis of whether the capacity replacement resulted in increases in visibility impairing pollutants. Furthermore, in addition to seeking and receiving authorization to recover costs associated with retirement of the Carbon plant, the Company also received authorization from state utility commissions to recover additional costs, including "installation of equipment necessary to ensure voltage stability, along with various communications upgrades and protection and control equipment." [119] It is unclear whether the activities associated with these additional costs resulted in capacity and emissions shifting and increased visibility impairment at the affected Class I areas. Therefore, while the record before us indicates that capacity has shifted, it is unclear how the shift was accommodated, and whether there are any emission increases and associated visibility impairment.[120]

It is therefore unclear whether the shift in capacity as a result of the Carbon plant retirement results in increased emissions and visibility impairment at the affected Class I areas. Because the record lacks information on these questions, we agree with the commenters that there is additional uncertainty as to whether the BART Alternative is better than BART.

E. Overarching Comments on BART Alternative Demonstration

Comment: The State of Utah commented that EPA should approve the option that Utah developed in close consultation with EPA and not the option that Utah was not even aware was being prepared or under consideration until it was signed by the Regional Administrator. Utah worked closely and in good faith with the EPA and the FLMs to evaluate and implement the appropriate controls for improving visibility. Up to the point of the current proposal, the EPA has indicated to Utah that the alternative to BART approach and analysis were acceptable. During the RH SIP development process, Utah and EPA worked as regulatory partners—Utah working closely and extensively with EPA's staff to ensure that Utah's BART Alternative was approvable. EPA's concurrence with Utah's RH SIP proposal is also supported by EPA's comments submitted during the state rulemaking public comment period on the current revision of the Utah's RH SIP. EPA did not point to any substantive flaws in Utah's RH SIP, but only requested minor clarifications and revisions in its 3-page comment letter.

Response: While we agree that EPA worked in close consultation with Utah on the BART Alternative within the limitations of what the State and PacifiCorp were willing to offer in the plan, EPA is not required to approve the option developed by Utah. As stated elsewhere in this document, EPA's comment letter on the State's proposed SIP explicitly explained the following: "[p]lease note that we will only come to a final conclusion regarding the regional haze program for Utah when we take action on the program through our own public notice-and-comment rulemaking." [121] Our May 1, 2015 letter further explained to the State that, "[i]n addition, we wish to inform you that we are working towards meeting our legal obligations that have resulted from our January 2013 partial disapproval action for Utah's May 2011 regional haze SIP." [122] EPA's assistance to states and our comment letters are intended to be helpful to the improvement of any SIP revision that is under development, but they do not constitute agency action on that SIP revision or constitute any assurance of positive action on that revision upon submission and review.

Additionally, the State's efforts to involve the FLMs did not adequately meet the requirements for FLM consultation in developing plan revisions. The State could have satisfied the consultation requirements by providing more time for FLM review so that the FLMs would have received the full number of 60 days for their review. However, in developing the co-proposals, consulting with the FLMs, and by taking this final action, EPA has considered the FLMs' concerns.

Comment: Several commenters asserted that both Utah and EPA imply that nitrate formation in non-winter months is not significant,[123] or that NO_X reductions will not meaningfully reduce nitrates in non-winter months.[124] Both are untrue. Based on IMPROVE data, light extinction attributable to ammonium nitrate in non-winter months is roughly 20% of that attributable to ammonium sulfate. Despite the preferential formation of ammonium sulfate year round and higher ammonium nitrate formation in winter months, it is clear that significant levels of ammonium nitrate also form in non-winter months, and that these are likely to be lowered by reductions in NO_X emissions. Furthermore, while EPA notes that wintertime conditions favor nitrate formation (versus non-winter),[125] this is accounted for in modeling and cannot be used to discount those results.

Response: We partially agree with the comment. While EPA did not suggest that nitrate in non-winter months is not significant, IMPROVE monitoring data do show that nitrate light extinction is highest in winter and substantially smaller in the other seasons. For example, in 2014, the most recent year of IMPROVE data available at the Canyonlands monitor, nitrate contributed an average of 31% of total light extinction in December to February compared to an average of 5% of total light extinction from March to November. In 2013, nitrate contributed an average of 45% of total light extinction in December to February compared to an average of 7.5% of total light extinction from March to November. By contrast, sulfate light extinction is relatively constant across the four seasons.[126]

Nonetheless, overall nitrate extinction at the affected areas is significant, particularly on the 20% worst days. For example, at Canyonlands on the 20% worst days, nitrate contributed 33% and 17% of total extinction in 2013 and

[119] *The Application of Rocky Mountain Power for Approval of a General Rate Increase,* No. 20000–446–ER–14, Wyoming Public Service Commission, (Jan. 23, 2015) (Findings of Fact, Conclusions of Law, Decision and Order Nunc Pro Tunc) (Available in docket at *https://www.regulations.gov/#!documentDetail;D=EPA-R08-OAR-2015-0463-0167*). An order from the Idaho Public Commission also discussed the impacts from Carbon's retirement on the transmission system and noted that "[t]he Company states that retiring Carbon may pose a complication with potential transmission system impacts." *See The Application of PacifiCorp DBD DBA Rocky Mountain Power,* Case No. PAC–E–12–08, Order No. 32701, at 1, Idaho Public Utilities Commission (Dec. 27, 2012) (Available in the docket at *https://www.regulations.gov/#!documentDetail;D=EPA-R08-OAR-2015-0463-0167*).

[120] Utah's BART Alternative has the characteristics of an "open market" program where some, but not all, sources in a source category are covered by the SIP measure. EPA Guidance, "Improving Air Quality with Economic Incentive Programs," at 48, 96, 112–118, EPA–452/R–01–001 (Jan. 2001), available at *https://www3.epa.gov/ttn/caaa/t1/memoranda/eipfin.pdf*); 77 FR 11928 (Feb. 28, 2012); 77 FR 46952 (Aug. 7, 2012).

[121] Letter from Carl Daly to Bryce Bird, Re. EPA Region 8 Comments on Utah's February 2015 Draft Regional Haze SIP Revision, at 1 (May 1, 2015). (Available in the docket at *https://www.regulations.gov/#!documentDetail;D=EPA-R08-OAR-2015-0463-0160*).

[122] *Id.*

[123] Utah Staff Review Report at 17, Exhibit 15. Winter months in this context are December, January, and February.

[124] 81 FR 2004, 2023 (EPA says that based on a computational model, "We propose to find that visibility benefits associated with NO_X reductions are much more likely to occur in the winter months because this is when aerosol thermodynamics favors nitrate formation").

[125] *Id.*

[126] See EPA spreadsheet entitled, Canyonlands IMPROVE Monitoring Data for 2013 and 2014 (Available in the in the docket).

2014, respectively. Given the focus of the reasonable progress provisions of the RHR on the 20% worst days, we consider the monitoring data for these days to be more informative than seasonal trends in monitoring data.

We also agree with the commenter that the modeling performed by Utah and EPA accounts for the fact that wintertime conditions favor nitrate formation (versus non-winter). In particular, the CALPUFF modeling performed by Utah and EPA both show that, while there will be some benefits from NO_X controls outside of the winter season, the largest benefits in nitrate reductions occur in winter months.[127] We have taken the strength of the modeling results for winter months into consideration; however, contrary to suggestions that visibility improvements during seasons of peak Class I area visitation should carry more weight, we have evaluated the visibility impacts throughout the entire year, regardless of the season and have given the most weight to those times when the sources in question have the largest impacts. In particular, as explained elsewhere in this document and our RTC document, we have given greater weight to the 98th percentile CALPUFF metric, which captures these highest impact days.

F. Cost of Controls

Comment: Several commenters submitted comments regarding the costs to install SCR at the Hunter and Huntington BART EGUs. PacifiCorp submitted a technical report developed by its consultant, Sargent & Lundy, which criticized numerous aspects of EPA's cost analysis developed by our contractor, Andover Technology Partners (ATP), including catalyst volume, SCR design, project and process contingency costs, and others. The conservation organizations' consultant reviewed PacifiCorp's cost analyses from 2012 and 2014 and provided comments about the validity of PacifiCorp's analyses. The National Park Service supported EPA's cost estimates in the proposed rule and indicated the estimates show that both the combined cost of LNB and SOFA plus SCR (SCR + LNB/SOFA) and the incremental cost of adding SCR to LNB/SOFA are cost-effective and represent BART. The conservation organizations also supported EPA's cost estimates in the proposed rule.

Response: EPA has provided a revised cost analysis to support our final rulemaking. We again used Andover Technology Partners (ATP) for conducting the analysis. We have carefully reviewed the analysis and determined that it appropriately estimates the costs to install SCR at Hunter and Huntington. Of particular note is that in our revised cost analysis, EPA has accepted both the catalyst volume and SCR design suggested by Sargent & Lundy. However, we continue to reject process and project contingency costs and other costs that are double counted, not permissible under the CCM, or are otherwise not justified. The final Andover report and spreadsheet provide further details regarding how each of these costs was addressed in the revised analysis supporting this rulemaking.[128] Also, in our RTC document, we have addressed the specific comments concerning the capital costs that Sargent & Lundy alleges that Andover incorrectly excluded from its analysis, as well as all other comments regarding our cost estimates.

We concur with the National Park Service's and conservation organizations' supportive comments regarding the cost effectiveness of SNCR and SCR. In addition, the revised cost effectiveness estimates that we prepared to support this final rule, when considered along with the other five BART factors, continue to support selection of SCR + LNB/SOFA as BART.

The conservation organizations' comments pertain to the costs that PacifiCorp submitted to the Utah Department of Air Quality, and which Utah included in its SIP submittal to EPA. However, EPA developed separate costs to support our FIP, and has updated those costs in support of our final action. Our RTC document contains additional detail concerning our consideration of these comments.

G. Comparison With Other Regional Haze Actions

Comment: Two commenters agreed with the comparisons we provided in our proposed rule to other BART determinations that EPA used to support our proposed FIP. One commenter disagreed with the comparisons. These comparisons included Cholla,[129] Hayden,[130] and Laramie River Station.[131] The commenter who disagreed asserted that different methodologies were involved in all three cases and that EPA failed to provide comparisons to other actions that did not support the FIP. The commenter provided additional examples from EPA actions in Florida, Montana, and Nebraska that they asserted do not support EPA's Utah FIP decision.

Response: We continue to find that the Cholla, Hayden and Laramie River Station comparisons are among the best to use considering the specifics of our Utah action. The commenter who disagreed with these comparisons did not show that it would make a significant difference to use precisely the same methodology in each of the determinations that EPA chose to rely on. Furthermore, we disagree that the methodology involved in the BART analyses necessarily must be precisely the same for each BART determination in order to use the determinations for comparison purposes. For example, a state may choose to use a slightly different methodology to analyze the BART factors and select BART, which is acceptable so long as the methodology is reasonable and consistent with the statute, RHR, and BART Guidelines. For details, please see the RTC document.

We also disagree that the cited BART determinations in Montana, Florida, and Nebraska are useful comparisons or show that our BART determination here is unreasonable. First, with respect to the Florida action, the cited NO_X BART determination at FPL's Manatee Plant involved two 800 MW oil and natural-gas fired steam turbines. 77 FR 73369, 73377 (Dec. 10, 2012) (proposal). As the two units were equipped with FGR, overfire air systems, staged combustion, LNB, and reburn, SCR was the only available additional control option identified. The total annualized cost of SCR at the two units would be $31 million, from which the state computed a dollar-per-deciview cost of $66 million/dv. *Id.* at 73377. Using these figures, the total (*i.e.* source wide) visibility improvements at the most impacted Class I area, Chassahowitzka NWA, would be 0.47 dv, which is considerably below the source-wide visibility improvement for SCR + LNB/SOFA at Hunter and Huntington of 2.948 dv and 3.848 dv, respectively.[132]

[127] Both Utah and EPA CALPUFF modeling results can be viewed in or obtained from the EPA Region 8 offices by contacting the individual listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.

[128] Andover Technology Partners, *Cost of NO_X BART Controls on Utah EGUs to: EC/R Inc.* (May 13, 2016). Andover Technology Partners is a subcontractor to EC/R Incorporated.

[129] 77 FR 42834 (July 20, 2012) (proposal); 77 FR 72512, 72514–15 (Dec. 5, 2012) (final).

[130] 77 FR 18069 (Mar. 26, 2012) (proposal); 77 FR 76871 (Dec. 31, 2012) (final).

[131] 79 FR 5032, 5099 (Jan. 30, 2014) (final partial approval/partial disapproval of Wyoming regional haze SIP submission).

[132] See also our response to comments on existing controls and the baseline, in which we look at the cost and visibility benefits at Hunter and Huntington of SCR apart from the LNB/SOFA, to

Continued

In addition, the Manatee Plant impacted only one other Class I area, Everglades NP, at nearly twice the distance of Chassahowitzka NWA. In comparison, Hunter and Huntington significantly impact nine Class I areas. Furthermore, the Manatee Plant received a permit to increase natural gas utilization from 5,670 MMBtu/hr to 8,650 MMBtu/hr, which would displace the use of oil and provide additional NO_X reductions. All of these must be considered when examining the state's conclusion that SCR would not be cost-effective for these units, which was primarily based on the dollar-per-deciview cost of $66 million/dv and not on the raw cost-effectiveness number of $3,776/ton. While we are not basing our BART determinations on the dollar-per-deciview metric, for purposes of comparison to Manatee, the dollar-per-deciview cost for Hunter and Huntington would be considerably less than at Manatee, about $23.7 million/dv and $15.8 million/dv, respectively, at the most impacted Class I area, and as mentioned earlier Hunter and Huntington impact many more Class I areas than Manatee.

With respect to the Montana action, EPA stated for PPL Colstrip Units 1 and 2, "we estimated the incremental cost effectiveness of SCR + SOFA (over SNCR + SOFA) to [be] $5,770/ton and $5,887/ton, respectively. Given these costs, we continue to find that SCR + SOFA is not justified *by the visibility improvement that would be provided.*" 77 FR 57864, 57889 (Sept. 18, 2012) (emphasis added). The commenter omits the emphasized language. The visibility improvements for the various NO_X control options for Colstrip Units 1 and 2 can be seen in our proposal action and in general are much lower than those for Hunter and Huntington. See 77 FR 23988, 24026–27, 24034–35 (Apr. 20, 2012). In particular, at Colstrip Unit 1, the visibility improvements from SCR + SOFA at the five impacted Class I areas (which is less than the nine impacted by Hunter and Huntington) ranged from 0.081 to 0.404 dv. At Colstrip Unit 2, the visibility improvements from SCR + SOFA at the same class I areas ranged from 0.091 dv to 0.423 dv. These values are all much less than for the Hunter and Huntington BART units. In any case, our NO_X BART determinations for Colstrip Units 1 and 2 were vacated by the Ninth Circuit Court of Appeals. *Nat'l Parks Conserv. Ass'n* v. *U.S. EPA,* 788 F.3d 1134 (9th Cir. 2014).[133] Finally, commenter's citation to the Nebraska proposal is fully addressed by our response to a similar comment on our Wyoming regional haze action. 79 FR 5032, 5178 (Jan. 30, 2014). Please refer to our RTC document for additional discussion of our comparisons to other BART determinations.

show that even if we agreed with this commenter that the baseline should reflect the installation of LNB/SOFA—which we do not—the selection of SCR as BART would still be reasonable. The numbers used there also compare favorably with Manatee.

H. CALPUFF Modeling

Comment: We received many comments related to both EPA's modeling for the FIP and Utah's modeling for the BART Alternative. In particular, PacifiCorp and its consultant asserted that EPA failed to account for the margin of error in the CALPUFF model and other material limitations of CALPUFF. PacifiCorp also asserted that we should have used CALPUFF version 6.42 in our FIP analysis instead of version 5.8.4. We partially respond to these comments here. Our full responses are contained in our RTC document.

Response: We do not agree with the commenter's criticism of the use of CALPUFF. In promulgating the 2005 BART Guidelines, we responded to comments concerning the limitations and appropriateness of using CALPUFF. In 2005 we explained that CALPUFF is the only EPA-approved model for use in estimating single source pollutant concentrations resulting from the long range transport of primary pollutants. In addition, it can also be used for other purposes such as visibility assessments to account for the chemical transformations of SO_2 and NO_X. As explained earlier, simulating the effect of precursor pollutant emissions on $PM_{2.5}$ concentrations requires air quality modeling that not only addresses transport and diffusion, but also chemical transformations. CALPUFF incorporates algorithms for predicting both. At a minimum, CALPUFF can be used to estimate the relative impacts of BART-eligible sources. *We are confident that CALPUFF distinguishes, comparatively, the relative contributions from sources such that the differences in source configurations, sizes, emission rates, and visibility impacts are well-reflected in the model results.*[134]

EPA also recognized the uncertainty in the CALPUFF modeling results when EPA made the decision (in the final BART Guidelines) to recommend that states use the 98th percentile visibility impairment rather than the highest daily impact value. We made the decision to consider the 98th percentile primarily because the chemistry modules in the CALPUFF model are simplified and likely to provide conservative (higher) results for peak impacts. Since CALPUFF's simplified chemistry could lead to model over predictions, EPA recommended the use of the 98th percentile to avoid giving undue weight to the extreme tail of the distribution.[135] Therefore, in recognizing some of the limitations of the CALPUFF model, we determined that use of the maximum modeled impact may be overly conservative and recommended the use of the 98th percentile value. While recognizing the limitations of the CALPUFF model in the BART Guidelines preamble, EPA concluded that, for the specific purposes of the RHR's BART provisions, CALPUFF is sufficiently reliable to inform the decision making process.[136]

It is further worth noting that the CALPUFF model can both predict higher and lower visibility impacts compared to a photochemical grid model. For example, the 2012 ENVIRON report on *Comparison of Single-Source Air Quality Assessment Techniques for Ozone, $PM_{2.5}$, other criteria pollutants and AQRVs* found that CALPUFF's predictions of the highest 24-hr nitrate and sulfate concentrations were lower than those predicted by the CAMx photochemical grid model in some areas within the modeling domain.[137] Thus, while there is some uncertainty in the absolute visibility impacts and benefits due to the model and some of the simplifications and assumptions used in the BART Guidelines modeling approach, the relative level of impact has been a reliable assessment of the degree of visibility impacts and benefit from controls. Any uncertainties in meteorological conditions that govern the transport and diffusion of pollutants are less important in comparing impacts between two control scenarios, since the

[133] The same commenter notes that the Wyoming and Arizona BART determinations we used for comparison purposes are currently under litigation; however the commenter fails to note that the Montana BART determination they propose for comparison was actually litigated and vacated. With respect to the pending litigation over the Wyoming and Arizona BART determinations, there are other BART determinations such as Colorado's Hayden Station that are comparable, support our selection of SCR + LNB/SOFA, and are not under litigation.

[134] 70 FR 39122 (Jul. 6, 2005) (emphasis added).

[135] "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." 70 FR 39104, 39121 (Jul. 6, 2005).

[136] 70 FR 39123 (Jul. 6, 2005).

[137] Comparison of Single-Source Air Quality Assessment Techniques for Ozone, $PM_{2.5}$, other Criteria Pollutants and AQRVs, ENVIRON, September 2012.

same effects will be included in both the base and the control scenario model simulations.

We also do not agree with the commenter's calculation of a ''margin of error'' for CALPUFF. The notion of a calculated ''margin of error'' is not part of any modeling guidance and has no legal or regulatory basis or applicability here. In addition, the commenter's suggestion that a 2012 report titled ''Documentation of the Evaluation of CALPUFF and Other Long Range Transport Models Using Tracer Field Experiment Data'', EPA–454/R–12–003 (ENVIRON Report) establishes a standard ''margin of error'' for CALPUFF is unfounded. The ENVIRON Report illustrated how well various types of modeling systems are able to capture regional transport. It does not provide any information about the accuracy of any models for predicting secondary $PM_{2.5}$ or visibility, nor does it indicate that the quantitative performance results provided are a presumptive globally applicable ''margin of error.'' Rather, these results are simply a way to compare various modeling systems in terms of performance for skill in long range transport. Thus, we do not agree that the ENVIRON Report provides a presumptive margin of error that can be applied to the modeling results in Utah's SIP or EPA's FIP.

With regard to Utah's use of CALPUFF in its SIP revision specifically, we note that the State was not required to use CALPUFF for purposes of its BART Alternative Demonstration under 40 CFR 51.308(e)(2)(i). Utah or PacifiCorp could have used other EPA-approved models with more advanced chemistry and dispersion techniques to support the BART Alternative demonstration but chose not to do so.

With regard to our use of CALPUFF for purposes of the FIP modeling, as explained in more detail in our RTC document, the legal deadline for challenging EPA's recommendation to use CALPUFF in BART analyses has passed. Furthermore, although the EPA proposed revisions to 40 CFR part 51, appendix W, Guideline on Air Quality Models (''Guideline'') in 2015, these proposed changes to the Guideline do not affect our recommendation in the 2005 BART Guidelines to use CALPUFF in the BART determination process.[138] Rather, as explained in the preamble to the proposed Guideline revisions, we consider it appropriate to continue using CALPUFF for BART determinations, given that the vast majority of BART determinations have been made using CALPUFF.[139]

In particular, for our FIP modeling, we used the current EPA-approved version of CALPUFF (Version 5.8.4, Level 130731). We disagree with the commenters that a new CALPUFF version should be used for the BART determinations. We relied on version 5.8 of CALPUFF because it is the version approved by EPA through a public notice-and-comment rulemaking, in accordance with the Guidelines (40 CFR part 51, appendix W, section 6.2.1.e). Later versions of CALPUFF are not approved by EPA for regulatory purposes, and we do not agree that the changes made to this most recent version of CALPUFF were simple model updates to address bugs. A full evaluation of a new model such as CALPUFF version 6.4 is needed before it should be used for regulatory purposes as errors that are not immediately apparent can be introduced along with new model features.

In response to comments, EPA performed additional modeling analysis to assess the combined benefit of SCR when applied to each of the two BART units at the Hunter facility. We did the same for the Huntington facility. These modeling results are shown in Tables 6 and 7 earlier in this document. Otherwise, we did not receive any comments that convinced us to alter our CALPUFF modeling analysis, and the comments we received do not justify a change in our BART determinations or our evaluation of the State's BART Alternative. We discuss these and other modeling comments in detail in our RTC document.

I. Consideration of Existing Controls

Comment: Several commenters asserted that EPA did not properly take into account the existing pollution control technology in use at the Hunter and Huntington BART units, as required by CAA section 169A(g)(2) and the BART Guidelines. Two of these commenters alleged that EPA was required to consider updated combustion controls, which were installed to comply with Utah's regional haze SIP. The commenters said EPA improperly used 2001–2003 emissions data to establish the baseline emissions for the Utah BART Units and that this is neither realistic nor provides the anticipated emissions as required by the BART Guidelines. The commenters asserted that had EPA relied on more recent emissions data, which reflect the NO_X reductions achieved by some of these newly installed controls, the cost-effectiveness values for SCR would have been higher, while the visibility improvement associated with SCR would have been lower.

Commenters pointed to an 8th Circuit court decision on EPA's final action on the North Dakota regional haze SIP where the Court found that EPA had failed to properly consider the existing pollution control technology at the Coal Creek Station. Commenters also asserted that in other EPA regional haze actions, EPA had adjusted baseline emissions to account for recently installed controls, such as EPA's final actions on the Arizona and Colorado regional haze SIPs, and settlement agreement with EPA Region 8 for the Deseret Bonanza plant. This commenter argued that because EPA had adjusted baseline emissions for some Arizona and Colorado 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 Utah's EGUs as well.

Two final commenters submitted supportive comments regarding the need for using a standard baseline period to provide for greater national consistency. One of these commenters noted examples where EPA has evaluated NO_X BART based on a baseline period from before the installation of the pollution controls, for the Navajo regional haze plan and the Wyoming regional haze plan.

Response: We disagree with comments that EPA failed to consider or unreasonably considered the existing pollution control technology at the Hunter and Huntington BART units. One of the statutory factors EPA is to consider for BART is ''any existing pollution control technology in use at the source.'' 42 U.S.C. 7491(g)(2). The CAA and the BART Guidelines do not specify how states or EPA must ''take into consideration'' this factor. Nor did the Eighth Circuit Court of Appeals specify how existing controls must be taken into account; instead it only examined the meaning of the word ''any,'' holding that EPA misinterpreted the term. *North Dakota* v. *U.S. EPA,* 730 F.3d 750, 762–64 (8th Cir. 2013). The Court did not examine the meaning of the phrase ''take into consideration.'' *See id.* As the statute is silent on how to take into consideration existing controls, under *Chevron U.S.A.* v. *NRDC,* 467 U.S. 837, 843–44 (1984), this silence creates a gap for EPA to fill. As next summarized and detailed in our RTC document, we are reasonably considering existing controls in several ways.

[138] 80 FR 45340, 45350 (July 29, 2015).

[139] *Id.*

First, the BART Guidelines state that existing pollution control technology in use at the source affects the availability of control options and their impacts. 40 CFR part 51, appendix Y, at IV.A. The Guidelines go on to explain 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 part 51, appendix Y, at IV.D.1.6. We have followed this recommendation. We find that the existing combustion controls, LNB/SOFA, cannot be reasonably upgraded, and we are not considering a control option that involves their complete replacement. The post-combustion control options, SNCR and SCR, by their nature can operate independently of combustion controls and without changes to the combustion controls, another way in which we considered the existing controls when evaluating SNCR and SCR.

Consistent with the Guidelines' statement that existing pollution control equipment in use at the source affects the impacts of the control options, we used the sources' 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 Hunter Unit 1, we did not use the baseline emission rate of 0.40 lb/MMBtu, but rather the current emission rate of 0.21 lb/MMBtu that appropriately reflects the installation of LNB/SOFA. 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. This is a reasonable way in which to consider existing pollution control technology.

As discussed in our Wyoming action and in additional detail in our RTC document for this action, baseline emissions should be "a realistic depiction of anticipated annual emissions" *before* the installation of BART. 40 CFR part 51, appendix Y, at IV.D.4.d. Because the LNB/OFA were installed pursuant to Utah's proposed BART determination, we used the period 2001–2003, prior to the installation of LNB/OFA at the Hunter and Huntington BART units, for baseline emissions, which in turn we used to evaluate the cost-effectiveness and visibility of control options. As a result, the existing LNB/OFA were not included in the baseline. According to the commenter, this skewed EPA's analysis.

We disagree. Because we have also considered the existing controls in our final BART determination by examining the cost-effectiveness and visibility benefit of SNCR and SCR relative to the existing LNB/SOFA as well as in tandem with LNB/SOFA, we have avoided any possibility that exclusion of the LNB/OFA from the baseline could result in an unreasonable BART selection. The cost-effectiveness values of SCR and SNCR relative to the existing LNB/SOFA are presented in the per-unit tables for Hunter and Huntington (Tables 2–5) under "Incremental cost-effectiveness." In other words, the cost-effectiveness value for SCR alone (assuming the existing LNB/SOFA) is essentially the same as the incremental cost-effectiveness of SCR + LNB/SOFA as compared to LNB/SOFA that is presented in the tables. As can be seen, the incremental cost-effectiveness values of SCR + LNB/SOFA relative to LNB/SOFA are, for all four units, somewhat lower than the incremental cost-effectiveness of SCR relative to SNCR. As explained in the section giving the rationale for our final action, we find the incremental cost-effectiveness of SCR to be reasonable relative to SNCR; therefore it is also reasonable relative to the existing LNB/SOFA.

Another way to make the same point is to, for the sake of argument, accept (which we do not) commenter's position that the baseline should reflect the LNB/SOFA. In that case, the values in the tables for the incremental cost-effectiveness of SCR + LNB/SOFA relative to LNB/SOFA can serve as a proxy for the average cost-effectiveness of SCR (assuming LNB/SOFA in the baseline). As shown by our comparisons, the incremental cost-effectiveness of SCR + LNB/SOFA is generally reasonable given the visibility benefits. This in turn shows that, even accepting for the sake of argument that LNB/SOFA should be reflected in the baseline, the average cost-effectiveness of SCR remains reasonable. Similar considerations apply to the incremental visibility benefits of SCR + LNB/SOFA relative to LNB/SOFA, which can be used as a proxy for the visibility benefits of SCR alone assuming that LNB/SOFA are reflected in the baseline. As shown by our comparisons, the incremental visibility benefits of SCR + LNB/SOFA relative to SNCR + LNB/SOFA are substantial and justify the costs of SCR. Since the incremental visibility benefits of SCR + LNB/SOFA relative to LNB/SOFA are necessarily larger than the incremental benefits relative to SNCR + LNB/SOFA, the incremental visibility benefits of SCR + LNB/SOFA relative to LNB/SOFA will also justify the costs of SCR. This in turn shows that even if we accepted the commenter's position—which we do not—the visibility benefits of SCR would justify its selection. For our detailed responses, please see our RTC document.

Finally, we acknowledge the supportive comments from two commenters on this issue and agree with many of the points that were made, for reasons explained elsewhere in this document and in our RTC document.

J. PM_{10} BART

Comment: We received several minor comments on Utah's PM_{10} BART determinations. One commenter in particular asserted that Utah underestimated the control effectiveness of baghouses, which should be able to achieve a limit of 0.010 lb/MMBtu or even lower.

Response: EPA agrees that baghouses have very high PM control efficiency capabilities. However, due to the low contribution of direct PM emissions from point sources such as Hunter Units 1 and 2 and Huntington Units 1 and 2[140] to visibility impairment and, consequently, the low anticipated visibility benefits from small PM reductions, lowering the emission limit to 0.010 is unlikely to result in any meaningful visibility improvement. We agree with Utah that the existing PM_{10} emission limit adopted for these sources in Section IX, Part H.22 of Utah's SIP satisfies BART for these units. We are finalizing our approval of Utah's PM_{10} BART determination at Hunter Units 1 and 2 and Huntington Units 1 and 2. We find that an emission limit of 0.015 lb/MMBtu represents what can be continuously achieved with a properly operated baghouse on these units. The fabric filters (*i.e.,* baghouses) at Hunter and Huntington are all new since they were installed after 2008. Recent PSD BACT limits for coal-fired EGUs with new baghouses have typically ranged from 0.01 to 0.015 lb/MMBtu using Method 5.

In addition, we note that the latest revision to the EGU New Source Performance Standards (NSPS) requires modified units to meet a PM limit of 0.015 lb/MMBtu.[141] Also, the EGU MATS rule set a PM emissions standard

[140] See Western Regional Air Partnership Regional Haze Rule Reasonable Progress Summary Report, Air Resource Specialist, Inc., State and Class I Area Summaries, Appendix p. 6–29, Table 6.13–19 (June 28, 2013). Available in the docket and at *http://www.wrapair2.org/RHRPR.aspx.*

[141] 77 FR 9450 (Feb. 16, 2012) (codified at 40 CFR 60.42Da).

of 0.03 lb/MMBtu as MACT for existing EGUs, and the BART Guidelines provide that, "unless there are new technologies subsequent to the MACT standards which would lead to cost-effective increases in the level of control, you may rely on the MACT standards for purposes of BART." [142] Therefore, we are finalizing our proposed approval of Utah's BART determination for PM_{10} at Hunter Units 1 and 2 and Huntington Units 1 and 2.

K. Environmental Justice

Comment: One commenter requested that EPA's FIP address any disproportionately high and adverse human health, economic, and environmental impacts on minority and low-income communities in Utah due to the regional haze plan. The commenter noted that this may be accomplished consistent with federal Executive Order 12898, which establishes environmental justice policy. The commenter also noted that societal costs such as general public health costs associated with poor air quality should be considered in the environmental justice analysis.

Response: In making a final determination in this case, EPA considered Executive Order 12898, which establishes federal executive policy on environmental justice. This Executive Order 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. EPA has determined that this final rule will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations. The installation of SCR at the two facilities will ensure greater emissions reductions of NO_X resulting in overall increases in the level of environmental protection for all affected populations.

EPA disagrees with the comment that societal costs such as general public health costs associated with poor air quality should be considered in the environmental justice analysis for this action. As addressed elsewhere in our RTC document, neither section 169A of the CAA, nor the BART Guidelines, require the BART analysis to include or quantify benefits to health, as health impacts are appropriately addressed under other CAA programs. Moreover, an analysis of societal costs is unlikely to alter the impact relating to environmental justice concerns because the final rule will result in greater protection for all affected populations as a result of the installation of the most stringent control technology available for NO_X.

III. Final Action

For the reasons discussed more fully in sections I and II and detailed in our proposal and its accompanying supporting materials, in this action, we are partially approving and partially disapproving revisions to the Utah SIP submitted by the State of Utah on June 4, 2015. We are taking no action on the Utah SIP submittal of October 20, 2015.

Section 110(k)(3) of the Act addresses the situation in which an entire submittal, or a separable portion of a submittal, meets all applicable requirements of the Act. In the case where a separable portion of the submittal meets all the applicable requirements, partial approval may be used to approve that part of the submittal and disapprove the remainder. Since the portions of the regional haze SIP submittal we are approving are separable from the portions we are disapproving as explained earlier, each approved PM_{10} BART determination for a particular pollutant for a given source will have an enforceable date of five years from the date of EPA's approval.

Under section 110(k)(4) of the Act, EPA may approve a submittal based on a commitment of the State to adopt specific enforceable measures no later than one year after the date of approval of the submittal. We are conditionally approving the State's recordkeeping requirements for the PM BART emission limitations based on Utah's commitment to adopt and submit certain measures to address the deficiencies in the recordkeeping requirements. If the State fails to adopt and submit these measures within one year of this action, our conditional approval will be treated as a disapproval.

Under section 110(c)(1)(B) of the Act, within two years of disapproving a required submittal in whole or in part, EPA must promulgate a FIP to address the deficiencies, unless the State corrects the deficiencies through a submittal and EPA approves the submittal before we promulgate a FIP. As a result of our prior disapproval of Utah's PM and NO_X BART submittals in 2012, there was a pending obligation for EPA to promulgate a FIP for PM and NO_X BART. In this action, we are promulgating a FIP for NO_X BART. Because we are approving Utah's revised PM BART submittal, which corrects the previous deficiencies in the original PM BART submittal, there is no longer an obligation for EPA to promulgate a FIP for PM BART. Thus, EPA has discharged its FIP obligations with respect to PM and NO_X BART for the State of Utah.

A. Final Partial Approval

1. We are approving these elements of the State's SIP submittals, which rely on elements from prior approvals: [143]

- BART determinations and emission limits for PM_{10} at Hunter Units 1 and 2 and Huntington Units 1 and 2.
- Monitoring, recordkeeping, and reporting requirements for units subject to the PM_{10} emission limits, including conditional approval of the recordkeeping requirements for the PM_{10} emission limits.

B. Final Partial Disapproval and Federal Implementation Plan

1. We are disapproving these aspects of the State's June 4, 2015 SIP submittal:

- NO_X BART Alternative that includes NO_X, and SO_2 emission reductions from Hunter Units 1 through 3, Huntington 1 and 2, and Carbon Units 1 and 2, and PM_{10} emission reductions from Carbon Units 1 and 2.
- Monitoring, recordkeeping and reporting requirements for units subject to the BART Alternative.

2. We are promulgating a FIP to address the deficiencies in the Utah regional haze SIP. The FIP includes the following elements:

- NO_X BART determinations and limits for Hunter Units 1 and 2, Huntington Units 1 and 2.
- Monitoring, recordkeeping, and reporting requirements applicable to Hunter Units 1 and 2, and Huntington Units 1 and 2.

C. No Action

1. We are taking no action on the State's October 20, 2015 SIP submittal which includes the following:

- The enforceable commitments to revise, at a minimum, SIP Section XX.D.3.c and State rule R307–150 by March 2018.

[142] 40 CFR part 51, appendix Y, section IV.C. While the Supreme Court reversed the D.C. Circuit's judgment on the MATS rule, the Supreme Court did so based on EPA's approach to the "appropriate and necessary" finding, not EPA's determination of MACT for EGUs. *Michigan* v. *EPA*, 135 S. Ct. 2699 (2015).

[143] As necessary for our approval, we are filling gaps in the 2015 Utah regional haze RH SIP submittals with the following already-approved sections from the 2011 Utah RH SIP: Section XX.B.8, Figures 1 and 2, Affected Class I Areas, pp. 8–9; Section XX.D.6.b, Table 3, BART-Eligible Sources in Utah, p. 21; Section. XX.D.6.c, Sources Subject to BART, pp. 21–23.

IV. Incorporation by Reference

In this rule, the EPA is finalizing regulatory text that includes incorporation by reference. In accordance with requirements of 1 CFR 51.5, the EPA is finalizing the incorporation by reference of the Utah Administrative Code discussed in section III, Final Action of this preamble. The EPA has made, and will continue to make, these documents generally available electronically through *www.regulations.gov* and/or in hard copy at the appropriate EPA office (see the **ADDRESSES** section of this preamble for more information).

V. 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 exempt from review by the Office of Management and Budget (OMB) because this final rule applies to only two facilities containing four BART units. 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 (PRA).[144] Because this final rule applies to just two facilities, the PRA does not apply.

C. Regulatory Flexibility Act

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

EPA is partially disapproving the State's SIP submittal and promulgating a FIP that consists of imposing federal controls to meet the BART requirement for emissions on four specific BART units at two facilities in Utah. The net result of this action is that EPA is requiring direct emission controls on selected units at only two sources, and those sources are large electric generating plants that are not owned by small entities, and therefore the owners are not a small entities under the RFA.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain an unfunded mandate of $100 million or more as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments.

EPA has determined that Title II of the UMRA does not apply to this rule. In 2 U.S.C. 1502(1) all terms in Title II of UMRA have the meanings set forth in 2 U.S.C. 658, which further provides that the terms "regulation" and "rule" have the meanings set forth in 5 U.S.C. 601(2). Under 5 U.S.C. 601(2), "the term 'rule' does not include a rule of particular applicability relating to . . . facilities." Because this rule is a rule of particular applicability relating to all four BART units at the Hunter and Huntington plants, EPA has determined that it is not a "rule" for the purposes of Title II of the UMRA. The private sector expenditures that result from promulgating a FIP include BART controls for all four units at the Hunter and Huntington plants are $58.6 million[145] per year. Additionally, we do not foresee significant costs (if any) for state and local governments. Thus, because the annual expenditures associated with promulgating a FIP are less than the threshold of $100 million in any one year, this final rule is not subject to the requirements of sections 202 or 205 of UMRA. This final rule is also not subject to the 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

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

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action 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 action.

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

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of "covered regulatory action" in section 2–202 of the Executive Order. This action is not subject to Executive Order 13045 because the EPA does not believe the environmental health or safety risks addressed by this action present a disproportionate risk to children. Moreover, "regulation" or "rule," is defined in Executive Order 12866 as "an agency statement of general applicability and future effect." E.O. 12866 does not define "statement of general applicability," but this term commonly refers to statements that apply to groups or classes, as opposed to statements, which apply only to named entities. The FIP therefore is not a rule of general applicability because its requirements apply and are tailored to only the Hunter and Huntington plants, which are individually identified facilities. Thus, it is not a "rule" or "regulation" within the meaning of E.O. 12866. However, as this action will limit emissions of NO_X, it 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, because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act

This rulemaking does not involve technical standards.

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

The EPA believes that this action does not have disproportionately high and adverse human health or environmental effects on minority populations, low-income populations and/or indigenous peoples, as specified in Executive Order 12898 (59 FR 7629, February 16, 1994).

The documentation for this decision is contained within the docket in a document entitled "Environmental Justice Analysis, November 2015." This final rule will result in overall emission reductions for NO_X, and PM_{10} and therefore an increase in the level of environmental protection for all affected populations.

K. Congressional Review Act

This action is not subject to the CRA because this is a rule of particular applicability. Additionally, this action

[144] 44 U.S.C. 3501 *et seq.*

[145] Andover Technology Partners, *Cost of NO_X BART Controls on Utah EGUs*, to EC/R, Inc. (May 13, 2016). Andover Technology Partners is a subcontractor to EC/R Incorporated.

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is not a ''major rule'' as defined by 5 U.S.C. 804(2).

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 September 6, 2016. 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).

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

List of Subjects in 40 CFR Part 52

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

Dated: June 1, 2016.

Gina McCarthy,

Administrator.

40 CFR part 52 is amended as follows:

PART 52—APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS

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

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

Subpart TT—Utah

* 2. Section 52.2320 is amended by:

* a. In the table in paragraph (c), under the heading ''R307–110. General Requirements: State Implementation Plan'' revising the entry ''R307–110–17.''

* b. In the table in paragraph (e), under the heading ''XVII. Visibility Protection'' adding in numerical order the entry ''Section XX.D.6. Best Available Retrofit Technology (BART) Assessment for NO_X and PM''.

The revision and addition read as follows:

§52.2320 Identification of plan.

* * * * *

(c) * * *

Rule No.	Rule title	State effective date	Final rule citation, date	Comments
*	*	*	*	*
R307–110. General Requirements: State Implementation Plan				
*	*	*	*	*
R307–110–17.	Section IX. Control Measures for Area and Point Sources, Part H, Emissions Limits.	6/4/2015	[Insert **Federal Register** citation] 7/5/2016.	Except for Section IX.H.21.e. which is conditionally approved through one year from [Insert date of publication in the **Federal Register**], IX.H.21.g., Sections of IX.H.21 that reference and apply to the source specific emission limitations disapproved in Section IX.H.22, and Sections IX.H.22.a.ii-iii, IX.H.22.b.ii, and IX.H.22.c.
*	*	*	*	*

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(e) * * *

Rule title	State effective date	Final rule citation, date	Comments
*	*	*	*
XVII. Visibility Protection			

ED_001237_00159506-00154

Rule title	State effective date	Final rule citation, date	Comments
* *	*	* *	* *
Section XX.D.6. Best Available Retrofit Technology (BART) Assessment for NO_X and PM.	6/4/2015	[Insert **Federal Register** citation] 7/5/2016.	Except for XX.D.6.a the phrase "and BART for NO_X through alternative measures under 40 CFR 51.308(e)(2)"; XX.D.6.c; XX.D.6.d the phrase "NO_X and" in the first sentence, the entire last sentence in the introductory paragraph, all SO_2 and NO_X provisions and the word "Permitted" in the "Utah Permitted Limits" column in Table 5, "Hunter 3" and the Hunter limits, and all provisions in the "Presumptive BART Rates" column in Table 5; XX.D.6.e the phrase ", and pursuant to 51.308(e)(2)(E)(3) all alternative measures must take place within the first planning period", the rows beginning with "Hunter 3", "Carbon 1" and "Carbon 2" in Table 6, and the entire paragraph immediately following Table 6.
* *	*	* *	* *

* 3. Section 52.2336 is added to read as follows:

§52.2336 Federal 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 Utah:

(i) PacifiCorp Hunter Plant Units 1 and 2; and

(ii) PacifiCorp Huntington Plant Units 1 and 2.

(2) [Reserved]

(b) *Definitions.* Terms not defined in this paragraph (b) 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 of this section.

(3) *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.

(4) *FIP* means Federal Implementation Plan.

(5) The term *lb/MMBtu* means pounds per million British thermal units of heat input to the fuel-burning unit.

(6) NO_X means nitrogen oxides.

(7) *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.

(8) The *owner/operator* means any person who owns or who operates, controls, or supervises a unit identified in paragraph (a) of this section.

(9) *Unit* means any of the units identified in paragraph (a) of this section.

(c) *Emission limitations.* (1) The owners/operators of emission units subject to this section shall not emit, or cause to be emitted, NO_X in excess of the following limitations:

TABLE 1 TO §52.2336—EMISSION LIMITATIONS FOR BART UNITS

Source name/BART unit	NO_X Emission limitation—lb/MMBtu (30-day rolling average)
PacifiCorp Hunter Plant/Unit 1 [1]	0.07
PacifiCorp Hunter Plant/Unit 2 [1]	0.07
PacifiCorp Huntington Plant/Unit 1 [1]	0.07
PacifiCorp Huntington Plant/Unit 2 [1]	0.07

[1] The owners and operators of PacifiCorp Hunter Units 1 and 2 and Huntington Units 1 and 2, shall comply with the NO_X emission limit for BART of 0.07 lb/MMBtu and other requirements of this section by August 4, 2021.

(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 Hunter Units 1 and 2 shall comply with the NO_X emission limitation of 0.07 lb/MMBtu and other requirements of this section by August 4, 2021. The owners and operators of PacifiCorp Huntington Units 1 and 2 shall comply with the NO_X emission limitation of 0.07 lb/MMBtu and other requirements of this section by August 4, 2021.

(2) [Reserved]

(e) *Compliance determinations for* NO_X. (1) For all BART 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) [Reserved]

(f) *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.

(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.

(g) *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.

(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 (g)(1) and (2) of this section.

(h) *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.

(i) *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.

(j) *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.

[FR Doc. 2016–14645 Filed 7–1–16; 8:45 am]

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Exhibit C
PacifiCorp v. EPA, Consolidated Case Nos. 16-9541, 16-9542, 16-9543, 16-9545

PacifiCorp's Request for Reconsideration and Request for Administrative Stay of EPA's Final Rule: "Approval, Disapproval and Promulgation of Air Quality Implementation Plans; Partial Approval and Partial Disapproval of Air Quality Implementation Plans and Federal Implementation Plan; Utah; Revisions to Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze." Docket ID No. EPA-R08-OAR-2015-0463
(Sep. 2, 2016)

PACIFICORP
A BERKSHIRE HATHAWAY ENERGY COMPANY

William K. Lawson
Director, Environmental Services
1407 West North Temple, Suite 210
Salt Lake City, Utah 84116
801.220.4581 (Office)

September 2, 2016

Via E-Mail and Overnight Mail

The Honorable Gina McCarthy
Administrator, U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460
(McCarthy.Gina@epa.gov)

Shaun McGrath
Region 8 Administrator
U.S. Environmental Protection Agency
1595 Wynkoop Street
Denver, Colorado 80202
(r8eisc@epa.gov)

Re: Request for Reconsideration and Request for Administrative Stay of EPA's Final Rule: "Approval, Disapproval and Promulgation of Air Quality Implementation Plans; Partial Approval and Partial Disapproval of Air Quality Implementation Plans and Federal Implementation Plan; Utah; Revisions to Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze; Final Rule." Docket ID No. EPA-R08-OAR-2015-0463

Dear Administrators McCarthy and McGrath:

PacifiCorp respectfully requests that the U.S. Environmental Protection Agency ("EPA" or "Agency") reconsider and grant an immediate administrative stay of the compliance deadline and toll the effective date of certain requirements in the Agency's final rule cited above. 81 Fed. Reg. 43894 (July 5, 2016) ("Final Rule"). Specifically, PacifiCorp requests EPA reconsider and administratively stay the best available retrofit technology ("BART") requirements related to nitrogen oxide (NO_x) emission control equipment ("BART NO_x FIP") at PacifiCorp's Hunter power plant (Units 1 and 2) and Huntington power plant (Units 1 and 2) ("collectively Utah BART Units). PacifiCorp also requests EPA reconsider its disapproval of Utah's regional haze state implementation plan.

As the majority owner and operator of Hunter Units 1 and 2, and the owner and operator of Huntington Units 1 and 2, PacifiCorp will be forced to begin spending

millions of dollars (a total of **over one half billion dollars** of capital costs by EPA's estimate) to prepare to install selective catalytic reduction ("SCR") systems required under the BART NO_x FIP —expenditures that would be wholly unnecessary if PacifiCorp's legal challenges to the BART NO_x FIP are successful. Because these legal challenges are based on sound legal principles and are likely to succeed on the merits, and because a stay is in the public interest and necessary to prevent irreparable harm to PacifiCorp and PacifiCorp's customers, EPA should grant PacifiCorp's stay request. In contrast, no significant harm will result to either EPA or the public from a stay of the Final Rule – particularly because many of the emission reductions and resulting visibility improvements contemplated under the Final Rule already are in place as required by the Utah SIP, and the Final Rule does not require further emission reductions until 2021.

PacifiCorp is likely to succeed on the merits because the BART NO_x FIP is contrary to applicable law. First, EPA improperly rejected the State of Utah's regional haze state implementation plan ("Utah RH SIP"). Second, EPA failed to conduct an adequate statutory five-factor BART analysis to justify SCR for the Utah BART Units, and EPA has taken contradictory positions regarding the results of the BART analysis it did conduct. Not only do EPA's analysis and BART NO_x FIP disregard the Congressional mandate that states have the primary role in designing regional haze programs, they undermine the State of Utah's goal of improving visibility at a reasonable and responsible pace without causing unnecessary economic distress from higher electricity rates. EPA's rejection of the Utah RH SIP and imposition of the BART NO_x FIP are also inconsistent with EPA's BART determinations in other states.

PacifiCorp thus requests EPA to grant an immediate stay of the BART NO_x FIP and to reconsider its rejection of the Utah RH SIP and BART Alternative. PacifiCorp respectfully requests EPA act on this application by September 29, 2016. PacifiCorp will treat EPA's failure to act on this application by that date as a constructive denial of its request for stay.

I. Background

I.A. PacifiCorp's BART-eligible units in Utah.

PacifiCorp, which operates in Utah under the business name Rocky Mountain Power, supplies electricity to more than 1.8 million residential and business customers in the state of Utah and five other western states. As stated, PacifiCorp owns, in majority or whole, and operates the Utah BART Units.[1] PacifiCorp also owns a third unit at the Hunter plant, which is not BART-eligible, and is the owner of the Carbon plant, which closed in 2015. The Utah BART Units are the only sources in the state that Utah and EPA have determined to be subject to the Clean Air Act's ("CAA" or "the Act") BART requirements. As a result, the State of Utah, PacifiCorp and PacifiCorp's customers will

[1] Deseret Generation & Transmission Cooperative, Utah Associated Municipal Power Systems, and Utah Municipal Power Agency are co owners of, and receive a portion of, the electrical output from certain affected units at the Hunter power plant. As a result, these entities and their customers will be similarly impacted by the Final Rule. The Huntington power plant is wholly owned and operated by PacifiCorp.

be uniquely and directly affected by EPA's final action regarding BART determinations in the Utah RH SIP.[2]

I.B. The NO_x history of the Utah BART Units.

The State of Utah has consistently submitted timely RH SIPs as required by the CAA. EPA, on the other hand, has not fulfilled its statutory duty to approve or disapprove these SIPs by hard deadlines established in the Act. *See* 42 U.S.C. § 7410(k)(1)(B) (requiring EPA to issue a finding of completeness within 60 days of a SIP submittal) and 7410(k)(2) (requiring EPA to issue a decision approving or disapproving the SIP within 12 months of finding a submission complete). Utah submitted RH SIPs in 2003 and 2008 that EPA failed to act on. As required by the CAA (42 U.S.C. § 7410(a)(2)), a Utah SIP becomes state law upon approval by the Utah Air Quality Board ("Board"), which is a necessary step before the SIP can be submitted to EPA. Thus PacifiCorp was, and is, legally bound by a Board-approved RH SIP even though EPA may never act on or approve that SIP.

The State of Utah submitted a RH SIP in 2003 (four years before EPA's deadline) and a revision in 2008 with requirements to make reasonable progress towards natural visibility in national parks and other similarly protected areas within its borders. *See* 42 U.S.C. § 7491. Utah's RH SIP revision in 2008 included NO_x BART determinations for the Utah BART Units. While EPA submitted comments to Utah on the NO_x BART determinations during the State comment process (to which the State responded in the final version), EPA did not act within the statutory deadlines to approve or disapprove the 2008 RH SIP submission as required by the CAA. In fact, EPA waited approximately four years before taking formal action on the 2008 RH SIP submittal. However, because the SIP submission became Utah law in 2008 (through amendments to Utah's State Implementation Plan, Section XX, Regional Haze, which were incorporated into state law through R307-110-28), PacifiCorp was legally required to install low NO_x burners and separated over-fire air ("LNB/SOFA" or "2008 BART Controls") on the Utah BART Units, which it did from 2009-2014.

Utah submitted additional RH SIP revisions to EPA on December 20, 2010 and May 26, 2011. The 2010 revisions clarified the NO_x BART determinations, while the 2011 submittal contained minor revisions related to the SO_2 BART Alternative SO_2 trading program. In the interim, EPA had been sued by WildEarth Guardians over its failure to act on Utah's 2008 RH SIP submission. EPA settled this suit with WildEarth Guardians through a consent decree, which required EPA to act on the 2008 Utah RH SIP by April 30, 2012.[3] Acting to meet this deadline, but over Utah's and PacifiCorp's objections, EPA disapproved the State's BART determinations for NO_x and PM_{10}, while approving an SO_2 BART Alternative, the SO_2 backstop trading program. 77 Fed. Reg. 74355 (Dec. 14, 2012). EPA did not issue a FIP at this time. In response, Utah worked

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[2] References to the Utah RH SIP include all supporting documents.

[3] EPA incorrectly portrayed the 2011 SIP revisions as replacing the 2008 RH SIP, including the BART NO_x determinations in its 2016 Proposed Rule. However the BART NO_x determinations were only clarified, not replaced, by the 2011 SIP revisions. *See* 81 Fed. Reg. 2004, 2012 (Jan. 14, 2016).

closely with EPA to find a solution that would meet the applicable requirements of the CAA and satisfy EPA demands for the NO_x BART.

Based on more than ten years of working collaboratively with both EPA and a Regional Planning Organization ("RPO") overseen by EPA, Utah has developed considerable knowledge and data regarding the most effective way to achieve greater "reasonable progress" at the Class I areas in Utah. Building on this expertise and local knowledge, and in close consultation with EPA, Utah submitted a revised RH SIP in 2015 – again at the request of EPA – which included extensive analysis supporting a BART Alternative for NO_x that would achieve greater reasonable progress than the most stringent BART option of SCR. The submission also provided an updated BART determination for PM_{10}. At EPA's request, Utah submitted an additional RH SIP revision on October 20, 2015, with additional measures to ensure that the SO_2 emission reductions for the BART Alternative were accurately and transparently accounted for. EPA requested this additional RH SIP so that a potential obstacle to approval of the BART Alternative – that SO_2 emission reductions under the BART Alternative might be double counted – would be removed. EPA further commented on the BART Alternative for NO_x during the state rulemaking phase with the goal of helping Utah make sure that the BART Alternative met applicable CAA requirements.[4] As a result, Utah's determination that the BART Alternative would achieve greater reasonable progress represented extensive public involvement (including extensive involvement by EPA) through Utah's public hearings and comment period.

After this lengthy history and close collaboration, EPA chose to issue a confusing and contradictory bifurcated proposed rule, where EPA found Utah's weight-of-evidence analysis for the BART Alternative simultaneously to be both adequate and inadequate to meet the requirements of the CAA. EPA, Utah RH SIP Proposed Rule, 81 Fed. Reg. 2004 (Jan. 14, 2016) ("Proposed Rule"). EPA then disapproved the BART Alternative portion of the SIP on July 5, 2016, implying alleged violations of unidentified CAA "applicable requirements" in the way Utah analyzed the evidence for the BART Alternative. *See, e.g.*, 81 Fed. Reg. 43894, 43909, 43911-12.

II. Request for Reconsideration

II.A. EPA should reconsider the Final Rule because issues of central relevance were unavailable (and thus impracticable) to comment on during the period for public comment.

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[4] EPA claims that no one can rely on EPA's statements or representations prior to a final rule: "EPA comment letters are intended to help improve any SIP revision that is under development, but they do not constitute agency action on that SIP revision or constitute any assurance of positive action. . . ." 81 Fed. Reg. at 43911. However, EPA offered its help in this instance specifically intending for it to be relied upon. And indeed it was. EPA does itself, the states, regulated sources and the public a disservice if, as the federal agency charged with helping states (and BART sources) comply with the CAA, its comments and directive assistance for SIP development are mere platitudes. EPA's efforts to improve SIP revisions, however, only ring hollow as EPA now asserts that any such help – here and in the future – is inherently unreliable and in fact should never be relied upon.

EPA proposed amendments to the nationwide Regional Haze Rule on May 4, 2016, that included issues of central relevance to the Final Rule. 81 Fed. Reg. 26942 ("2016 RH Rule Amendments"). The public comment period in the Proposed Rule for the Utah RH SIP/EPA FIP closed on March 14, 2016. 81 Fed. Reg. at 2004. Although PacifiCorp submitted comments to EPA addressing the issues raised by the 2016 RH Rule Amendments, EPA refused to consider PacifiCorp's comments because they were submitted after the close of the comment period for the Utah RH SIP. *See* EPA, Response to Comments for the Federal Register Notice for Air Quality State Implementation Plans (Utah) (June 1, 2016) EPA-R08-OAR-2015-0463 ("RH RTC") at 8, note 1. However, because the issues raised by the 2016 RH Rule Amendments are of central relevance and may have tipped the weight of evidence against EPA's decisions to reject the BART Alternative and to impose the BART NO_x FIP in the Final Rule, EPA should reconsider the Final Rule.

The CAA requires the Administrator of EPA to convene a reconsideration proceeding if "it was impracticable to raise [an] objection" to a final EPA action within the time for public comment or if "the grounds for such objection arose after the period for public comment (but within the time specified for judicial review)" and such objection is "of central relevance to the outcome of the rule." 42 U.S.C. § 7607(d)(7)(B). The CAA further provides that "[a]ll documents which become available after the proposed rule has been published and which the Administrator deems are of central relevance to the rulemaking shall be placed in the docket as soon as possible after their availability." 42 U.S.C. §7607(d)(4)(B)(i). As explained by the 6th Circuit Court of Appeals:

> The D.C. Circuit has read this portion of the Clean Air Act as permitting the EPA to consider comments submitted after the close of the comment period. *Sierra Club v. Costle*, 657 F.2d 298, 397-98 (D.C.Cir. 1981). This seems a reasonable interpretation of section 7667(d)(4)(B)(i), since this subparagraph refers both to comments submitted during the comment period and comments submitted afterward.

Air Pollution Control Dist. of Jefferson County v. EPA, 739 F.2d 1071, 1081 (6th Cir. Ct. App. 1984).

EPA should consider the 2016 RH Rule Amendments because they include information of central relevance to the outcome of the Final Rule. "[N]ew information . . . may dictate a revision or modification of any promulgated standard or regulation." *Oljato Chapter of Navajo Tribe v. Train*, 515 F.2d 654, 660 (D.C. Cir. 1975) (citing legislative history); *see also Maier v. EPA*, 114 F.3d 1032, 1037 (10th Cir. 1997) (citing *Oljato*). Because EPA's 2016 RH Rule Amendments were issued after the comment period for the Final Rule, EPA did not consider the following key issues of central relevance to its decisions: (1) reductions in anthropogenic emissions have had limited impact on visibility improvements for Class I areas in the Western United States; and (2) when determining visibility impacts, EPA recommends states compare those days with the most impairment from *anthropogenic* sources rather than just the days with the most

haze. Because EPA did not take into account or receive meaningful comments on these centrally relevant factors it did not properly consider them. Thus, reconsideration is appropriate.

II.A.1 The 2016 RH Rule Amendments add sufficient weight for EPA to approve the BART Alternative.

In the 2016 RH Rule Amendments, EPA advises states to measure visibility impairment "based on anthropogenic visibility impairment rather than based on the days with highest deciview values due to impacts from all types of sources." 81 Fed. Reg. at 26955. As EPA explains, the current Regional Haze Rule "could be read to direct states and the EPA to use the days with the most perceptible *anthropogenic* impairment as the 20 percent most impaired days." *Id.* (emphasis added). These conclusions from the 2016 RH Rule Amendments support Utah's consideration of a variety of visibility-related data, such as the Annual Emissions Comparison as well as the IMPROVE Monitoring Data, rather than just the 98th Percentile modeling metric (which EPA relied on exclusively). *See* Sections III.A.3, 4, and 7 *infra* outlining EPA's disapproval of the Utah RH SIP based on an evaluation of these metrics that contradicts the 2016 RH Rule Amendments.

EPA admits that, while visibility improvement has been significant in the East (where source-specific BART was largely avoided and BART Alternatives were used), some areas in the West have not experienced significant improvement because "reduced emissions from man-made sources have been overwhelmed by impacts from wildfire and/or dust events." *Id.* at 26946. This admission is significant and translates to an admission that the modeled visibility improvements, upon which EPA relies to reject the BART Alternative, often do not translate into real visibility improvements in western Class I areas. This aligns with and supports Utah's findings, based on the IMPROVE monitoring data, that reductions in anthropogenic NO_x emissions are not reliably linked to visibility improvements. *See* Utah DAQ Staff Review, 2008 PM BART Determination and Recommended Alternative to BART for NO_x, May 13, 2015, at 1-14 through 1-19 ("Staff Report").

EPA also endorses strategies developed by RPOs to best identify and address the pollutants that contribute to haze within specific regions. 81 Fed. Reg. at 26947. This supports Utah's reliance on increased SO_2 reductions to compensate for slightly lower NO_x reductions under the BART Alternative, since the RPOs (the Western Regional Air Partnership, or "WRAP," in this instance) have identified SO_2 as the most significant anthropogenic pollutant contributing to the haze on the Colorado Plateau. *See* GCVTC Report at 32-33; WRAP Report at 6-11 through 6-16. *See also* Section III.A.7 *infra* outlining EPA's rejection of Utah's Annual Emissions metric, which relies on SO_2 as the pollutant with the greatest impact on visibility for Class I areas on the Colorado Plateau.

II.A.2 The 2016 RH Rule Amendments undermine EPA's decision that SCR is reasonable as BART.

The same findings discussed above support PacifiCorp's objection that SCR is not reasonable as BART in EPA's FIP. First, the 2016 RH Rule Amendments verify that

emission reductions from stationary sources have not led to improved visibility in some areas in the West. Instead, the questionable impacts from anthropogenic NO_x emissions reductions in the West, call into question EPA's modeled visibility improvements for the affected Class I areas. EPA's BART analyses use modeled visibility improvements to support its FIP, predicting a combined 6.4 dv modeled visibility improvement (1.5 dv + 1.3 dv + 1.9 dv + 1.7 dv) from the installation of LNB/SOFA/SCR at all of the Utah BART Units. 81 Fed. Reg. at 43903-04, Tables 2, 3, 4, and 5. Yet, as now conceded in the 2016 RH Rule Amendments, such modeled visibility improvements do not reliably translate to real visibility improvement in all western Class I areas. EPA recognizes that there "are . . . some western areas were visibility has changed only by a slight amount." 81 Fed. Reg. at 26946. EPA has a statutory duty to determine the "degree of improvement in visibility which *may reasonably be anticipated to result* from the use of such technology." 42 U.S.C. § 7491(g)(2) (emphasis added).

Given this statutory duty and the information referred to in the 2016 RH Rule Amendments, EPA should stay the Final Rule and commence a "reconsideration" proceeding to (1) consider the BART controls already required for these "western areas" where little to slight visibility improvement occurred, (2) determine why those BART controls did not result in greater visibility improvement, (3) determine the difference between the modeled and actual visibility improvements for these western areas, (4) identify why EPA's modeled visibility data were incorrect, and (5) then apply the lessons learned to EPA's BART determination for the Utah BART Units. This analysis on reconsideration is particularly important where, as here, data presented by Utah show a lack of actual monitored visibility improvements from previous NO_x emissions reductions. *See* Staff Report at 1-14 through 1-19.

Further, the 2016 RH Rule Amendments underscore that BART controls must be implemented before the compliance deadline of the first implementation period, which is July 31, 2018. *See* 2016 RH Rule Amendments at 26965. Although EPA proposes extending the due date for SIPs for the second implementation period (2018-2028), EPA emphasizes that it does "*not* intend for the proposed changes to affect the development of state plans for the first implementation period . . . due under the existing Regional Haze Rule." *Id.* at 26944. EPA emphasizes that SIPs must contain emission reduction measures targeted at achieving reasonable progress by the close of the implementation period addressed by the SIP, a "long-standing EPA interpretation." *Id.* *See* Section III.A.6 *infra*, outlining the failure of EPA's FIP to require BART to be installed by 2018, the close of the first implementation period.

Because the 2016 RH Rule Amendments contradict key analyses that EPA relied on to disapprove the BART Alternative and to support the FIP, EPA should reconsider the Final Rule.

III. Administrative Stay Argument

In addition to the issues for reconsideration outlined above, EPA should stay implementation of the BART NO_x FIP requirements because there are numerous legal

and technical flaws in the Final Rule. Because the FIP is dependent upon EPA's decision to reject the BART Alternative, EPA should stay the entire Rule.

The legal standard for an administrative stay is even broader than the standard for a judicial stay. The Administrative Procedures Act grants EPA authority to stay the BART NO_x FIP's requirements when "justice so requires . . . pending judicial review." 5 U.S.C. § 705. Despite this broad authority to grant stays, agencies often apply the more specific criteria governing preliminary injunction requests when determining whether a stay should be granted. *See Affinity Healthcare Servs. v. Sebelius*, 720 F. Supp. 2d 12, 15 note 4 (D.D.C. 2010) ("Motions to stay agency action pursuant to [5 U.S.C. § 705] are reviewed under the same standards used to evaluate requests for interim injunctive relief."). "A plaintiff seeking a preliminary injunction must establish that he is likely to succeed on the merits, that he is likely to suffer irreparable harm in the absence of preliminary relief, that the balance of equities tips in his favor, and that an injunction is in the public interest." *Winter v. NRDC*, 555 U.S. 7, 20 (2008); *see also RoDa Drilling Co. v. Siegal*, 552 F.3d 1203, 1208 (10th Cir. 2009) (same).

The Tenth Circuit has adopted a less stringent requirement for proving the likelihood of success. *See Davis v. Mineta*, 302 F.3d 1104, 1111 (10th Cir. 2002). In the Tenth Circuit:

> If the plaintiff can establish that the latter three requirements tip strongly in his favor, the test is modified, and the plaintiff may meet the requirement for showing success on the merits by showing that questions going to the merits are so serious, substantial, difficult, and doubtful as to make the issue ripe for litigation and deserving of more deliberate investigation."

Id. (citation omitted). This modified requirement for likelihood of success applies here, as discussed below.

III.A. PacifiCorp Is Likely to Prevail on The Merits.

The EPA's NO_x BART determination in the FIP should be stayed by EPA because the determination, and EPA's rejection of Utah's RH SIP, are flawed in several critical respects, as shown below. Thus, PacifiCorp's challenges to EPA's disapproval of the Utah RH SIP and adoption of the FIP in the U.S. Court of Appeals for the Tenth Circuit are likely to succeed on the merits (and, at a minimum, present serious and substantial questions). EPA's errors range from fundamental legal misinterpretations and improper applications of its own rules governing BART determinations to flawed technical analyses and procedural failures. In addition, EPA's errors result in unlawful federal interference with the State's regulatory processes and improperly require expenditures in excess of $700 million dollars that will impact energy costs throughout the State of Utah. EPA should take into account the seriousness of these issues in evaluating PacifiCorp's likelihood of success on the merits. Even if EPA believes that the courts may ultimately sustain the Final Rule upon judicial review, PacifiCorp's claims provide a compelling basis for a stay pending judicial review because the extreme

costs, indeterminate benefits, and the potential for interference with Utah's state sovereignty present such substantial issues.

III.A.1. PacifiCorp's requests for reconsideration support a stay.

As outlined above, EPA's failure to consider the 2016 RH Rule Amendments, and the related implications, when it promulgated the Final Rule supports reconsideration of the Final Rule by EPA. The D.C. Circuit Court has found that a legitimate case for reconsideration supports a stay. *See, e.g.*, *Portland Cement Ass'n v. EPA*, 665 F.3d 177, 189 (D.C. Cir. 2011) ("industry should not have to build expensive new containment structures until the standard is finally determined"). In addition, several courts have recently granted stays based on substantial issues of cost and state sovereignty raised under regional haze rules, even where EPA has refused to grant an administrative stay. *See Texas v. EPA*, 2016 WL 3878180 at *20 (5th Cir. July 15, 2016); *Oklahoma v. EPA*, 723 F.3d 1201, 1206-07 (10th Cir. 2013); *Wyoming v. EPA*, Nos. 14-9529, 14-9530, 14-9533, 14-9534 (10th Cir. Sept. 9, 2014); *Cliffs Nat. Res. Inc. v. EPA*, Nos. 13-1758, 13-1761 (8th Cir. June 14, 2013). As outlined above, the Tenth Circuit Court of Appeals has ruled that plaintiffs may meet the success on the merits requirement by showing their claims are "serious, substantial, difficult, and doubtful as to make the issue ripe for litigation and deserving of more deliberate investigation." *Davis v. Mineta*, 302 F3d 1104, 1111 (10th Cir. 2002). Because PacifiCorp's claims for reconsideration are sufficient to meet this standard, they also support the likely success of such claims on the merits and the need for EPA to grant the requested stay.

III.A.2. EPA failed to consider required cost and energy/environmental impacts when rejecting the BART Alternative.

EPA violated the clear language of the Regional Haze Statute (42 U.S.C. §§ 7491 and 7492) and Rule (40 C.F.R. §§ 51.300-309) by ignoring comparative costs in its rejection of the BART Alternative. When evaluating the BART Alternative, the ultimate question is whether or not it will result in greater "reasonable progress" than BART. 40 C.F.R. § 308(e)(2). EPA improperly redefines "reasonable progress" as solely "greater visibility improvement," while the Regional Haze Statute clearly requires consideration of costs – including the comparative cost differences between the BART Alternative and BART – to determine reasonable progress. Indeed, the plain language of the CAA makes crystal clear that "in determining reasonable progress there shall be taken into consideration the costs of compliance . . . ." 42 U.S.C. § 7491(g)(1). And yet EPA claims, "because the described cost difference does not have a direct bearing on whether the BART Alternative achieves greater reasonable progress, it is not material to our action whether we agree or disagree with Utah's conclusion that the BART Alternative would have a lower cost impact." 81 Fed. Reg. at 43901. EPA cannot make a determination about whether the BART Alternative makes greater reasonable progress than BART, without comparing the two options, and a reasonable progress determination, by statute, considers costs.

By refusing to consider comparative costs, EPA effectively has written "reasonable" out of the "reasonable progress" standard and instead attempts to impose a

more restrictive "visibility-only" standard that was not contemplated by Congress. Even in a ruling where cost was less prominently required by the statute, the U.S. Supreme Court required EPA to consider costs, explaining, "Statutory context reinforces the relevance of cost." *Michigan v. EPA*, 135 S. Ct. 2699, 2708 (2015). Here, the need to consider the comparative cost difference is even more important because not only the context but the plain language of the RH Statute requires it.

Also, EPA's own regulations require EPA to "[c]onsider the costs of compliance" as the first requirement for determining reasonable progress. 40 C.F.R. § 51.308(d)(1)(i)(A). The Tenth Circuit Court of Appeals confirmed the requirement to consider not only costs, but also and energy/environmental impacts, to determine reasonable progress under the Regional Haze Statute:

> "Reasonable progress" is measured by comparing "<u>the costs of compliance</u>, the time necessary for compliance, . . . the <u>energy and non-air quality environmental impacts</u> of compliance, and the remaining useful life of any existing [regulated] source" (known as the "four factors").

WildEarth Guardians v. EPA, 770 F.3d 919, 924 note 3 (10th Cir. 2014) (quoting 42 U.S.C. § 7491(a)(4), emphasis added).

EPA's refusal to consider energy/environmental factors as part of the assessment of the BART Alternative is similarly fatal to EPA's ultimate determinations in the Final Rule. As noted above, the Tenth Circuit has explained that "reasonable progress" is measured by comparing, among other things, energy and non-air quality environmental impacts. *WildEarth Guardians*, 270 F. 3d at 924. Like costs, energy/environmental impacts are required to determine reasonable progress by the Regional Haze Statute: "in determining reasonable progress there shall be taken into consideration . . . the energy and nonair quality environmental impacts of compliance." 42 U.S.C. § 7491(g)(1). Like costs, EPA claims that although "the Utah BART Alternative would avoid an annual energy penalty of approximately $2 million . . . . Because such benefits do not have direct bearing on whether the BART Alternative achieves greater reasonable progress, it is not material to our action whether we agree or disagree with Utah's assessment that they reduce energy and non-air quality impacts." 81 Fed. Reg. at 2024.

In short, PacifiCorp will prevail because EPA defied the plain language of the statute when it refused to consider comparative costs and energy impacts/ non-air quality environmental impacts to disapprove Utah's BART Alternative.

III.A.3. <u>EPA introduces a new, narrow "clearly demonstrated . . . greater visibility benefits" standard in the Final Rule that is contrary to the statutory "greater reasonable progress" standard.</u>

The EPA excluded costs and energy/non-air quality impacts from consideration when analyzing the BART Alternative because EPA illegally changed the statutory "greater reasonable progress" standard to the illegal and narrower "greater visibility benefits" standard. For the first time in the Final Rule, EPA introduces this new standard

for the weight-of-evidence analysis for the BART Alternative. EPA's new standard is most clearly articulated in the Response to Comments: "The weight-of-evidence analysis answers just this question—whether the Alternative will clearly result in greater visibility benefits." RH RTC at 39. However, under the Clean Air Act a "reasonable progress" analysis, and by extension a "greater reasonable progress" analysis, requires analysis of not just visibility impacts but also the specific costs of compliance, energy impacts, other environmental impacts, and the useful life of the source.[5] EPA's newly minted "greater visibility benefits" test excludes several of these factors and thus does not comply with the plain language of the statute.

Seemingly in an effort to quietly implement a new standard in the Final Rule, EPA fails to clearly explain the new standard or its narrowness except in its application. At page 43902 in the first column, for example, EPA applies the standard to reject the BART Alternative: "[W]e find that, on balance, the evidence does not show that the Alternative *clearly achieves greater visibility benefits* than BART." (Emphasis added); *see also, e.g.*, 81 Fed. Reg. at 43897, 43901, 43909, 43915. EPA then continues to develop and apply the new standard through several separate explanations in the Final Rule.

> [Evaluating the evidence] involves assigning weights to each piece of information that indicate *the degree to which it supports a finding that the alternative program will achieve greater visibility benefits* [emphasis added]. Such a weighing system might find that: (i) The information *clearly* shows the alternative will achieve greater reasonable progress than BART [emphasis in original]; (ii) the information supports the alternative in some way, *but not clearly* [emphasis added]; or (iii) the information does not support the alternative. . . .
>
> . . . .
>
> [W]e assessed the [State-provided] metrics collectively to determine whether the relevant evidence, considered as a whole, *clearly demonstrated that the alternative program achieves greater visibility benefits*. [emphasis added] . . . Our initial review considered whether each of the nine metrics met the *threshold regulatory requirement that information considered in a weight-of-evidence analysis be relevant to an assessment of visibility impacts*. [emphasis added] . . . the [costs and energy and non-air quality] metrics do not evaluate *visibility* benefits [emphasis in original] at the nine Class I areas impacted by the State's sources. Therefore . . . we did not give this information any weight in our evaluation of whether the State has demonstrated that its BART Alternative achieves greater reasonable progress than BART.

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[5] "For purposes of this [Regional Haze] section—in determining reasonable progress there shall be taken into consideration the costs of compliance, the time necessary for compliance, and the energy and nonair quality environmental impacts of compliance, and the remaining useful life of any existing source subject to such requirements." 42 U.S.C. § 7491(g)(1).

81 Fed. Reg. at 43897.

In other words, EPA's new "greater visibility benefits" standard, as applied, takes the statutory definition of greater "reasonable progress," subtracts from that definition the required components of costs, energy and non-air quality considerations, and then applies the new standard absent such components. This EPA cannot do. Courts have found procedural error where, as here, "vital assumptions" regarding the basis for EPA's new standard do not conform to the governing statute and EPA's own regulations, and the Agency's subsequent justification was not subject to notice-and-comment rulemaking. *See New Jersey v. EPA*, 517 F.3d 574, 583-84 (D.C. Cir. 2008) (vacating EPA rulemaking that "nullifie[d]" provisions of the CAA). Vacatur of agency action is "the normal remedy" for procedural error. *Allina Health Servs. v. Sebelius*, 746 F.3d 1102, 1110-11 (D.C. Cir. 2014). PacifiCorp is likely to prevail on the merits regarding this issue.

III.A.4. EPA failed to give proper deference to Utah's selection and weighing of metrics in rejecting the BART Alternative.

Congress stated in Section 169A(b)(2)(A) of the CAA that BART is "determined by the State." 42 U.S.C. § 7491(b)(2)(A) Utah determined that LNB/SOFA were NO_x BART for the Utah BART Units in its 2008 SIP, rejecting SCR. This requirement subsequently became law in Utah (and EPA failed to fulfill its duty to respond to this action for years). Based on this PacifiCorp installed the new equipment required by Utah's NO_x BART determination. When EPA rejected this determination more than four years after it was submitted, the State proceeded to propose a BART Alternative that would achieve greater reasonable progress, based on an analysis of nine different metrics. However, EPA again rejected Utah's analysis based on a single metric (out of the nine) that EPA claims is enough—on its own—to overturn the State's determination.

The single metric is the 98th percentile metric. The 98th percentile metric represents the visibility impact occurring on a single day during the year (normally the eighth highest day), and is based on a computerized model which relies on a myriad of inputs and assumptions. As EPA itself has recognized, this metric represents only "the extreme tails of a distribution," appropriate for determining whether a source is BART-eligible, but not to determine the precise amount of visibility impact. EPA, 70 Fed. Reg. 39104, 39121 (July 6, 2005) ("BART Guidelines").

In order to determine reasonable progress, as required for a BART Alternative, the RH Rule requires "improvement in visibility for the most impaired days . . . [and] no degradation in visibility for the least impaired days." 40 C.F.R. § 51.308(d)(1). The most and least impaired days are defined as the 20 percent highest and lowest days of monitored visibility impairment. 40 C.F.R. § 51.301. Thus, the 98th percentile metric—based on modeling, not monitoring—is not sufficient, by itself, to determine improvement in visibility or reasonable progress. Again, EPA normally recognizes this fact:

> [T]he 98th percentile value would only be used to determine whether a particular BART-eligible source would be subject to further review by the State. . . . In determining what, if any, emission controls should be required, the State will have the opportunity to consider the frequency, duration, and intensity of a source's predicted effect on visibility.

BART Guidelines, 70 Fed. Reg. at 39121. Contrary to this EPA statement, in the Final Rule EPA wrongly "gives most weight to the visibility impacts based on the 98th percentile air quality modeling results." In fact, EPA gives so much weight to the 98th percentile metric that it overcomes all the other metrics relied on by Utah and wrongly causes EPA to conclude that the BART Alternative does not result in greater reasonable progress (or to be more precise, EPA's substitute standard—greater visibility improvement). 81 Fed. Reg. at 43899.

EPA also claims that "the State's summary of the weight-of-evidence did not include the results from the 98th percentile modeling impact," and that the State "did not assess the relative strengths and weaknesses of the metrics." 81 Fed. Reg. at 43897-98. However, contrary to EPA's claim in the Final Rule, Utah took the 98th percentile metric into account and properly weighed its value in making its determination that the BART Alternative provides greater reasonable progress than EPA's BART determination of SCR. *See* Staff Report, at 1-14 through 1-19.

While the Staff Report is understandably technical, its findings are clear: NO_x reductions over the past 15 years have not resulted in the visibility benefits predicted by the 98th percentile metric, while SO_2 reductions have. *Id.* at 1-15. Based on these findings:

> DAQ has greater confidence that modeled improvements due to reductions in SO_2 will be reflected in improved visibility . . . to the Class I areas, while reductions in NO_x have a more uncertain benefit."

Id. at 1-19. Based on this substantial analysis, the State gave more weight to the visibility benefits associated with its BART Alternative, which relies on the reduction of both SO_2 and NO_X emissions, and rightly gave only marginal weight to the 0.14 dv advantage modeled for the 98th percentile metric associated with EPA's BART requirement, which only relied on the reduction of NO_X emissions. The data contradicting the 98th percentile metric include real-time monitoring data showing that actual NO_x emission reductions achieved at multiple anthropogenic sources surrounding the Class I areas have not led to visibility improvements predicted by the model. *Id.* at 1-15 and 1-18. On the other hand, the same monitoring data showed that SO_2 reductions were more reliably linked to the visibility improvements predicted by the modeling. *Id.* Utah properly reviewed observed monitoring data to verify, analyze and provide context for the computer model results used in the 98th percentile metric. With all of that information in mind, Utah was able to determine what weight the 98th percentile modeling results should be given in the BART Alternative analysis. Such actions fall totally within the State of Utah's discretion; such discretion cannot be coopted by EPA because it does not like the state's result. The BART Guidelines establish that states have the "flexibility to assess visibility

improvements due to BART controls by one or more methods, or by a combination of methods." 70 Fed. Reg. at 39129, and states "are **free to determine the weight and significance to be assigned to each factor**" for visibility improvements. 40 C.F.R. Part 51, App. Y, IV(D)(5) (emphasis added).

EPA has been warned by the courts before for failing to account for the limitations of the computerized modeling relied on for the 98th percentile metric. The Ninth Circuit Court of Appeals recently remanded a BART determination to EPA that failed to account for "the model's ability to anticipate improvements at a level allegedly within its margin of error, whether perceptible or not to the human eye." *Nat'l Parks Conservation Ass'n v. EPA*, 788 F.3d 1134, 1147 (9th Cir. 2015). EPA has estimated that, based only on this metric, its chosen BART control (SCR at all four units) would result in an average incremental visibility improvement (over the BART Alternative) at the nine impacted Class I areas of just 0.14 deciviews (approximately one-seventh of what is discernible to the human eye). 81 Fed. Reg. at 43898-99. And yet EPA relies solely on this metric, for which many of the computerized modeled visibility results are within the margin of error, to reject Utah's BART Alternative, which properly gave this metric less weight. Further, the cases EPA cites as support for primary reliance on the 98th percentile metric do not support sole reliance on this metric when it contradicts other evidence submitted by a State. *See* 81 Fed. Reg. at 2022, note 90 (claiming to cite regional haze determinations where the 98th percentile metric is "one of the primary metrics that EPA has relied on").[6]

The CAA Statute requires that "the Administrator shall approve such [SIP] as a whole if it meets all of the applicable requirements of [the Clean Air Act]."). By reanalyzing, distorting, and even completely disallowing several of the metrics provided by the State, and placing undue emphasis on the 98th percentile metric, EPA unlawfully imposes its own interpretation of which "evidence" should be considered and emphasized. Such value judgments are not an applicable requirement under the CAA but are instead left to the discretion of the states. EPA can cite no statute or regulation that requires the 98th percentile metric to outweigh all other evidence presented by the state.

Because "Congress intended the states to decide which sources impair visibility and what BART controls should apply to those sources," *American Corn Growers Ass'n v. EPA*, 291 F.3d 1, 8 (D.C. Cir. 2002), EPA must defer to the State's analysis of the evidence unless it violates an applicable requirement of the Clean Air Act. Here, it does not. EPA admits Utah's BART Alternative is a "close call." 81 Fed. Reg. at 43912. EPA also admits its role is deferential to the States as long as a SIP meets the applicable requirements of Act. *See, e.g.*, 81 Fed. Reg. at 2006 ("it is preferable that the regional haze program be implemented through state plans"); 81 Fed. Reg. at 43909, 43912. And EPA admits it must approve a regional haze SIP when a state's discretion is "reasonably exercised and . . . supported by adequate documentation of its analyses." 81 Fed. Reg. at 43909, citing Proposed Rule, 81 Fed. Reg. at 2006. As discussed above, the State's

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[6] It should be noted that the Maryland determination cited by EPA does not use or mention the 98th percentile metric. The Tesoro and Arizona determinations merely used the 98th percentile metric as additional support for other state metrics that demonstrated greater reasonable progress by substituting SO_2 for NO_x reductions.

legitimate consideration of the undisputed and massive cost difference between the Alternative and BART, as well as the energy/environmental costs of BART, are appropriate under the Act. The State's discounting of the marginal visibility improvements predicted by the 98th percentile metric, which are contrary to actual monitored data, is appropriate under the Act. Where, as here, the State has provided numerous metrics supported by legitimate evidence and analysis, a "close call" must weigh in Utah's favor, and EPA must give the proper deference to the State's determination. PacifiCorp is likely to prevail on this issue.

III.A.5. EPA's failure to properly account for "existing pollution control equipment" when calculating the visibility impact and costs for the FIP violates the Clean Air Act.

EPA's NO_x BART analysis fails to account for the installed LNB/SOFA when conducting the baseline emissions analyses, cost analyses, and visibility improvement analyses. The LNB/SOFA were installed at each of the Utah BART Units from 2006-2014, a fact that EPA openly acknowledges. *See, e.g.*, 81 Fed. Reg. at 2023. However, EPA conducted a new NO_x BART analysis for its FIP that ignored the existing LNB/SOFA for all practical purposes (pretending the LNB/SOFA didn't exist when conducting the cost and visibility analyses). EPA calculated "cost-effectiveness" and "visibility improvement" for NO_x BART at the Utah BART Units as if the LNB/SOFA had not been installed. EPA's failure to account for "existing pollution control equipment" is contrary to the CAA and skewed EPA's FIP to make SCR look more reasonable by taking credit for reductions from the existing equipment. *See North Dakota v. EPA*, 730 F.3d 750, 763-64 (8th Cir. 2013) (vacating a FIP where EPA ignores reductions from existing pollution control equipment).

Given that a review of "any pollution equipment in use or in existence at the source" is one of the five BART factors, EPA is required by statute to properly account for this equipment in its BART analysis. On this basis alone, EPA should grant this Request for Reconsideration and Stay.

III.A.6. EPA's FIP is illegal because it does not – and never can – ensure BART implementation by 2018 as required by law.

EPA's FIP does not ensure the installation of BART controls during the time period covered by the SIP and is therefore unlawful. In developing a FIP for NO_x BART, EPA is subject to the same regulatory limitations as a state. *See* 77 Fed. Reg. 40150, 40164 (July 6, 2012) ("At the point EPA becomes obligated to promulgate a FIP, EPA steps into the State's shoes, and must meet the same requirements. . . ."). Further, "EPA may not use its own delay as an excuse for imposing burdens . . . that the Regional Haze Rule does not permit." *Texas v. EPA*, No. 16-60118, 2016 WL 3878180, at *17 (5th Cir. July 15, 2016). Thus, if the EPA FIP does not comply with same requirements that would bind Utah, even if this is caused by EPA's failure to timely act on Utah's 2008 SIP, the FIP is invalid.

Under the Regional Haze Rule, SIPs (and therefore FIPs) must establish "the emission reduction measures needed to achieve [the reasonable progress goal] *for the period covered by the implementation plan*." 40 C.F.R. § 51.308(d)(1)(i)(B) (emphasis added). SIPs must also impose "enforceable emissions limitations, compliance schedules, and other measures as necessary to achieve the reasonable progress goals" within the planning period of the SIP. 40 C.F.R. § 51.308(d)(3).

BART is one of the enforceable emissions limitations and must be included in a state's initial SIP. 40 C.F.R. § 51.308(e). The first planning period for SIPs lasts from 2007–2018, and states are required to submit revised SIPs for each ten-year period thereafter. 40 C.F.R. § 51.308(b), (f); *see also* 42 U.S.C. § 7491(b)(2)(B). The Regional Haze Rule specifically articulates the requirement that "all necessary emission reductions take place during the period of the first long-term strategy for regional haze" for BART Alternatives, which is the same time period as the requirement for installation of BART. 40 C.F.R. § 51.308(e)(2)(iii). This requirement is proved by "including schedules for implementation." *Id.*

EPA has consistently required that BART be installed and implemented before the end of the first planning period. As EPA explained for its Wyoming FIP:

> [T]he 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.

79 Fed. Reg. 5032, 5170; *see also id.* at 5055 (rejecting claims that requiring BART reductions to occur within the first planning period was "front-loading" the reasonable progress requirements). In SIP actions for both Maine and Arizona, EPA again indicated that BART requirements must be implemented during the first implementation period. *See* 78 Fed. Reg. 8083, 8085 (Arizona SIP disapproval) ("During the first implementation period for the Regional Haze Program (through 2018), states must also impose best available retrofit technology ('BART') on 'BART-eligible sources'. . . ."); 77 Fed. Reg. 24385, 24387 (Maine SIP approval) ("States must determine BART eligibility and controls only during this first planning period . . . ."). EPA has definitively stated that the first regional haze planning period for Utah ends in 2018. 77 Fed. Reg. 28825, 28838 (May 16, 2012) (when reviewing a previously submitted BART Alternative, EPA said: "The first planning period ends in 2018"); 77 Fed. Reg. 74355, 74368 (Dec. 14, 2012) ("Nor, at this time, are such emissions increases expected during the first planning period (2003-2018).").

However, despite its own requirements, consistent practice, and specific statements about Utah's first planning period ending in 2018, EPA's BART FIP for Utah does not require installation of SCR until 2021, three years after the end of the first planning period. 81 Fed. Reg. at 43924 (40 C.F.R. § 52.2336(d)) (establishing compliance dates of 2021). While EPA may argue that its belated FIP BART requirements resulted from the late disapproval of Utah's SIP, it is actually EPA's failure

to act on Utah's 2008 SIP (which contained BART for NOx) that accounts for this delay.[7] Because EPA's delay contributed to the late FIP, and because the FIP's BART timing requirement is inconsistent with the CAA and EPA's consistent practices, the FIP is invalid. PacifiCorp is likely to prevail on the merits on this issue.

EPA is aware that, although BART controls can be required on eligible units only during the first regional haze planning period, emission sources like the Utah BART Units will be subject to ongoing regulation under regional haze requirements. In other words, the State of Utah surely will visit again in future planning periods whether or not NOx controls such as SCR systems are appropriate at the Utah BART Units. 81 Fed. Reg. 26942, 26947 (May 4, 2016).

III.A.7. EPA improperly rejected Utah's "annual emissions comparison."

Utah found that the "combined emissions of three key visibility-impairing pollutants will be lower under the BART Alternative scenario and that this supported the weight of evidence determination that the BART Alternative will provide greater reasonable progress than BART." 81 Fed. Reg. at 43898. EPA found that, although this metric "is a relevant concept," in this instance the metric is "inconclusive," and Utah could not offset minor NO_x emissions increases with substantial SO_2 and PM emissions reductions because of "differences in visibility impacts and complex interactions between pollutants." *Id.*

EPA's actions ignore the substantial data already before the agency regarding the impact of SO_2 and PM emissions on visibility. A commission established by the CAA to study the Colorado Plateau, where all the Class I areas affected by the Utah BART Units are located, determined that sulfates (produced by SO_2 emissions) are the most significant anthropogenic pollutant contributing to the haze on the Colorado Plateau. *See* Grand Canyon Visibility Transport Commission, Recommendations for Improving Western Vistas (June 10, 1996) at 33 ("GCVTC Report") (recommending near- and long-term focus on SO_2 to ensure reasonable progress); *see also* 40 C.F.R. § 51.309.[8] The WRAP the successor to the GCVTC, provides regular reports to EPA on reasonable progress for Class I areas impacted by Utah. Some of these reports are included in the record for the Utah RH SIP. *See, e.g.*, WRAP Regional Haze Rule Reasonable Progress Report Support Document, State and Class I Area Summaries, at 6-11 through 6-16 (Doc. No. EPA-R08-OAR-2015-0463-0200) ("WRAP Report"). The WRAP Report includes analyses of the relative visibility impacts by pollutant (expressed as "aerosol extinction") at the affected

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[7] Given the planning, engineering, procurement, and construction necessary to construct simultaneously four SCRs, not to mention the need to locate and obtain reasonably priced electricity to replace that produced by the Hunter and Huntington power plants during construction shut downs, the four SCRs required by EPA's FIP cannot reasonably be constructed prior to the end of 2018.

[8] As a result of this and other information, there has been a concerted focus on anthropogenic SO_2 emissions as the leading impairment to visibility for Class I areas on the Colorado Plateau. *See, e.g.*, 77 Fed. Reg. 73926 (approval of Wyoming SIP with focus on SO_2 reductions); 77 Fed. Reg. 74355 (approval of Utah SIP with focus on SO_2 reductions); 77 Fed. Reg. 30953 (approval of New Mexico SIP with focus on SO_2 reductions).

Class I areas. The WRAP Report documents, for example, that ammonium sulfate (produced by SO_2 emissions combining with ammonia) accounted for 21% of the visibility impacts on the most impaired days at Zions Canyon, while ammonium nitrate (produced by NO_x emissions combining with ammonia) accounted for only 7%, from 2005-2009. Canyonlands shows a similar ratio, with 23% impacts from ammonium sulfate compared to 14% from ammonium nitrate. *Id.* at 6-11. This information clearly establishes that SO_2 emissions reductions will have as much, or even greater, impacts on visibility than NO_x emissions reductions.

Similarly, Progress Reports submitted to EPA every five years from the State further validate the WRAP findings. *See, e.g.*, Utah Div. of Air Quality, Progress Report for Utah's State Implementation Plan for Regional Haze, May 18, 2015 at F-26 through F-28 ("For all sites, ammonium sulfate was the largest contributor to the non-Rayleigh aerosol species of extinction."). For Zions Canyon, ammonium sulfate accounted for 21% of visibility impairment for 2009-2013, while ammonium nitrate accounted for only 7%. *Id.* at F-27. EPA almost concedes the existence of this data in the Proposed Rule:

> [W]e propose to concur with Utah's finding that SO_2 emissions reductions should provide visibility benefits in all seasons and that sulfate is the largest contributor to visibility impairment at the affected Class I areas. Furthermore, we propose to find that these observations suggest that the BART Alternative is likely to achieve greater reasonable progress.

81 Fed. Reg. at 2022. In the Final Rule, EPA agrees with the State that "sulfate is the largest contributor to visibility impairment at the affected Class I areas." 81 Fed. Reg. at 43900.

Because the State reasonably exercised its discretion and supported its decision with adequate documentation, the burden is on EPA to show that State's decision does not meet an applicable requirement. *See United States v. Minnkota Power Coop.*, 831 F. Supp. 2d 1109, 1121 (D. N.D. 2011) (placing burden on EPA to show state permitting decision is "unreasonable, arbitrary, or capricious"). With all of the available information showing the greater visibility impacts of SO_2 emissions as compared to NO_x emissions, EPA's claim that it lacked "information on the likely visibility impacts of the State's alternative program as compared to BART," 81 Fed. Reg. at 43897, is simply false and another contrived effort to support a particular result (SCR) when the BART Alternative shows greater reasonable progress. Even if the State had not provided such extensive analysis (which it did), EPA "retains a duty to examine key assumptions as part of its affirmative burden of promulgating and explaining a non-arbitrary, non-capricious rule." *Appalachian Power Co. v. EPA*, 135 F.3d 791, 818 (D.C. Cir. 1998). This burden is heightened when EPA's decision "runs counter to the evidence before the agency." *United States Sugar Corp. v. EPA*, No. 11-1108, 2016 WL 4056404, at *51 (D.C. Cir. July 29, 2016) (quoting *Motor Veh. Mfrs. Ass'n v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 43 (1983). EPA's reliance on a lack of modeling data does not meet its burden. *See* 81 Fed. Reg. at 43898. EPA's determination that the "annual emissions comparison" metric is "inconclusive" based on an alleged lack of data about the impact of SO_2 emissions on visibility (as compared to NO_x emissions), is incorrect, unsupportable, and

contrary to both the State's determination and the enormous amounts of data in the possession of EPA. This is yet another reason PacifiCorp will prevail on the merits.

III.A.8. EPA arbitrarily changed its position in the Final Rule by improperly analyzing the impact of pre-FIP deadline emission reductions and resulting visibility improvements.

EPA illegally ignored data in the record and public comments about emissions reductions under the BART Alternative that occur before the BART installation deadline in EPA's FIP (sometimes referred to as "early" reductions in the record), and improperly changed its position between the Proposed and Final Rule about which of these reductions under the BART Alternative qualified for consideration in the reasonable progress analysis. In the Proposed Rule, EPA stated:

> [R]eductions under the Utah BART Alternative will occur earlier than the BART Benchmark. The reductions under the Utah BART Alternative are required under the State SIP by August 2015 . . . and would provide an **early and on-going visibility benefit** as compared to BART. . . . BART likely would be fully implemented sometime between 2019 and 2021. Therefore, we recognize that the reductions from the BART Alternative would occur before the BART Benchmark.

81 Fed. Reg. at 2030 (emphasis added); *see also id.* at 2018 and 2023. On both sides of its Proposed Rule to potentially approve and disapprove the BART Alternative, EPA recognized "early and ongoing" emission reductions resulting under, and supporting the adoption of, the BART Alternative.[9] These pre-FIP deadline emissions reductions included those from LNB/SOFA installations on all four Utah BART Units (as required by the Utah RH SIP), LNB/SOFA on an additional non-BART unit (Hunter Unit 3), and the shutdown of the two units at the Carbon plant. 81 Fed. Reg. at 2018.

However, in the Final Rule, EPA backtracked as follows:

> [W]e have decided to consider only those emission reductions that occurred between 2006 and 2011 as lending weight to the argument that the Alternative will provide for greater reasonable progress.

RH RTC at 138. This means that between the Proposed Rule and the Final Rule, EPA decided to ignore the pre-FIP deadline emission reductions from the LNB/SOFA

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[9] As EPA explained when approving a previous Utah BART Alternative, early emission reductions weigh in favor of the BART Alternative when a "state implementation plan submittal may have already influenced sources to upgrade their plants before any case by case BART determination . . . may have required it." *WildEarth Guardians v. EPA*, 770 F.3d 919, 937 (10th Cir. 2014) (quoting EPA). EPA also has taken early emission reductions into account for other BART Alternatives. *See, e.g.*, 79 Fed. Reg. 46514 (using early emission reductions as justification for a BART Alternative FIP for the Navajo Nation); 77 Fed. Reg. 34801, 34804 (acknowledging early emission reductions made by Minnesota (Metropolitan Emission Reduction Program) to approve its proposed BART Alternative of the Cross State Air Pollution Rule).

installation at one of the Utah BART Units as well as those from the shutdown of the Carbon plant, even though it considered such reductions under all aspects of its Proposed Rule. Moreover, EPA further ignored all pre-FIP deadline emissions reductions already generated, and to be generated, under the BART Alternative between 2011 and 2021 (the BART installation date for the SCR systems under EPA's FIP). As a result, EPA purposely excludes hundreds of thousands of tons of emission reductions – and the resulting visibility benefits – achieved before the 2021 FIP compliance date.

EPA was fully aware of these reductions. In its public comment letter, PacifiCorp reported that 340,000 tons of emission reductions had occurred under the BART Alternative through 2014, and estimated that an additional 235,000 tons of added emissions reductions would occur through 2021, the FIP compliance deadline. RH RTC at 136-137 (*see* figure at 137). Contrary to EPA's decision to sweep some of these pre-FIP deadline emission reductions under the proverbial carpet for purposes of evaluating the BART Alternative, all of these emission reductions actually have occurred, or will occur based on currently installed controls and current unit closures, before emission reductions from BART would take place. This clearly means that all – not just some – of the pre-FIP deadline emission reductions should have been considered by EPA in evaluating the BART Alternative. *See* PacifiCorp Comments on Proposed Rule, March 14, 2016, Cover Letter/Executive Summary at 2; Full Comments at 16, 23. Not only did EPA fail to consider these reductions, EPA could not even bring itself to make its refusal clear in the Federal Register, only admitting the specifics in the RH RTC. EPA's refusal to consider all pre-FIP deadline emissions reductions is arbitrary and capricious because it failed to consider an "important aspect of the problem," and because its decision "runs counter to the evidence before the agency." *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 43 (1983).

In the RH RTC, EPA incorrectly claims that Utah only considered pre-FIP deadline emissions reductions through 2011 so that EPA is only required to do the same. RH RTC at 138. EPA, however, considers an isolated statement by Utah out of context. Both Utah and PacifiCorp provided EPA with information indicating that the pre-FIP deadline emissions commenced in 2006 and would provide "a corresponding early and on-going visibility improvement" until the BART compliance deadline, which EPA set in the FIP as 2021. Utah Staff Report at 1-13. *See also* PacifiCorp Comments on Proposed Rule, March 14, 2016, Cover Letter/Executive Summary at 2; Full Comments at 16, 23. Moreover, Utah clearly relied on the pre-FIP deadline emissions reductions from Carbon (2015 and beyond) and LNB/SOFA installed at Hunter 1 in 2014 when assessing other metrics (such as aggregate emissions reductions, etc.). *See* Staff Report at 1-12, Table 2 (projecting pre-FIP deadline emissions after 2011); and 1-30 (a full section outlining pre-FIP deadline emission reductions, including reductions after 2011). EPA's attempt to artificially limit the pre-FIP deadline reductions that Utah not only considered but relied upon infringes on Utah's statutory role to make value judgments when determining BART, and by extension a BART Alternative. Because EPA is overturning a state determination, its obligation to consider all of the information supporting that determination is high. *See* 42 U.S.C. § 7410(k)(3); *Texas v. EPA*, No. 16-60118 at *1 ("The structure of the Clean Air Act indicates a congressional preference that states, not EPA, drive the regulatory process."); *Minnkota Power Coop.*, 831 F. Supp. 2d at 1121

(D. N.D. 2011) (reversing EPA's disapproval of a state CAA determination and holding that "[the State's] conclusions regarding such highly technical matters are entitled to deference unless EPA proves them to be unreasonable, arbitrary, or capricious").

In the end, EPA explained in the RH RTC that its decision not to consider hundreds of thousands of tons of pre-FIP deadline emission reductions caused it to give only "some weight to this metric but [to] not consider the timing of these reductions to be compelling." RH RTC at 138. This pivotal announcement shifts consideration of the full effect of emission reductions occurring from 2006-2021 to a more limited effect from only those reductions that took place from 2006-2011. This is dramatic discounting of a key metric supporting the BART Alternative. *See id.* Again, because the decision to disapprove the BART Alternative was such a "close call," any additional piece of favorable evidence should tip the balance towards approval of the Alternative. Because EPA purposefully refused to consider all evidence before the agency regarding pre-FIP deadline emissions reductions, EPA acted arbitrarily and capriciously; as a result, PacifiCorp will likely prevail on the merits.

III.A.9. EPA failed to adjust its FIP BART analysis after acknowledging a cost error of more than $80 million in the Final Rule.

EPA's admitted error of more than $80 million ($20 million per unit) in its required SCR cost analysis renders its BART decision arbitrary.[10] Although ultimately acknowledging that the error existed in the Proposed Rule and that EPA relied upon the erroneous numbers to find SCR is cost-effective control equipment, EPA declines to conduct additional analysis to account or adjust for the error:

> [W]e revised our analysis of the cost of installing and operating NO_x BART controls at the four subject-to-BART EGUs. . . . [W]e concluded it was unnecessary to review our analysis of visibility improvement or the other statutory BART factors. Our proposed action contains a full description of the five step BART analysis, the five BART factors [which include statutorily required cost analysis], and our proposed BART determination.

81 Fed. Reg. at 43902. The error impacts not only the assumed total capital costs for SCR, but also significantly increases the incremental cost-effectiveness for each unit by more than 20 percent. *See, e.g.*, 81 Fed. Reg. at 43904 (increasing incremental cost-effectiveness per ton for Huntington Unit 2 from $4,877/ton in the Proposed Rule to $6,368/ton (an additional $1,132/ton), 81 Fed. Reg. at 2048, Table 36). Because these cost increases are expressed in dollars per ton, they represent millions of dollars in increased costs.

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[10] *Compare, e.g.*, total capital costs from the Final Rule, 81 Fed. Reg. at 43903, Table 1 with the Proposed Rule, 81 Fed. Reg. at 2035, Table 14 (total capital investment for LNB/SOFA/SCR). *Compare also* Proposed Rule, 81 Fed. Reg. at 2039, Table 20; at 2042, Table 26; and at 2046, Table 32. Note also that several million dollars in total annual costs are also added for each unit in the Final Rule.

Contrary to its actions in the Final Rule, EPA may not simply forego an analysis of whether more than $80 million in new costs would impact the appropriateness of SCR as BART. This increase in capital costs substantially increased both the average and incremental cost-effectiveness of each unit. These substantial increases changed the reasonableness of whether such controls should be required, and thus the changed figures should have been subject to public notice and comment.

While courts give EPA deference in matters subject to its expertise, they have also explained that "[w]e are hesitant to rubber-stamp EPA's invocation of statistics without some explanation of the underlying principles or reasons why its formulas would produce an accurate result, particularly when the 'facts found' . . . demonstrate flaws in the formula." *Nat'l Ass'n of Clean Water Agencies v. EPA*, 734 F.3d 1115, 1145 (D.C. Cir. 2013). EPA's revised and much larger cost-effectiveness numbers, as well as much larger capital costs, should have caused EPA to seek public comment on the "reasonableness" of requiring such expensive controls, and to reject SCR as BART. PacifiCorp is likely to prevail on the merits of this issue.

III.B. PacifiCorp and Its Customers Will Suffer Irreparable Harm Without a Stay.

The compliance deadlines established in the Final Rule for installation of SCR place PacifiCorp in an untenable position. The installation of SCR at four units will be a massive construction effort requiring extensive planning, long-lead time engineering, and logistical coordination that will begin years before project completion and take several years to complete. PacifiCorp's estimated cost of SCR construction and installation at the four Utah BART Units is in excess of $700 million,[11] with a resultant increase in annual Operating & Maintenance costs in excess of $150 million per year.

No mechanism exists for PacifiCorp to recover from EPA the SCR development costs incurred if the Final Rule is found to be invalid. *See Crowe & Dunlevy, P.C. v. Stidham*, 640 F.3d 1140, 1157 (10th Cir. 2011) ("Imposition of money damages that cannot later be recovered for reasons such as sovereign immunity constitutes irreparable injury.") (citations omitted). Therefore, such SCR development costs constitute "irreparable injury."

Finally, these SCR development costs are expected to be passed on to PacifiCorp's customers in the form of higher electricity rates, as EPA admits. In the rulemaking docket, EPA provides an estimate (utilizing its estimated costs, which are lower than expected by PacifiCorp) that installation of SCR at the Utah BART Units will result in 5-10% higher electricity rates for PacifiCorp customers. RH RTC at 370. Higher electricity rates could have an even broader adverse economic impact on the citizens of Utah, as businesses look to pass their higher costs through to their customers. Financial losses have been found to constitute irreparable injury "where no adequate compensatory or other corrective relief will be available at a later date, in the ordinary course of litigation." *Mexichem Specialty Resins, Inc. v. EPA*, 787 F.3d 555 (D.C. Cir.

[11] EPA claims costs of $517 million.

2015) (citations omitted). In addition, consideration of rate increases caused by EPA-mandated control equipment was one of several factors found to support the recent stay of a Regional Haze FIP in Texas. *See Texas v. EPA*, No. 16-60118 at *18, notes 40-42.[12]

Thus, irreparable harm will result from continuation of the current effective date for EPA's FIP for the Utah BART Units.

III.C. The Balance of the Equities and the Public Interest Tip in PacifiCorp's Favor.

Neither EPA nor the regional haze program's overarching "visibility goals" will suffer any irreparable harm from a stay. Congress identified the purpose of the regional haze program as setting and achieving goals to achieve "natural visibility conditions by the year 2064." *See* 40 C.F.R. § 51.308(d)(1)(i)(B). Even if EPA's FIP for NO_x BART is ultimately upheld, Utah is ahead of its reasonable progress goals, without imposition of the FIP. *See, e.g.*, Utah Div. of Air Quality, Progress Report for Utah's State Implementation Plan for Regional Haze (May 18, 2015) at F10-F11, F-62 ("Utah Progress Report"). As established by the most recent data in Utah's 5-year progress report to EPA, Utah is meeting and surpassing its long-term visibility goals for all Class I areas in Utah. Utah Progress Report at F10-F11. Further, Utah reported that "the State of Utah has determined that the current implementation plan elements and strategies are sufficient . . . to meet all established reasonable progress goals." *Id.* at F-62. The SIP referred to in the State's progress report did not include EPA's FIP SCR requirement.

Moreover, EPA has already admitted that Utah is making reasonable progress towards the applicable Clean Air Act requirements. 77 Fed. Reg. at 74367 (Dec. 14, 2012) ("the State [of Utah] met all reasonable progress requirements for the Class I areas in Utah"). Granting a stay does not impede visibility improvement because the Utah BART Alternative already is in place. Moreover, EPA does not even require the emissions reductions under its FIP until 2021. In the meantime, the status quo continues, with Utah's reasonable progress goals being exceeded. *See* Final Rule at 43924/40 C.F.R. § 52.2336(d)(1) (setting an August 4, 2021 compliance deadline for installation of SCR on the Utah BART Units).

Utah's regional haze SIP and its permits for PacifiCorp's facilities have required action to reduce emissions earlier than EPA's FIP. 81 Fed. Reg. at 2030 ("The reductions under the Utah BART Alternative are required . . . by August 2015 . . . and would provide an early and on-going visibility benefit"); 77 Fed. Reg. at 74367-68 (EPA has found that Utah "met all reasonable progress requirements for the Class I areas in Utah" and the "two BART-eligible plants in central Utah are projected to decrease SO_2 emissions by 13,200 tons and NO_x emissions by 6,200 tons between 2002 and 2018. The State also shows that in general the impact from sources in Utah is not significant" at Class I areas in neighboring states.). Many of the visibility benefits from the BART

[12] *See also* EPA cited FIPs for Hawaii (77 FR 61478, 61488 (Oct. 9, 2012)); Navajo Nation (77 FR 51620, 51625 51626 (Aug. 24, 2012)); and Arizona Apache Generating Station (77 FR 72512 (Dec. 5, 2012), which EPA claims were situations where consideration of rate increases was an appropriate part of its BART analysis. RH RTC at 370, note 576.

Alternative are already being realized under Utah law, including the emission reductions from new control equipment and the shutdown of the Carbon plant (which were not contemplated when EPA made these statements). Thus even under a stay of EPA's FIP, the relevant Class I areas are still benefiting from these pre-FIP deadline emissions reductions required by the State's proposed RH SIP. This ensures that the Congressional objective for visibility improvement will not be inhibited even if EPA's FIP BART for NO_x is delayed or vacated.

An additional matter of public interest favoring a stay is the concentrated nature of employment impacts related to the Utah BART Units. In addition to higher costs of electricity for consumers, the compliance costs for the FIP may lead to the closure of facilities if PacifiCorp determines that the increased compliance costs do not justify continued operation of one or more units. The decision to shut units down or change to natural gas rather than install SCR has been a common result of EPA FIPs requiring SCR installation. *See, e.g.*, Arizona Apache Plant, 80 Fed Reg 19220 (Feb. 27, 2015) (originally requiring SCR through an EPA FIP but changing to natural gas in subsequent SIP revision); Arizona Cholla Plant, 81 Fed Reg 46852 (July 19, 2016) (same); Oregon Boardman Plant, 76 Fed. Reg. 38997 (July 5, 2011) (requiring SCR in original state submittal to EPA but replacing with BART Alternative that requires cessation of burning coal by 2020 and only LNB/modified OFA). Because the Utah BART Units are all located within a nexus of small rural communities, the employment impacts from closure of even one unit will be significant for those communities. Emery County has been designated as a "Mining Dependent" county by the Department of Agriculture. USDA, Economic Research Service, County Typology 2015, *available at* http://www.ers.usda.gov/data-products/county-typology-codes.aspx. As stated by a local county commissioner, "The economic impact of the Hunter and Huntington Power Plants is a large portion of our economy in Emery County. The economic impact Rocky Mountain Power has had to Emery County in direct and indirect is 800+ jobs." *Part I: Commissioner Brady speaks at EPA hearing on regional haze*, Emery County Progress, Feb. 2, 2016.

Importantly, the Regional Haze Statute and the Regional Haze Rule do not address matters of public health. *See, Texas v. EPA*, 2016 WL 3878180 at *19, note 42 (finding public health benefits are not relevant to a stay consideration). Instead, the purpose of the regional haze program is to remedy anthropogenic contributions to visibility impairment in Class I areas. *See* 42 U.S.C. § 7491(a)(1). Thus, delaying the effective date of the Utah RH FIP is not related to public health. The area where the Utah BART Units are located is attaining the National Ambient Air Quality Standards for all criteria pollutants. Impacts from a stay would not present the type of risks to justify compelling immediate capital projects of inordinate cost that will disrupt the State's economy and PacifiCorp's electric generating operations with little or no visibility benefits. *See*, e.g., *Tate Access Floors, Inc. v. Interface Architectural Res., Inc.*, 279 F.3d 1357, 1364 (Fed. Cir. 2002).

IV. Conclusion

If a stay is not entered, PacifiCorp will be forced to begin the planning, engineering and construction processes for SCR at the four Utah BART Units at significant cost. The actual costs of installing and operating SCR at the four units will approach one billion dollars, while EPA's projected improvement in visibility will be imperceptible at best, and actually lower than Utah's proposed BART Alternative. On the other hand, granting PacifiCorp's stay request will have no negative consequences on visibility while allowing well-justified further consideration of the Final Rule.

Based on the foregoing, EPA should grant PacifiCorp's Request for Reconsideration and Request for Administrative Stay.

Sincerely,

William K. Lawson
Director, Environmental Services
PacifiCorp
1407 W. North Temple
Salt Lake City, Utah 84116

cc: Blaine Rawson
Mike Jenkins

Exhibit D
PacifiCorp v. EPA, Consolidated Case Nos. 16-9541, 16-9542, 16-9543, 16-9545

Declaration of Chad Teply

IN THE UNITED STATES COURT OF APPEALS
FOR THE TENTH CIRCUIT

PACIFICORP, Petitioner, v. UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, and GINA MCCARTHY Administrator, United States Environmental Protection Agency, Respondents.	))))))))))	Case No. 16-9542

DECLARATION OF CHAD TEPLY

I, Chad Teply, having been first duly sworn upon my oath, declare and state as follows:

1. My name is Chad Teply and I am Vice President of Strategy and Development at PacifiCorp ("PacifiCorp"). I am over the age of 18 and am competent to testify concerning the matters in this declaration. I make this declaration based on my personal knowledge and information gathered and provided to me by PacifiCorp personnel.

2. I hold a Bachelor of Science degree in mechanical engineering from South Dakota State University. I have 17 years of experience in the utility industry. I joined MidAmerican Energy Company, a Berkshire Hathaway Energy Holdings

company, in November 1999 and held positions of increasing responsibility within its power generation organization. In April 2008, I moved to Northern Natural Gas Company as senior director of engineering. In February 2009, I joined PacifiCorp as Vice President of Resource Development and Construction. My current responsibilities for PacifiCorp encompass strategic planning, stakeholder engagement, resource development, and construction services.

3. In my current position, I have among my responsibilities the development and execution of major environmental compliance projects.

4. This declaration is submitted in support of Petitioner PacifiCorp's Motion for Stay of the United States Environmental Protection Agency's ("EPA") regional haze rulemaking affecting PacifiCorp's coal-fired power plants in Utah, entitled "Approval, Disapproval and Promulgation of Air Quality Implementation Plans; Partial Approval and Partial Disapproval of Air Quality Implementation Plans and Federal Implementation Plan; Utah; Revisions to Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze; Final Rule." 81 Fed. Reg. 43894 (July 5, 2016) ("Final Rule"). The Final Rule disapproved key portions of Utah's regional haze state implementation plan ("RH SIP") and replaced it with a significantly more expensive and minimally effective federal implementation plan ("RH FIP"), which requires the installation of selective catalytic reduction ("SCR") systems to control nitrogen oxide (NO_x) emissions at each of the Utah BART Units. Specifically, the Motion for Stay seeks to enjoin these NO_x-related

requirements of the RH FIP.

5. PacifiCorp owns, in majority or whole, and operates two power plants in Utah, with two units at each plant that are subject to Best Available Retrofit Technology ("BART") requirements under the Clean Air Act.

6. The Hunter power plant is located in Castle Dale, Utah, and contains three coal-fired units. Units 1 and 2 are both BART-eligible, while Unit 3 is not subject to BART requirements. The Hunter power plant has a generating capability of approximately 1360 net megawatts ("MW"). Deseret Generation & Transmission Cooperative, Utah Associated Municipal Power Systems, and Utah Municipal Power Agency are co-owners of, and pay their share to receive a portion of, the electrical output from certain affected units at the Hunter power plant.

7. The Huntington power plant is located near Huntington, Utah, and contains two coal-fired units. Units 1 and 2 are both BART-eligible. The Huntington power plant has a generating capability of approximately 910 net MW. PacifiCorp is the owner and operator of both units at the Huntington power plant.

8. Hunter Units 1 and 2 and Huntington Units 1 and 2 are collectively referred to as the "Utah BART Units" in this declaration. PacifiCorp is also the owner of the Carbon power plant in Utah, which was closed in 2015. The Utah BART Units are the only sources in the state that Utah and the EPA have determined to be subject to the Clean Air Act's BART requirements.

9. The electrical capacity and energy produced by the Utah BART Units

helps serve the needs of PacifiCorp's 1.8 million customers in six western states. The Utah BART Units are an integral and essential power generation resource for the customers of PacifiCorp as well as Deseret Generation & Transmission Cooperative, Utah Associated Municipal Power Systems, and Utah Municipal Power Agency.

10. The Utah BART Units directly employ approximately 370 Rocky Mountain Power personnel, and contribute approximately $7.9 million annually in property taxes to the state of Utah.

11. The Utah BART Units have been regulated by the regional haze program for years. In the early and mid-2000s, PacifiCorp worked cooperatively with the State of Utah to develop an effective RH SIP. The State of Utah submitted a RH SIP revision to EPA in September of 2008 with NO_x BART determinations for the Utah BART Units ("2008 RH SIP"). The 2008 RH SIP explicitly rejected the installation of selective catalytic reduction ("SCR") as NO_x BART for the Utah BART Units because the excessive cost was not justified by the visibility benefits. Instead, Utah found that low NO_x burners and separated over-fire air ("LNB/SOFA" or "2008 BART Controls") were the appropriate controls to constitute NO_x BART. EPA did not act within the statutory deadlines to approve or disapprove the 2008 RH SIP submission.

12. Because the 2008 RH SIP became Utah law in 2008, PacifiCorp was legally required to install the NO_x BART of LNB/SOFA at the Utah BART Units, even though EPA had not acted to approve or disapprove the 2008 RH SIP.

13. Through proactive planning, PacifiCorp began to install LNB/SOFA at the Utah BART Units in 2006 and completed the installations in 2014, as required by the 2008 RH SIP. The total cost of the LNB/SOFA installations for all four of the units was approximately $40 million. Installation of the LNB/SOFA systems reduced NO_x emissions as required by the 2008 RH SIP. In fact, the installation of LNB/SOFA from 2006 - 2014 has reduced total NO_x emissions by approximately 11,000 tons annually from the four Utah BART Units.

14. The 2008 RH SIP also required the installation of equipment to reduce particulate matter ("PM") and sulfur dioxide ("SO_2") emissions. PacifiCorp installed this equipment at the Utah BART Units during the same 2006 - 2014 timeframe at the total cost of approximately $515 million and resulting in the reduction of approximately 12,700 annual tons of SO_2 emissions.

15. EPA eventually got around to considering the 2008 RH SIP at the end of 2012 – years after it was statutorily required to act and after PacifiCorp already had installed all of the equipment, with the exception of Hunter Unit 1 retrofits completed in 2014, required by the 2008 RH SIP. Acting to meet a new deadline set by a consent decree negotiated with WildEarth Guardians, EPA disapproved the State's BART determinations under the 2008 RH SIP for NO_x and PM, while it approved an SO_2 BART Alternative (often referred to as "the SO_2 backstop trading program"). 77 Fed. Reg. 74355 (Dec. 14, 2012). EPA did not issue a FIP at that time for the disapproved portions of the 2008 RH SIP.

16. In 2015, Utah submitted a revised RH SIP – at the request of EPA – proposing a BART Alternative for NO_x ("2015 RH SIP Revision"). The 2015 RH SIP Revision included a BART Alternative for NO_x that required the same NO_x emission reductions included in the 2008 RH SIP, as well as additional NO_x emission reductions at three Utah non-BART Units: (i) Hunter Unit 3; (ii) Carbon Unit 1; and (ii) Carbon Unit 2. The 2015 RH SIP Revision also required further emission reductions for PM and SO_2.

17. In fact requiring emission reductions from these three Utah non-BART Units has resulted in the additional reduction of approximately 4,900 tons of NO_x emissions each year, as well as the reduction of approximately 8,000 tons of SO_2 and approximately 570 tons of PM emissions, all of which are projected to continue into the future. The submission also provided an updated BART determination for PM for the Utah BART Units. In approving the 2015 RH SIP Revision, the State of Utah found that its plan resulted in greater reasonable progress in satisfaction of regional haze requirements than would be achieved by the installation of SCR at the Utah BART Units.

18. Again at EPA's request, Utah submitted an additional RH SIP revision on October 20, 2015, with transparency measures to ensure that the SO_2 emission reductions for the BART Alternative were accurately accounted for. EPA requested this additional RH SIP revision so that a potential obstacle to approval of the BART Alternative – fears that SO_2 emission reductions under the BART Alternative might

be double counted – would be removed.

19. In response, EPA issued a bifurcated proposed rule, where EPA found Utah's weight-of-evidence analysis for the BART Alternative simultaneously to be both adequate and inadequate to meet the requirements of the Clean Air Act. EPA, Utah RH SIP Proposed Rule, 81 Fed. Reg. 2004 (Jan. 14, 2016) ("Proposed Rule").

20. EPA then subsequently disapproved the BART Alternative portion of the RH SIP in the Final Rule on July 5, 2016. *See, e.g.*, 81 Fed. Reg. 43894, 43909, 43911-12. In place of the State of Utah's BART Alternative, EPA imposed a RH FIP that required SCR as the NO_x BART—an option Utah had previously twice considered but rejected. *Id.* at 43921.

21. EPA's RH FIP requires the Utah BART Units to install four SCRs (one on each unit) by August of 2021, and imposes a NO_x emission limit of 0.07 lb/MMBtu (30-day rolling average). 40 C.F.R. § 52.2336(c). PacifiCorp has projected that installation of four SCRs at the Utah BART Units will cost in excess of $700 million, with an additional increase in annual operating and maintenance costs of approximately $6 million per year (which does not include the millions needed every four years for SCR catalyst replacement). This is in addition to the approximately $500 million PacifiCorp already has spent to install NO_x, PM, and SO_2 emissions control equipment at the Utah BART Units since 2006.

22. PacifiCorp has asked EPA to reconsider and stay the Final Rule as it pertains to NO_x BART for the Utah BART Units, but EPA did not respond. The

installation of the four SCRs at the Utah BART Units in the short timeframe defined by the RH FIP requires a series of massive construction projects involving extensive planning and logistical coordination. To effectuate timely compliance, project analysis and development activities and associated expenditures already have begun.

23. PacifiCorp and the Utah BART Unit co-owners expect to spend approximately $200,000 on analysis and development of the four SCRs by the end of 2016, with projections in excess of $2 million to be spent in 2017 to maintain prescribed implementation schedules. Expenditures through 2021 are contingent upon the RH FIP being upheld and the projects being determined to be economically justified for customers, but would require a significant ramp up in costs, with total expenditures estimated to be in excess of $700 million by the completion of the FIP-required SCR installations at the four Utah BART Units.

24. EPA has promulgated RH FIPs, and approved RH SIPs, for the states of Arizona, Colorado, Montana and Wyoming that also require PacifiCorp to install emissions control retrofits at other BART Units wholly or partially owned by PacifiCorp. The emissions control retrofit projects required by these other RH FIPs and SIPs have already been installed at several of PacifiCorp's affected units, and are projected to cost PacifiCorp in excess of $1.3 billion from 2005 through 2016.

25. To effectively serve its customers, PacifiCorp currently dispatches the output of the Utah BART Units as base load serving resources in response to the demands of the bulk electric system. Beyond the initial cost, the FIP-required SCR

installations will negatively impact the efficiency of the unit per kilowatt-hour produced and raise the operating costs of each of the Utah BART Units.

26. The compliance costs for the RH FIP may lead to the closure of facilities if PacifiCorp determines that the increased compliance costs do not justify continued operation of one or more units. The decision to shut units down or change to natural gas as a fuel source rather than install SCR has been a common result of EPA FIPs requiring SCR installation. *See, e.g.*, Arizona Apache Plant, 80 Fed Reg 19220 (Feb. 27, 2015) (originally requiring SCR through an EPA FIP but changing the plant to natural gas in subsequent SIP revision); Arizona Cholla Plant, 81 Fed Reg 46852 (July 19, 2016) (closure of units and/or conversion to gas); Oregon Boardman Plant, 76 Fed. Reg. 38997 (July 5, 2011) (requiring SCR in original state submittal to EPA but replacing with BART Alternative that requires cessation of burning coal by 2020 and only LNB/modified OFA).

27. PacifiCorp has sought an administrative stay and reconsideration of the Final Rule from EPA, but to date, EPA has taken no action on this request. Any stay from the Tenth Circuit Court of Appeals would need to be a day-for-day extension of the compliance deadline identified in the RH FIP, since analysis, development, regulatory review, procurement, and construction of the FIP-required SCR installations would require, at a minimum, the full time period allowed under the RH FIP.

28. Given the extensive processes (including engineering, permitting,

regulatory review, competitive procurement, contracting, and construction) necessary to simultaneously construct four SCRs, the four SCRs required by EPA's FIP cannot practicably be constructed prior to mid-year 2018 (the end of the first regional haze planning period and BART deadline).

I, Chad Teply, make the following declaration regarding the veracity of my statements herein:

> I declare under penalty of perjury that the foregoing is true and correct to the extent of my personal knowledge and otherwise reflects information gathered and provided to me by PacifiCorp personnel and other sources.

Executed this 28th day of October, 2016.

CERTIFICATE OF SERVICE

I hereby certify that I electronically filed the foregoing **DECLARATION OF CHAD TEPLY** with the Clerk of the Court for the United States Court of Appeals for the Tenth Circuit by using the appellate CM/ECF system on this 28th day of October, 2016.

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CERTIFICATE OF DIGITAL SUBMISSION

I hereby certify that with respect to the foregoing:

(1) all required privacy redactions have been made per 10th Cir. R. 25.5;

(2) if required to file additional hard copies, that the ECF submission is an exact copy of those documents;

(3) the digital submissions have been scanned for viruses with the most recent version of a commercial virus scanning program, Symantec Endpoint Protection (Version 12.1.6), and according to the program are free of viruses.

DATED this 28th day of October, 2016.

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Exhibit E
PacifiCorp v. EPA, Consolidated Case Nos. 16-9541, 16-9542, 16-9543, 16-9545

Excerpts from Western Regional Air Partnership, Regional Haze Rule Reasonable Progress Report Support Document, State and Class I Area Summaries (Docket ID No. EPA-R08-OAR-2015-0463-0200) *and* Utah Division of Air Quality, Progress Report for Utah's State Implementation Plan for Regional Haze (May 18, 2015)

6.0 STATE AND CLASS I AREA SUMMARIES

As described in Section 2.0, each state is required to submit progress reports at interim points between submittals of Regional Haze Rule (RHR) State Implementation Plans (SIPs), which assess progress towards visibility improvement goals in each state's mandatory Federal Class I areas (CIAs). Data summaries for each CIA in each Western Regional Air Partnership (WRAP) state, which address Regional Haze Rule (RHR) requirements for visibility measurements and emissions inventories are provided in this section. These summaries are intended to provide individual states with the technical information they need to determine if current RHR implementation plan elements and strategies are sufficient to meet all established reasonable progress goals, as defined in their respective initial RHR implementation plans.

6.13 UTAH

The goal of the RHR is to ensure that visibility on the 20% most impaired, or worst, days continues to improve at each Federal Class I area (CIA), and that visibility on the 20% least impaired, or best, days does not get worse, as measured at representative Interagency Monitoring of Protected Visual Environments (IMPROVE) monitoring sites. Utah has 5 mandatory Federal CIAs, which are depicted in Figure 6.13-1 and listed in Table 6.13-1, along with the associated IMPROVE monitor locations.

This section addresses differences between the 2000-2004 baseline and 2005-2009 period, for both monitored data and emission inventory estimates. Monitored data are presented for the 20% most impaired, or worst, days and for the 20% least impaired, or best, days, as per Regional Haze Rule (RHR) requirements. Annual average trend statistics for the 2000-2009 10-year period are also presented here to support assessments of changes in each monitored species that contributes to visibility impairment. Some of the highlights regarding these comparisons are listed below, and more detailed state specific information is provided in monitoring and emissions sub-sections that follow.

- For the best days, the 5-year average deciview metric decreased at all Utah Federal CIA IMPROVE sites.
- For the worst days, 5-year average deciview metric increased at the BRCA1 and CAPI1 sites, and decreased at the ZICA1 and CANY1 sites.
- Changes in deciview averages for the worst days were driven by changes in particulate organic mass, which increased at the BRCA1 and CAPI1 sites and decreased at the ZICA1 and CANY1 sites.
- Ammonium sulfate decreased at all except the ZICA1 site, but changes in 5-year averages at the ZICA1 site used estimates for baseline data that were based on changes measured in the broader Colorado Plateau region. Ammonium sulfate showed decreasing annual average trends at all sites, which was consistent with emissions inventory comparison results that showed large decreases in point source SO_2 emission inventories.
- Ammonium nitrate decreased at all except the CANY1 site, and showed a statistically significant decreasing annual average trend at the CAPI1 site. Changes in emissions inventories showed a net reduction in anthropogenic sources, with increases in area sources and decreases in mobile sources.
- Coarse mass increased at the CAPI1 and CANY1 sites, but neither site showed increasing trends. Higher 5-year averages for the current period were influenced by higher than average coarse mass events in late April 2008 at both sites.

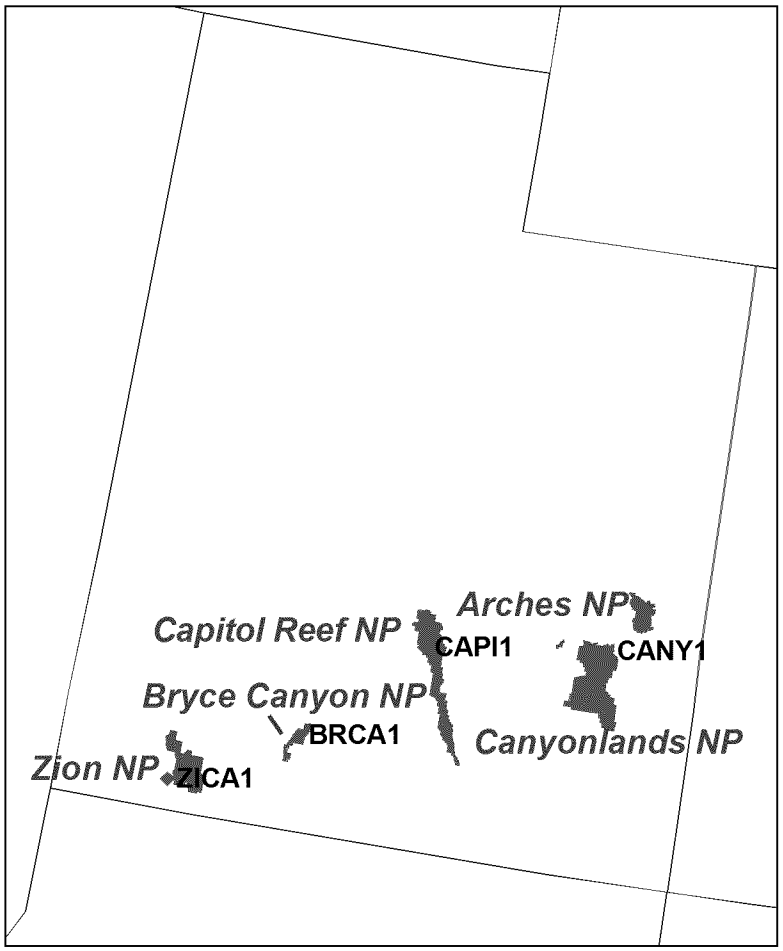

Figure 6.13-1. Map Depicting Federal CIAs and Representative IMPROVE Monitors in Utah.

Table 6.13-1
Utah CIAs and Representative IMPROVE Monitors

Class I Area	Representative IMPROVE Site	Latitude	Longitude	Elevation (m)
Bryce Canyon NP	BRCA1	37.62	-112.17	2481
Canyonlands NP	CANY1	38.46	-109.82	1798
Arches NP				
Capitol Reef NP	CAPI1	38.30	-111.29	1896
Zion NP	ZICA1*	37.20	-113.15	1215

*Replaced the ZION1 monitoring site in 2003.

6.13.1 Monitoring Data

This section addresses RHR regulatory requirements for monitored data as measured by IMPROVE monitors representing Federal CIAs in Utah, including estimates of baseline concentrations for the Zion National Park ZICA1 site. These summaries are supported by

regional data presented in Section 4.0 and by more detailed site specific tables and charts in Appendix M.

As described in Section 3.1, regional haze progress in Federal CIAs is tracked using calculations based on speciated aerosol mass as collected by IMPROVE monitors. The RHR calls for tracking haze in units of deciviews (dv), where the deciview metric was designed to be linearly associated with human perception of visibility. In a pristine atmosphere, the deciview metric is near zero, and a one deciview change is approximately equivalent to a 10% change in cumulative species extinction. To better understand visibility conditions, summaries here include both the deciview metric, and the apportionment of haze into extinction due to the various measured species in units of inverse megameters (Mm^{-1}).

6.13.1.1 Zion Baseline Estimate

In Utah, the ZION1 IMPROVE monitor, which was originally intended to represent Zion National Park, began operation in 2000 at a site located on the northwest edge of the park, near an interstate highway. In 2003 a second IMPROVE monitor, ZICA1, was established approximately 19 miles from the original ZION1 along the southwest edge of the park. A map depicting both Zion National Park sites is presented in Figure 6.13-2.

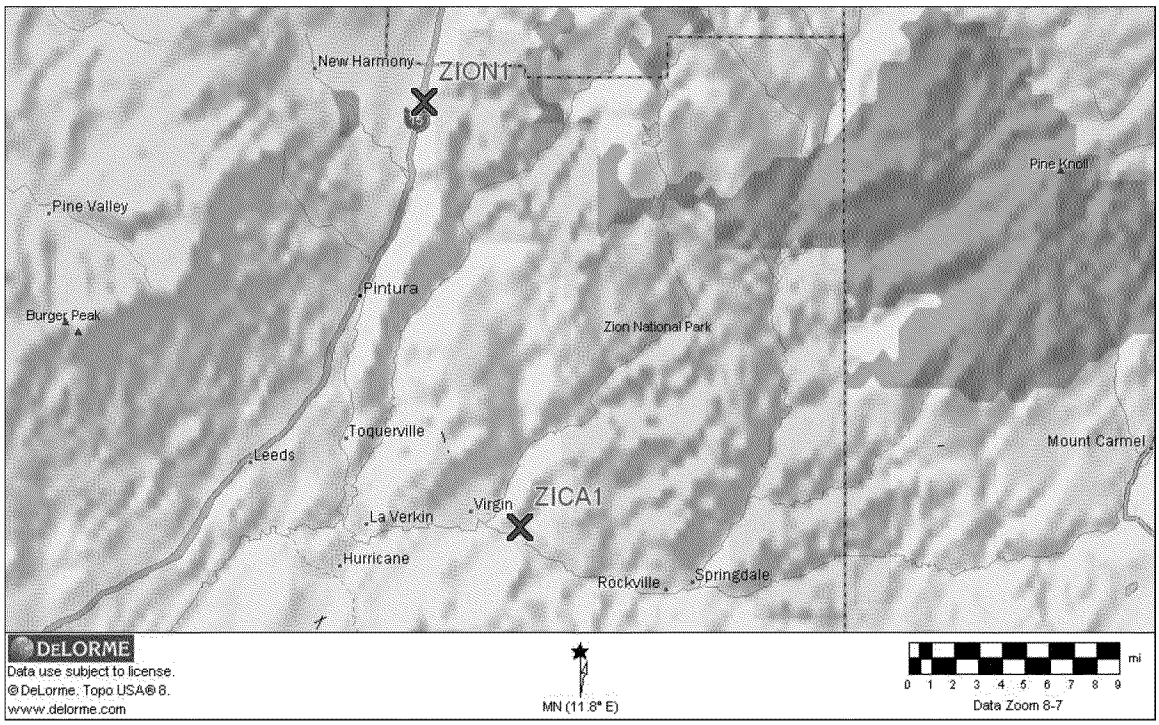

Figure 6.13-2. Map of ZION1 and ZICA1 Sites Representing Zion National Park.

The second site was installed in part because elevated ammonium nitrate at the original site was influenced by mobile sources from the interstate highway that were not representative of park conditions. Figure 6.13-3 presents a scatter plot of ammonium nitrate measurements for the period where both samplers ran concurrently between February 2, 2003, when the ZICA1

monitor was installed, and ending July 29, 2004, when monitoring at the ZION1 site was discontinued. The comparison indicates that ammonium nitrate measurements were much higher at the ZION1 site than the ZICA1 site. Because of these differences, it was determined that future RHR SIPs and progress updates should use the ZICA1 data.

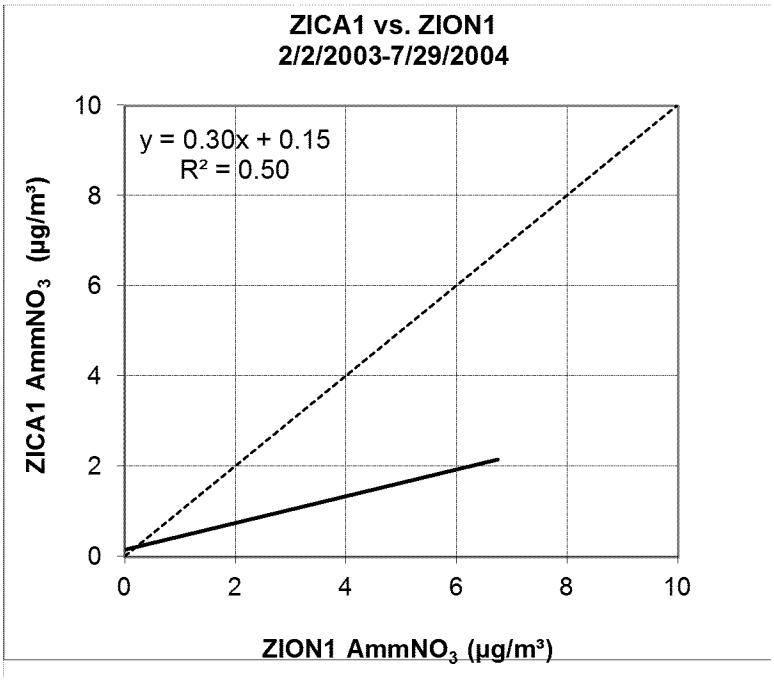

Figure 6.13-3. Correlation Plot for Ammonium Nitrate Depicting Mass Measured at the ZICA1 and ZION1 sites between February 2, 2003 and July 29, 2004.

RHR guidelines require that progress be measured again the 2000-2004 baseline period,[1] but baseline data are not available for the ZICA1 location. The RHR also states that approximations should be made for baseline conditions if these monitoring data are not available.[2] A methodology to estimate baseline conditions for the ZICA1 site was developed in consultation with the State of Utah – Division of Air Quality and IMPROVE Steering Committee representatives from the U.S. Forest Service and National Park Service. This methodology involved applying an average of ratios between progress periods and baseline periods at nearby sites in the region to scale the ZICA1 progress period. Sites selected included those that represent the 16 CIAs on the Colorado Plateau, which have previously been treated regionally as the focus of the Grand Canyon Visibility Transport Commission (GCVTC) report[3] and subsequent Section

[1] EPA's September 2003 *Guidance for Tracking Progress Under the Regional Haze Rule* specifies that progress is tracked against the 2000-2004 baseline period using corresponding averages over successive 5-year periods, i.e. 2005-2009, 2010-2014, etc. (see page 4-2 in the Guidance document)

[2] Section 308(d)(2)(i) of the RHR states, "For mandatory Class I Federal areas without onsite monitoring data for 2000-2004, the State must establish baseline values using the most representative available monitoring data for 2000-2004, in consultation with the Administrator or his or her designee."

[3] The June 1996 *Grand Canyon Visibility Transport Commission Report, Recommendations for Improving Western Vistas* Report is available at www.wrapair.org/WRAP/reports/GCVTCFinal.PDF.

309 requirements of the RHR. Table 6.13-2 list the Colorado Plateau CIA areas and representative IMPROVE sites that were used as the basis for the ZICA1 baseline estimate.

Table 6.13-2
Colorado Plateau CIAs and Representative IMPROVE Sites

State	Colorado Plateau Class I Area	IMPROVE Site
AZ	Mount Baldy WA	BALD1
	Grand Canyon NP	GRCA2
	Petrified Forest NP	PEFO1
	Sycamore Canyon WA	SYCA1
CO	Mesa Verde NP	MEVE1
	Black Canyon of the Gunnison NP	WEMI1
	Weminuche WA	
	Flat Tops WA	WHRI1
	Maroon Bells-Snowmass WA	
	West Elk WA	
NM	San Pedro Parks WA	SAPE1
UT	Bryce Canyon NP	BRCA1
	Arches NP	CANY1
	Canyonlands NP	
	Capitol Reef NP	CAPI1
	Zion NP	ZICA1

To estimate baseline conditions at the ZICA1 site, ratios between the 2005-2009 progress period and the 2000-2004 baseline period were determined for each species, for both the 20% most impaired days and 20% least impaired data, for each site in the Colorado Plateau. The average of these ratios was then applied to the ZICA1 progress period measurement to estimate the 2000-2004 baseline period for each species at the ZICA1 site, for both the most and least impaired days. Table 6.13-3 lists the average progress to baseline period ratios for the Colorado Plateau sites for the 20% most impaired days, and Table 6.13-4 lists averages and ratios for the least impaired days. These average ratios were applied to the 2005-2009 progress period from the ZICA1 site to obtain species and group specific estimates, such that, for each species:

$$\frac{\text{ZICA1 Progress Period}}{\text{Colorado Plateau } \frac{\text{Progress}}{\text{Baseline}} \text{ Average}} = \text{ZICA1 Baseline Period Estimate}$$

Table 6.13-3
Colorado Plateau Sites
20% Most Impaired Visibility Days
Species Averages and Ratios

20% Most Impaired Days		GRCA1	BALD1	PEFO1	SYCA1	WEMI1	WHRI1	MEVE1	SAPE1	CANY1	BRCA1	CAPI1	Average Progress/ Baseline Ratio
Ammonium Sulfate	Baseline Period	5.4	6.2	6.6	5.0	5.0	4.8	6.5	5.8	5.6	5.2	5.9	1.04
	Progress Period	5.8	6.5	7.2	5.7	5.1	5.1	6.3	6.8	5.3	5.0	5.7	
	Ratio (progress/ baseline)	**1.09**	**1.04**	**1.08**	**1.14**	**1.02**	**1.07**	**0.97**	**1.17**	**0.95**	**0.96**	**0.97**	
Ammonium Nitrate	Baseline Period	2.2	1.1	1.8	2.0	1.2	1.3	2.3	1.6	3.0	2.5	3.4	0.86
	Progress Period	1.8	1.0	1.5	1.4	1.0	1.3	2.0	1.2	3.3	2.2	2.7	
	Ratio (progress/ baseline)	**0.81**	**0.87**	**0.83**	**0.67**	**0.83**	**1.02**	**0.86**	**0.73**	**1.10**	**0.89**	**0.80**	
Particulate Organic Carbon	Baseline Period	10.7	13.0	10.9	11.7	8.3	7.8	12.3	7.7	7.1	9.4	5.8	0.91
	Progress Period	10.7	10.9	9.5	11.2	6.9	5.6	6.5	6.3	6.2	11.8	7.6	
	Ratio (progress/ baseline)	**1.01**	**0.84**	**0.87**	**0.96**	**0.84**	**0.71**	**0.53**	**0.82**	**0.87**	**1.27**	**1.30**	
Light Absorbing Carbon	Baseline Period	2.4	2.8	2.9	3.2	2.0	1.8	2.4	1.6	1.7	2.4	1.6	0.98
	Progress Period	2.9	2.1	3.4	3.5	1.8	1.4	1.6	1.6	1.6	2.5	1.8	
	Ratio (progress/ baseline)	**1.23**	**0.75**	**1.16**	**1.12**	**0.92**	**0.81**	**0.70**	**0.96**	**0.94**	**1.07**	**1.09**	
Soil	Baseline Period	1.3	1.1	2.0	6.8	1.3	1.2	2.5	1.5	1.5	1.2	1.3	1.07
	Progress Period	1.5	1.5	2.6	5.8	1.3	1.3	2.0	1.3	1.5	1.3	1.6	
	Ratio (progress/ baseline)	**1.11**	**1.35**	**1.28**	**0.85**	**1.05**	**1.07**	**0.79**	**0.91**	**1.04**	**1.06**	**1.27**	
Coarse Mass	Baseline Period	3.5	2.8	7.3	9.4	3.0	2.8	6.5	2.7	3.8	4.0	3.4	1.00
	Progress Period	3.2	4.1	6.3	10.8	3.0	2.3	4.6	2.5	4.6	3.1	4.1	
	Ratio (progress/ baseline)	**0.92**	**1.44**	**0.87**	**1.15**	**0.99**	**0.81**	**0.70**	**0.93**	**1.20**	**0.76**	**1.20**	
Sea Salt	Baseline Period	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	2.31
	Progress Period	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	
	Ratio (progress/ baseline)	**0.80**	**2.36**	**5.36**	**0.93**	**0.37**	**3.05**	**1.42**	**0.57**	**1.80**	**1.31**	**7.46**	

Table 6.13-4
Colorado Plateau Sites
20% Least Impaired Visibility Days
Species Averages and Ratios

20% Least Impaired Days		GRCA1	BALD1	PEFO1	SYCA1	WEMI1	WHRI1	MEVE1	SAPE1	CANY1	BRCA1	CAPI1	Average Progress/ Baseline Ratio
Ammonium Sulfate (Mm^{-1})	Baseline Period	1.5	1.6	2.3	2.0	1.5	1.1	2.4	1.6	2.2	1.5	1.9	0.94
	Progress Period	1.6	1.6	2.1	2.1	1.3	1.0	2.1	1.5	1.8	1.4	1.6	
	Ratio (progress/ baseline)	**1.08**	**0.96**	**0.95**	**1.03**	**0.91**	**0.96**	**0.87**	**0.94**	**0.84**	**0.92**	**0.84**	
Ammonium Nitrate (Mm^{-1})	Baseline Period	0.4	0.4	0.8	0.9	0.3	0.3	0.8	0.4	0.6	0.7	1.0	0.78
	Progress Period	0.4	0.3	0.6	0.8	0.2	0.2	0.6	0.4	0.5	0.5	0.6	
	Ratio (progress/ baseline)	**1.01**	**0.74**	**0.78**	**0.92**	**0.72**	**0.73**	**0.67**	**0.83**	**0.89**	**0.76**	**0.56**	
Particulate Organic Carbon (Mm^{-1})	Baseline Period	0.6	1.2	1.9	2.4	1.2	0.6	1.5	0.7	1.1	1.0	1.3	0.72
	Progress Period	0.5	1.2	1.5	1.8	0.9	0.3	1.0	0.6	0.7	0.7	0.9	
	Ratio (progress/ baseline)	**0.80**	**0.94**	**0.78**	**0.75**	**0.70**	**0.51**	**0.68**	**0.78**	**0.59**	**0.71**	**0.65**	
Light Absorbing Carbon (Mm^{-1})	Baseline Period	0.3	0.6	1.3	1.6	0.8	0.5	0.6	0.4	0.4	0.4	0.6	0.75
	Progress Period	0.3	0.6	1.3	1.4	0.5	0.3	0.4	0.2	0.3	0.2	0.3	
	Ratio (progress/ baseline)	**0.87**	**0.92**	**0.99**	**0.88**	**0.70**	**0.72**	**0.68**	**0.63**	**0.70**	**0.60**	**0.57**	
Soil (Mm^{-1})	Baseline Period	0.1	0.2	0.4	0.7	0.2	0.1	0.4	0.2	0.3	0.1	0.3	0.90
	Progress Period	0.2	0.2	0.4	0.6	0.2	0.1	0.2	0.1	0.2	0.1	0.2	
	Ratio (progress/ baseline)	**1.06**	**1.04**	**1.16**	**0.86**	**0.87**	**1.04**	**0.61**	**0.96**	**0.69**	**0.95**	**0.62**	
Coarse Mass (Mm^{-1})	Baseline Period	0.4	0.5	1.0	1.0	0.7	0.2	0.7	0.3	1.0	0.5	1.0	0.91
	Progress Period	0.5	0.6	1.0	1.2	0.6	0.3	0.4	0.3	0.7	0.4	0.6	
	Ratio (progress/ baseline)	**1.05**	**1.29**	**1.01**	**1.13**	**0.89**	**1.02**	**0.59**	**1.02**	**0.75**	**0.71**	**0.60**	
Sea Salt (Mm^{-1})	Baseline Period	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.50
	Progress Period	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Ratio (progress/ baseline)	**1.53**	**8.34**	**4.45**	**2.42**	**1.24**	**1.25**	**1.03**	**1.02**	**1.51**	**3.92**	**0.78**	

Because of the logarithmic nature of the dv calculation (i.e., dv = $10\ln(b_{ext}/10)$), average dv ratios were not applied. Instead, in a manner consistent with RHR calculations, ratios were applied to individual species and individual days, and 5-year average deciview value was calculated from annual average deciviews, which were in turn calculated from daily average deciview value. Table 6.13-5 lists results for the ZICA1 site, where deciview values for the baseline period are approximated as being slightly higher than the measured progress period for both the 20% most impaired and least impaired days. These estimated baseline period averages are used to represent the ZICA1 for all summaries presented in this report. Note that similar baseline estimates have also been applied to estimate baseline conditions for the HACR1 site in Hawaii, as described in Section 6.5.1.1.

Table 6.13-5
ZICA1 Progress Period and Baseline Estimates

20% Least Impaired Days		ZICA1 2005-2009 Progress Period	Average of Colorado Plateau Progress/Baseline Ratios	ZICA1 2000-2004 Baseline Estimate
Ammonium Sulfate (Mm^{-1})	**20% Best Days**	1.7	0.94	1.8
	20% Worst Days	5.4	1.04	5.2
Ammonium Nitrate (Mm^{-1})	**20% Best Days**	0.6	0.78	0.8
	20% Worst Days	1.9	0.86	2.2
Particulate Organic Carbon (Mm^{-1})	**20% Best Days**	1.3	0.72	1.8
	20% Worst Days	8.5	0.91	9.3
Light Absorbing Carbon (Mm^{-1})	**20% Best Days**	0.6	0.75	0.8
	20% Worst Days	2.4	0.98	2.4
Soil (Mm^{-1})	**20% Best Days**	0.3	0.90	0.3
	20% Worst Days	1.8	1.07	1.7
Coarse Mass (Mm^{-1})	**20% Best Days**	1.0	0.91	1.1
	20% Worst Days	5.6	1.00	5.6
Sea Salt (Mm^{-1})	**20% Best Days**	0.0	2.50	0.0
	20% Worst Days	0.1	2.31	0.1
Deciviews (dv)	**20% Best Days**	4.3	N/A	**5.0***
	20% Worst Days	12.3	N/A	**12.5***

*Calculated from daily average b_{ext} determined using species specific average ratios from all Colorado Plateau sites.

6.13.1.2 Current Conditions

This section addresses the regulatory question, ***what are the current visibility conditions for the most impaired and least impaired days (40 CFR 51.309(d)(10)(i)(C))?*** RHR guidance specifies that 5-year averages be calculated over successive 5-year periods, i.e. 2000-2004, 2005-2009, 2010-2014, etc.[4] Current visibility conditions are represented here as the most recent successive 5-year average period available, or the 2005-2009 period average, although the most recent IMPROVE monitoring data currently available includes 2010 data.

Tables 6.13-6 and 6.13-7 present the calculated deciview values for current conditions at each site, along with the percent contribution to extinction from each aerosol species for the 20% most impaired, or worst, and 20% least impaired, or best, days for each of the Federal CIA IMPROVE monitors in Utah. Figure 6.13-4 presents 5-year average extinction for the current progress period for both the 20% most impaired and 20% least impaired days. Note that the percentages in the tables consider only the aerosol species which contribute to extinction, while the charts also show Rayleigh, or scattering due to background gases in the atmosphere.

Specific observations for the current visibility conditions on the 20% most impaired days are as follows:

- The largest contributors to aerosol extinction at Utah sites were particulate organic mass, ammonium sulfate and coarse mass.
- The highest aerosol extinction (12.3 dv) was measured at the ZICA1 site, where particulate organic mass was the largest contributor to aerosol extinction, followed by coarse mass. The lowest aerosol extinction (11.0 dv) was measured at the CANY1 site.

Specific observations for the current visibility conditions on the 20% least impaired days are as follows:

- The aerosol contribution to total extinction on the best days was less than Rayleigh, or the background scattering that would occur in clear air. Average extinction (including Rayleigh) ranged from 2.1 dv (BRCA2) to 4.3 dv (ZICA1).
- For all sites, ammonium sulfate was the largest contributor to the non-Rayleigh aerosol species of extinction

[4] EPA's September 2003 *Guidance for Tracking Progress Under the Regional Haze Rule* specifies that progress is tracked against the 2000-2004 baseline period using corresponding averages over successive 5-year periods, i.e. 2005-2009, 2010-2014, etc. (See page 4-2 in the Guidance document.)

Table 6.13-6
Utah Class I Area IMPROVE Sites
Current Visibility Conditions
2005-2009 Progress Period, 20% Most Impaired Days

Site	Deciviews (dv)	Percent Contribution to Aerosol Extinction by Species (Excludes Rayleigh) (% of Mm^{-1}) and Rank*						
		Ammonium Sulfate	Ammonium Nitrate	Particulate Organic Mass	Elemental Carbon	Soil	Coarse Mass	Sea Salt
BRCA1	11.9	19% (2)	9% (5)	**45% (1)**	10% (4)	5% (6)	12% (3)	0% (7)
CANY1	11.0	23% (2)	14% (4)	**27% (1)**	7% (5)	7% (6)	20% (3)	0% (7)
CAPI1	11.3	24% (2)	12% (4)	**32% (1)**	8% (5)	7% (6)	17% (3)	0% (7)
ZICA1	12.3	21% (3)	7% (5)	**33% (1)**	9% (4)	7% (6)	22% (2)	0% (7)

*Highest aerosol species contribution per site is highlighted in bold.

Table 6.13-7
Utah Class I Area IMPROVE Sites
Current Visibility Conditions
2005-2009 Progress Period, 20% Least Impaired Days

Site	Deciviews (dv)	Percent Contribution to Aerosol Extinction by Species (Excludes Rayleigh) (% of Mm^{-1}) and Rank						
		Ammonium Sulfate	Ammonium Nitrate	Particulate Organic Mass	Elemental Carbon	Soil	Coarse Mass	Sea Salt
BRCA1	2.1	**40% (1)**	15% (3)	22% (2)	7% (5)	4% (6)	11% (4)	1% (7)
CANY1	2.8	**43% (1)**	12% (4)	15% (3)	7% (5)	5% (6)	17% (2)	1% (7)
CAPI1	2.7	**38% (1)**	13% (4)	21% (2)	8% (5)	5% (6)	14% (3)	1% (7)
ZICA1	4.3	**30% (1)**	11% (4)	23% (2)	10% (5)	6% (6)	18% (3)	1% (7)

*Highest aerosol species contribution per site is highlighted in bold.

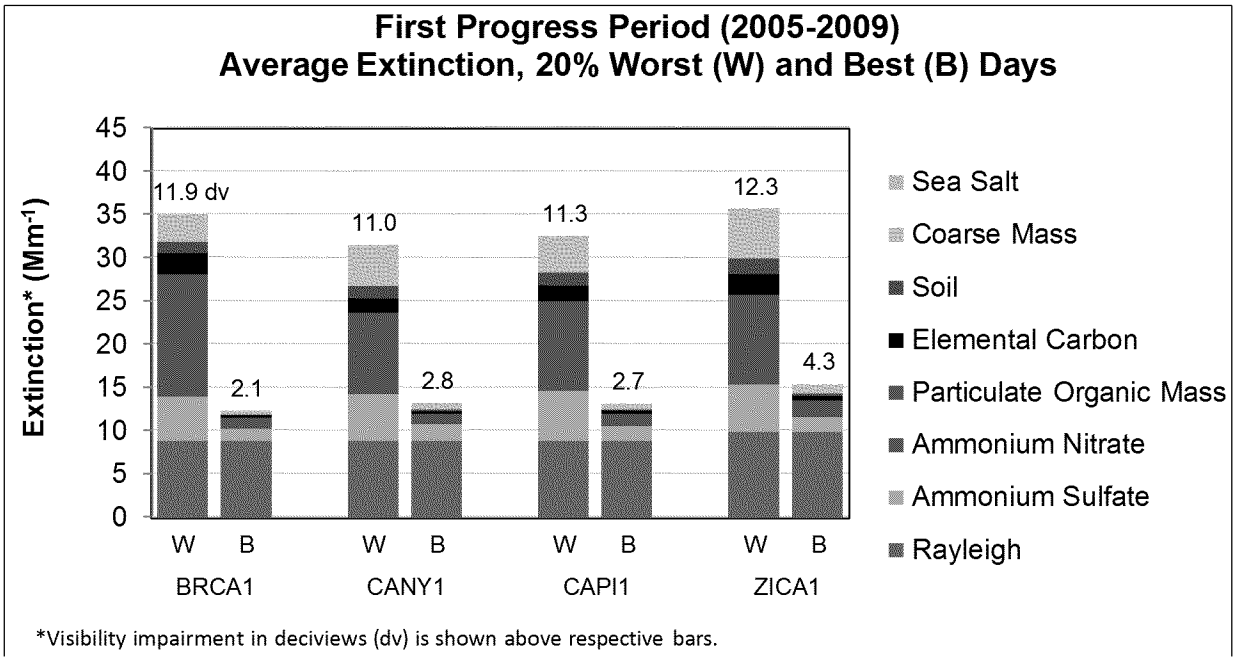

Figure 6.13-4. Average Extinction for Current Progress Period (2005-2009) for the Worst (Most Impaired) and Best (Least Impaired) Days Measured at Utah Class I Area IMPROVE Sites.

6.13.1.3 Differences between Current and Baseline Conditions

This section addresses the regulatory question, ***what is the difference between current visibility conditions for the most impaired and least impaired days and baseline visibility conditions (40 CFR 51.309(d)(10)(i)(C))?*** Included here are comparisons between the 5-year average baseline conditions (2000-2004) and current progress period extinction (2005-2009).

Table 6.13-8 presents the differences between the 2000-2004 baseline period average extinction and the 2005-2009 progress period average for each site in Utah for the 20% most impaired days, and Table 6.13-9 presents similar data for the least impaired days. Averages that increased are depicted in red text and averages that decreased in blue.

Figure 6.13-5 presents the 5-year average extinction for the baseline and current progress period averages for the worst days and Figure 6.13-6 presents the differences in averages by aerosol species, with increases represented above the zero line and decreases below the zero line. Figures 6.13-7 and 6.13-8 present similar plots for the best days.

For the 20% most impaired days, the 5-year average RHR deciview metric increased between the 2000-2004 and 2005-2009 periods at the BRCA1 and CAPI1 sites and decreased at the CANY1 and ZICA1 sites. Notable differences for individual species averages were as follows:

- Increases in 5-year average deciviews at the BRCA1 and CAPI1 sites were mostly due to increases in particulate organic mass, with some increases also measured in

elemental carbon and soil. Coarse mass also contributed to increases at the CAPI1 site. Increases were offset by decreases in ammonium nitrate and ammonium sulfate at both sites.

- Ammonium sulfate decreased at all sites except ZICA1. Note that the ZICA1 site did not measure during the baseline years, and changes reported here are proportional to average changes in extinction as measured at regional sites as discussed in Section 6.13.1.1.

For the 20% least impaired days, the 5-year average deciview metric decreased at all sites. Notable differences for individual species averages on the 20% least impaired days were as follows:

- All species at all sites either decreased or stayed the same between the baseline and current progress period for the best days.
- The largest decreases on the best days were measured in particulate organic mass, ammonium nitrate, ammonium sulfate, and coarse mass.

Table 6.13-8
Utah Class I Area IMPROVE Sites
Difference in Aerosol Extinction by Species
2000-2004 Baseline Period to 2005-2009 Progress Period
20% Most Impaired Days

Site	Deciview (dv)			Change in Extinction by Species (Mm^{-1})*						
	2000-04 Baseline Period	2005-09 Progress Period	Change in dv*	Amm. Sulfate	Amm. Nitrate	POM	EC	Soil	CM	Sea Salt
BRCA1	11.6	11.9	+0.3	-0.2	-0.3	+2.5	+0.2	+0.1	-0.9	0.0
CANY1	11.2	11.0	-0.2	-0.3	+0.3	-0.9	-0.1	+0.1	+0.8	0.0
CAPI1	10.9	11.3	+0.4	-0.2	-0.7	+1.8	+0.2	+0.3	+0.7	+0.1
ZICA1	12.5	12.3	-0.2	+0.2	-0.3	-0.8	-0.1	+0.1	0.0	+0.1

*Change is calculated as progress period average minus baseline period average. Values in red indicate increases in extinction and values in blue indicate decreases.

Table 6.13-9
Utah Class I Area IMPROVE Sites
Difference in Aerosol Extinction by Species
2000-2004 Baseline Period to 2005-2009 Progress Period
20% Least Impaired Days

Site	Deciview (dv)			Change in Extinction by Species (Mm^{-1})*						
	2000-04 Baseline Period	2005-09 Progress Period	Change in dv*	Amm. Sulfate	Amm. Nitrate	POM	EC	Soil	CM	Sea Salt
BRCA1	2.8	2.1	-0.7	-0.1	-0.2	-0.3	-0.2	0.0	-0.1	0.0
CANY1	3.7	2.8	-0.9	-0.3	-0.1	-0.5	-0.1	-0.1	-0.2	0.0
CAPI1	4.1	2.7	-1.4	-0.3	-0.4	-0.5	-0.3	-0.1	-0.4	0.0
ZICA1	5.0	4.3	-0.7	-0.1	-0.2	-0.5	-0.2	0.0	-0.1	0.0

*Change is calculated as progress period average minus baseline period average. Values in red indicate increases in extinction and values in blue indicate decreases.

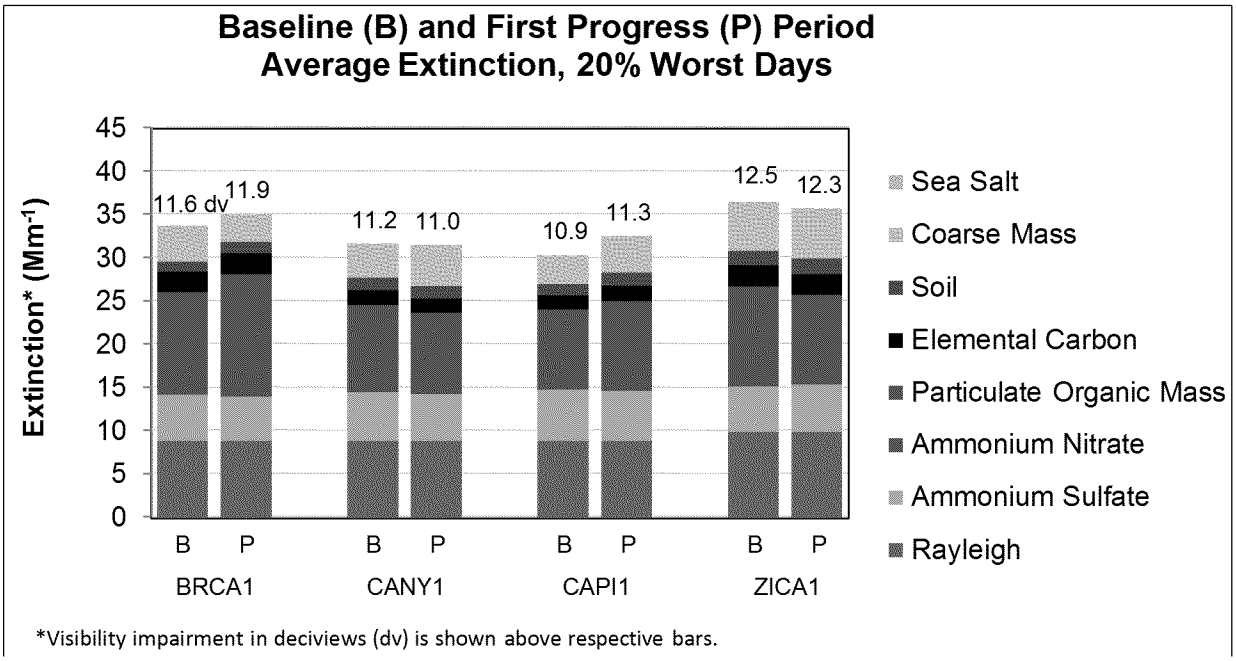

Figure 6.13-5. Average Extinction for Baseline and Progress Period Extinction for Worst (Most Impaired) Days Measured at Utah Class I Area IMPROVE Sites.

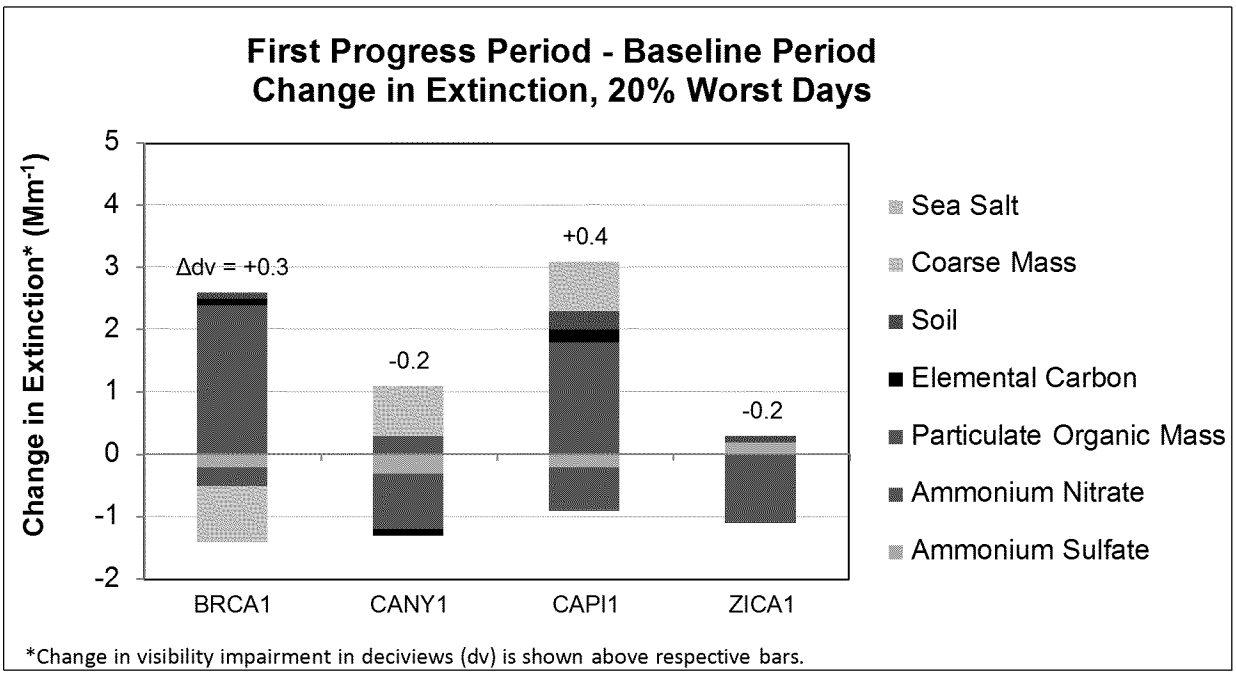

Figure 6.13-6. Difference between Average Extinction for Current Progress Period (2005-2009) and Baseline Period (2000-2004) for the Worst (Most Impaired) Days Measured at Utah Class I Area IMPROVE Sites.

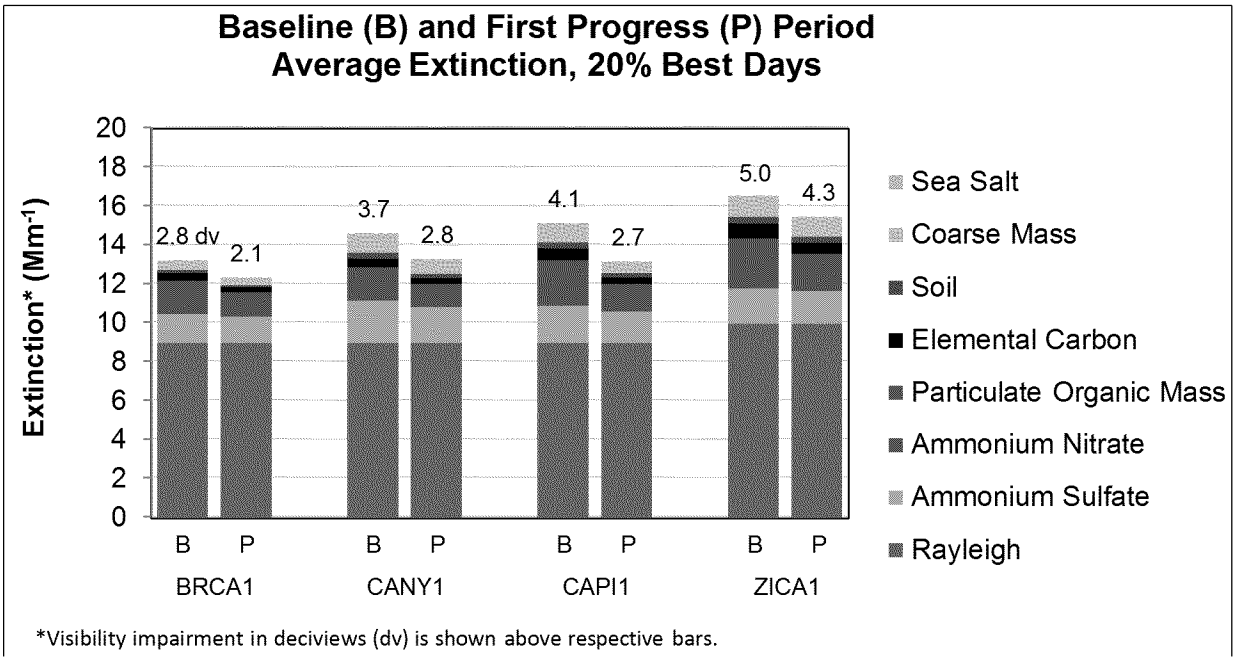

Figure 6.13-7. Average Extinction for Baseline and Progress Period Extinction for Best (Least Impaired) Days Measured at Utah Class I Area IMPROVE Sites.

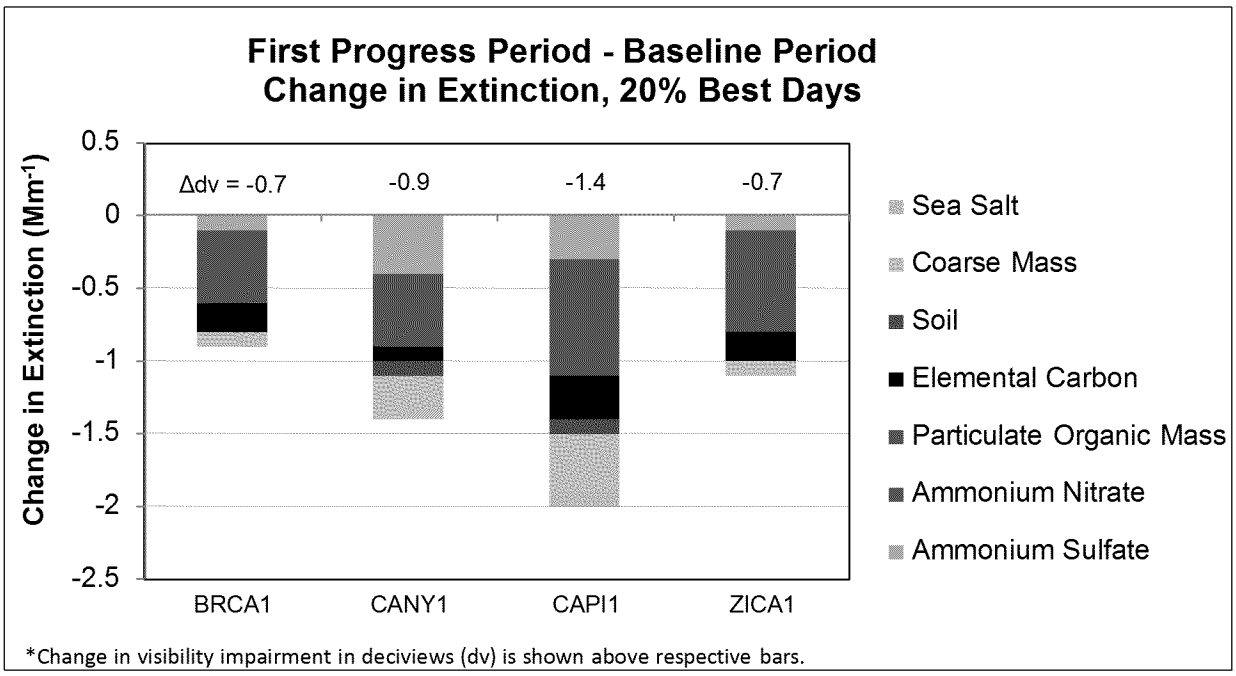

Figure 6.13-8. Difference between Average Extinction for Current Progress Period (2005-2009) and Baseline Period (2000-2004) for the Best (Least Impaired) Days Measured at Utah Class I Area IMPROVE Sites.

6.13.1.4 Changes in Visibility Impairment

This section addresses the regulatory question, ***what is the change in visibility impairment for the most impaired and least impaired days over the past 5 years (40 CFR 51.309(d)(10)(i)(C))?*** Included here are changes in visibility impairment as characterized by annual average trend statistics, and some general observations regarding local and regional events and outliers on a daily and annual basis that affected the current 5-year progress period. The regulatory requirement asks for a description of changes over the past 5-year period, but trend analysis is better suited to longer periods of time, so trends for the entire 10-year planning period are presented here.

Trend statistics for the years 2000-2009 for each species at each site in Utah are summarized in Table 6.13-10, and regional trends were presented earlier in Section 4.1.1.[5] Only trends for aerosol species trends with p-value statistics less than 0.15 (85% confidence level) are presented in the table here, with increasing slopes in red and decreasing slopes in blue.[6] In some cases, trends may show decreasing tendencies while the difference between the 5-year averages do not (or vice versa), as discussed in Section 3.1.2.2. In these cases, the 5-year average for the best and worst days is the important metric for RHR regulatory purposes, but trend statistics may be of value to understand and address visibility impairment issues for planning purposes.

For each site, a more comprehensive list of all trends for all species, including the associated p-values, is provided in Appendix M. Additionally, the appendix includes plots depicting 5-year, annual, monthly and daily average extinction for each site. These plots are intended to provide a fairly comprehensive compilation of reference information for individual states to investigate local and regional events and outliers that may have influenced changes in visibility impairment as tracked using the 5-year deciview metrics. Note that similar summary products are also available from the WRAP TSS website (http://vista.cira.colostate.edu/tss/). Some general observations regarding changes in visibility impairment at sites in Utah are as follows:

- Particulate organic mass was the largest contributor to aerosol extinction at all sites in Utah. The largest difference between the 5-year average baseline and progress periods was measured for particulate organic mass at the BRCA1 site. This difference average was influenced by a high particulate organic mass events in July and August, 2009.
- For ammonium sulfate, annual average trend statistics for all measured days indicated decreasing trends at all Utah sites. A slight increase in the 5-year average ammonium

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[5] Annual trends were calculated for the years 2000-2009, with a trend defined as the slope derived using Theil statistics. Trends derived from Theil statistics are useful in analyzing changes in air quality data because these statistics can show the overall tendency of measurements over long periods of time, while minimizing the effects of year-to-year fluctuations which are common in air quality data. Theil statistics are also used in EPA's National Air EPA's National Air Quality Trends Reports (http://www.epa.gov/airtrends/) and the IMPROVE program trend reports (http://vista.cira.colostate.edu/improve/Publications/improve_reports.htm)

[6] The significance of the trend is represented with p-values calculated using Mann-Kendall trend statistics. Determining a significance level helps to distinguish random variability in data from a real tendency to increase or decrease over time, where lower p-values indicate higher confidence levels in the computed slopes.

sulfate was reported for the ZICA1 site, but this was based on a baseline average estimate as described in Section 6.13.1.1. Actual data measured between 2004 and 2009 at the ZICA1 site indicated a slightly decreasing annual average trend.

- For ammonium nitrate, annual average trend statistics for all measured days indicated a decreasing trend at the CAPI1 site, and either no trend or insignificant trends at the other Utah sites.
- For soil, slightly increasing annual average trends were measured at the ZICA1 site, and an increasing trend for the worst days was measured at the CAPI1 site.
- Coarse mass increased at the CAPI1 and CANY1 sites, but these sites did not show increasing trends. Higher 5-year current period averages were influenced by higher than average coarse mass events in late April of 2008 at both sites.

Table 6.13-10
Utah Class I Area IMPROVE Sites
Change in Aerosol Extinction by Species
2000-2009 Annual Average Trends

Site	Group	Annual Trend* (Mm^{-1}/year)						
		Ammonium Sulfate	Ammonium Nitrate	Particulate Organic Mass	Elemental Carbon	Soil	Coarse Mass	Sea Salt
BRCA1	20% Best	--	0.0	-0.1	0.0	--	0.0	0.0
	20% Worst	-0.2	--	0.5	0.1	--	--	0.0
	All Days	-0.1	0.0	--	--	--	--	--
CANY1	20% Best	-0.1	--	-0.1	0.0	--	-0.1	0.0
	20% Worst	-0.1	--	--	--	--	--	0.0
	All Days	-0.1	0.0	--	0.0	0.0	--	0.0
CAPI1	20% Best	-0.1	-0.1	-0.1	0.0	--	-0.1	--
	20% Worst	--	-0.2	--	--	0.1	--	0.0
	All Days	-0.1	-0.1	--	0.0	--	--	0.0
ZICA1	20% Best	0.0	--	--	0.0	0.0	--	0.0
	20% Worst	-0.5	--	--	--	--	--	--
	All Days	-0.2	--	--	-0.1	0.1	--	--

*(--) Indicates statistically insignificant trend (<85% confidence level). Annual averages and complete trend statistics for all significance levels are included for each site in Appendix M.

6.13.2 Emissions Data

Included here are summaries depicting differences between two emission inventory years that are used to represent the 5-year baseline and current progress periods. The baseline period is represented using a 2002 inventory developed by the WRAP for use in the initial WRAP state SIPs, and the progress period is represented by a 2008 inventory which leverages recent WRAP inventory work for modeling efforts, as referenced in Section 3.2.1. For reference, Table 6.13-7 lists the major emitted pollutants inventoried, the related aerosol species, some of the major sources for each pollutant, and some notes regarding implications of these pollutants. Differences

between these baseline and progress period inventories, and a separate summary of annual emissions from electrical generating units (EGUs), are presented in this section.

Table 6.13-11
Utah
Pollutants, Aerosol Species, and Major Sources

Emitted Pollutant	Related Aerosol	Major Sources	Notes
Sulfur Dioxide (SO_2)	Ammonium Sulfate	Point Sources; On- and Off-Road Mobile Sources	SO_2 emissions are generally associated with anthropogenic sources such as coal-burning power plants, other industrial sources such and refineries and cement plants, and both on- and off-road diesel engines.
Oxides of Nitrogen (NO_X)	Ammonium Nitrate	On- and Off-Road Mobile Sources; Point Sources; Area Sources	NO_X emissions are generally associated with anthropogenic sources. Common sources include virtually all combustion activities, especially those involving cars, trucks, power plants, and other industrial processes.
Ammonia (NH_3)	Ammonium Sulfate and Ammonium Nitrate	Area Sources; On-Road Mobile Sources	Gaseous NH_3 has implications in particle formation because it can form particulate ammonium. Ammonium is not directly measured by the IMPROVE program, but affects formation potential of ammonium sulfate and ammonium nitrate. All measured nitrate and sulfate is assumed to be associated with ammonium for IMPROVE reporting purposes.
Volatile Organic Compounds (VOCs)	Particulate Organic Mass (POM)	Biogenic Emissions; Vehicle Emissions; Area Sources	VOCs are gaseous emissions of carbon compounds, which are often converted to POM through chemical reactions in the atmosphere. Estimates for biogenic emissions of VOCs have undergone significant updates since 2002, so changes reported here are more reflective of methodology changes than actual changes in emissions (see Section 3.2.1).
Primary Organic Aerosol (POA)	POM	Wildfires; Area Sources	POA represents organic aerosols that are emitted directly as particles, as opposed to gases. Wildfires in the west generally dominate POA emissions, and large wildfire events are generally sporadic and highly variable from year-to-year.
Elemental Carbon (EC)	EC	Wildfires; On- and Off-Road Mobile Sources	Large EC events are often associated with large POM events during wildfires. Other sources include both on- and off-road diesel engines.
Fine Soil	Soil	Windblown Dust; Fugitive Dust; Road Dust; Area Sources	Fine soil is reported here as the crustal or soil components of $PM_{2.5}$.
Coarse Mass (PMC)	Coarse Mass	Windblown Dust; Fugitive Dust	Coarse mass is reported by the IMPROVE Network as the difference between PM_{10} and $PM_{2.5}$ mass measurements. Coarse mass is not separated by species in the same way that $PM_{2.5}$ is speciated, but these measurements are generally associated with crustal components. Similar to crustal $PM_{2.5}$, natural windblown dust is often the largest contributor to PMC.

6.13.2.1 Changes in Emissions

This section addresses the regulatory question, ***what is the change over the past 5 years in emissions of pollutants contributing to visibility impairment from all sources and activities within the State (40 CFR 51.309(d)(10)(i)(D))?*** For these summaries, emissions during the baseline years are represented using a 2002 inventory, which was developed with support from the WRAP for use in the original RHR SIP strategy development (termed plan02d). Differences between inventories are represented as the difference between the 2002 inventory, and a 2008 inventory which leverages recent inventory development work performed by the WRAP for the WestJumpAQMS and DEASCO$_3$ modeling projects (termed WestJump2008). Note that the comparisons of differences between inventories does not necessarily reflect a change in emissions, as a number of methodology changes and enhancements have occurred between development of the individual inventories, as referenced in Section 3.2.1. Inventories for all major visibility impairing pollutants are presented for major source categories, and categorized as either anthropogenic or natural emissions. State-wide inventories totals and differences are presented here, and inventory totals on a county level basis are available on the WRAP Technical Support System website (http://vista.cira.colostate.edu/tss/).

Table 6.13-12 and Figure 6.13-9 present the differences between the 2002 and 2008 sulfur dioxide (SO_2) inventories by source category. Tables 6.13-13 and Figure 6.13-10 present data for oxides of nitrogen (NO_X), and subsequent tables and figures (Tables 6.13-14 through 6.13-19 and Figures 6.13-10 through 6.13-16) present data for ammonia (NH_3), volatile organic compounds (VOCs), primary organic aerosol (POA), elemental carbon (EC), fine soil, and coarse mass. Inventory totals on a county level basis will be made available on the WRAP TSS website (http://vista.cira.colostate.edu/tss/). General observations regarding emissions inventory comparisons are listed below.

- Largest differences for point source inventories were a decrease in SO_2 emissions and an increases in NO_X.
- Area source inventories showed decreases in SO_2 and increases in NO_X, NH_3, POA, and VOCs. These changes may be due to a combination of population changes and differences in methodologies used to estimate these emissions, as referenced in Section 3.2.1. One methodology change was the reclassification of some off-road mobile sources (such as some types of marine vessels and locomotives) into the area source category in 2008, which may have contributed to increases in area source inventory totals, but decreases in off-road mobile totals.
- On-road mobile source inventory comparisons showed decreases in most parameters, especially NO_X and VOCs, with increases in POA, EC, and coarse mass. Reductions in NO_X and VOC are likely influenced by federal and state emissions standards that have already been implemented. The increases in POA, EC, and coarse mass occurred in all of the WRAP states for on-road mobile inventories, regardless of reductions in NOX and VOCs, indicating that these increases were likely due use of different on-road models, as referenced in Section 3.2.1.
- Off-road mobile source inventories showed decreases in NO_X, SO_2, and VOCs, and increases in fine soil and coarse mass, which was consistent with most contiguous

6.13.2.2 EGU Summary

As described in previous sections, differences between the baseline and progress period inventories presented here do not necessarily represent changes in actual emissions because numerous updates in inventory methodologies have occurred between the development of the separate inventories. Also, the 2002 baseline and 2008 progress period inventories represent only annual snapshots of emissions estimates, which may not be representative of entire 5-year monitoring periods compared. To better account for year-to-year changes in emissions, annual emission totals for Utah electrical generating units (EGU) are presented here. EGU emissions are some of the more consistently reported emissions, as tracked in EPA's Air Markets Program Database for permitted Title V facilities in the state (http://ampd.epa.gov/ampd/). RHR implementation plans are required to pay specific attention to certain major stationary sources, including EGUs, built between 1962 and 1977.

Figure 6.13-17 presents a sum of annual NO_X and SO_2 emissions as reported for Utah EGU sources between 1996 and 2010. While these types of facilities are targeted for controls in state regional haze SIPs, it should be noted that many of the controls planned for EGUs in the WRAP states had not taken place yet in 2010, while other controls separate from the RHR may have been implemented. The chart shows some periods of decline for both NO_X and SO_2, with a sharp decline in SO_2 emissions between 2006 and 2007.

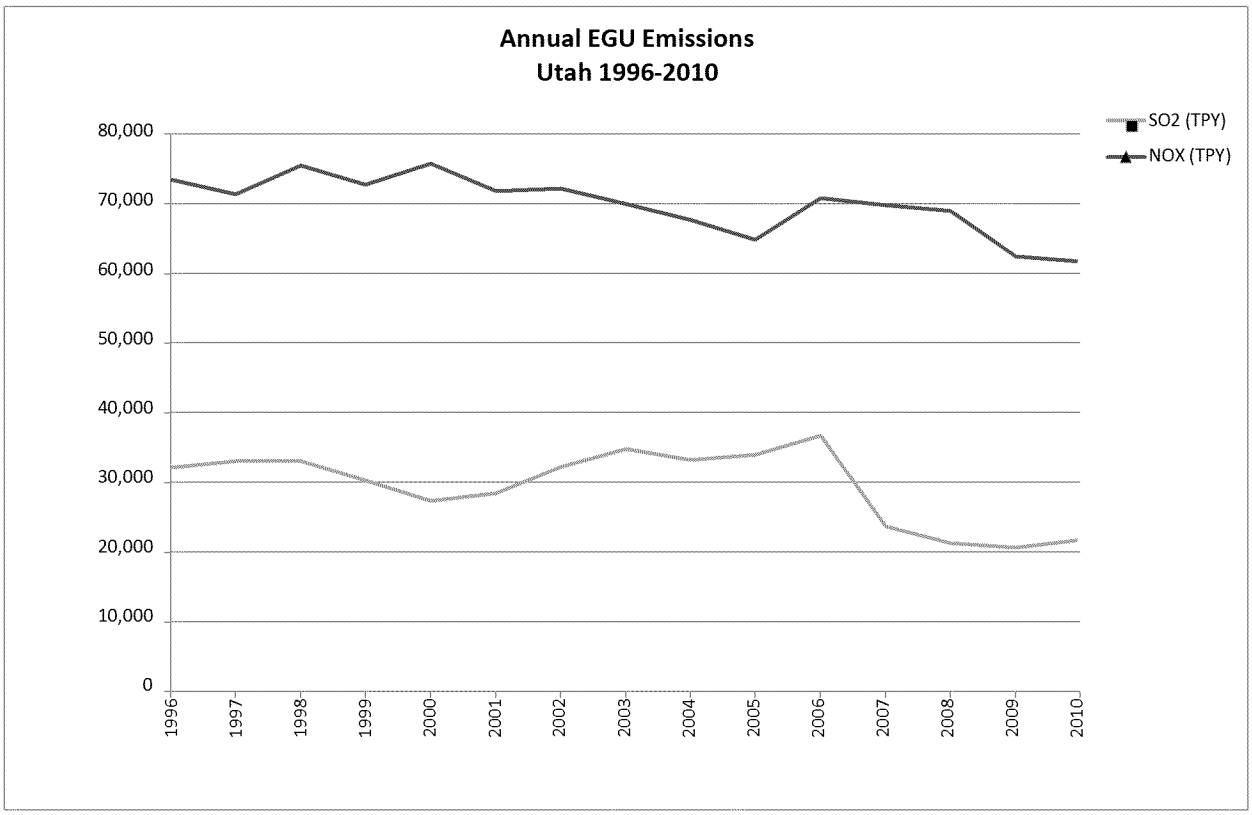

Figure 6.13-17. Sum of EGU Emissions of SO_2 and NO_X reported between 1996 and 2010 for Utah.

PROGRESS REPORT FOR UTAH'S STATE IMPLEMENTATION PLAN FOR REGIONAL HAZE

May 18, 2015

Prepared by staff of the:

Utah Division of Air Quality
Utah Department of Environmental Quality
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1.0 INTRODUCTION

On December 12, 2003, the State of Utah submitted a Regional Haze State Implementation Plan (RH SIP) to meet the requirements of 40 CFR 51.309 (309 SIP) to improve visibility in Utah's five Federal Class I Areas. The 2003 version of the 309 SIP and subsequent revisions to it addressed the first phase of requirements, with an emphasis on stationary source sulfur dioxide (SO_2) emission reductions, smoke management, and a focus on improving visibility on the Colorado Plateau.

On December 14, 2012, the EPA approved the majority of Utah's RH SIP, but disapproved several SIP provisions, which included the BART determination for nitrogen oxide (NOx) and particulate matter (PM)[1]. The Utah Air Quality Board proposed a revision to the RH SIP on March 4, 2015 to address EPA's concerns and is expected to take final action on the proposal in June, 2015. The previous BART determination has been fully implemented and significant emission reductions of NOx, SO_2, and PM have already been achieved.

1.1 State Implementation Plan Requirements for the 5-Year Progress Report

Provisions of the Regional Haze (RH) rule contained in 40 CFR §51.309(d)(10) require that each state submit a progress report five years after the submittal of their initial RH SIP. The progress report must be in the form of a SIP revision and must include a determination regarding the adequacy of the existing regional haze SIP. This report has been prepared to fulfill all applicable requirements pertaining to the first five-year progress report.

The progress report SIP must include 1) the status for implementation of control measures included in the original regional haze SIP, 2) a summary of emission reductions achieved through the implementation of control measures, 3) an assessment of visibility conditions, 4) an analysis of the changes in emission pollutants, 5) an assessment of significant changes in emissions that may have limited or impeded progress in improving visibility, 6) an assessment of whether the current SIP elements and strategies are sufficient to meet reasonable progress goals and 7) a review of the State's visibility monitoring strategy.

The technical data included in this progress report are from the *"Western Regional Air Partnership Regional Haze Rule Reasonable Progress Summary Report"* (Appendix A) developed by the Western Regional Air Partnership (WRAP)[2] in June of 2013 and the WRAP Technical Support System (TSS). The WRAP progress report technical support document (TSD) was prepared on behalf of the 15 western state members in the WRAP region. It serves as the technical basis for use by states to develop the first of their individual reasonable progress reports for the 116 Federal Class I areas located in the western states. Data are presented in this report on a regional, state, and Class I area-specific basis that characterize the difference between 2000-2004 baseline conditions and current conditions, represented here by the most recent successive 5-year average. The WRAP progress report TSD was focused on the first 5-year period, 2005-2009, and therefore the monitoring and emission inventory data reflect that time period. Changes in visibility impairment are characterized using aerosol measurements form the IMPROVE network (the

[1] 77 FR 74355, December 14, 2012.

[2] The WRAP is a collaborative effort of tribal governments, state governments and various federal agencies representing the western states that provides technical and policy tools for the western states and tribes to comply with the EPA's RH regulations. Detailed information regarding WRAP support of air quality management issues for western states is provided on the WRAP website, www.wrapair2.org. Data summary descriptions and tools specific to RHR support are available on the WRAP Technical Support System website, http://vista.cira.colostate.edu/tss/.

primary monitoring network for regional haze, both nationwide and in Utah), and the differences between emissions inventory years represent both the baseline and current progress period.

The State of Utah intends to consult with federal land managers as required under 40 CFR §51.308(i) during the development of the RH SIP for the next planning period that is due in 2018. The State of Utah reaffirms its commitment to participate in a regional planning process with Alaska, Arizona, California, Colorado, Idaho, Montana, New Mexico, North Dakota, Oregon, South Dakota, Washington, Wyoming, the United States Department of Interior (USDI) Fish and Wildlife Services (FWS) and National Park Services (NPS), and the United States Department of Agriculture (USDA) Forest Service (FS).

Pursuant to the Tribal Authority Rule, any tribe whose lands are within the boundaries of the State of Utah has the option to develop a RH Tribal Implementation Plan (TIP) for their lands to assure reasonable progress in the five Class I areas in Utah. Accordingly, no provisions of this periodic report shall be construed as being applicable to Indian Country.

2.0 UTAH CLASS I AREAS

Utah has five Federal Class I areas within its borders: Arches National Park, Bryce Canyon National Park, Canyonlands National Park, Capitol Reef National Park, and Zion National Park. All five of Utah's Federal Class I areas are located on the Colorado Plateau (Figure 2.1).

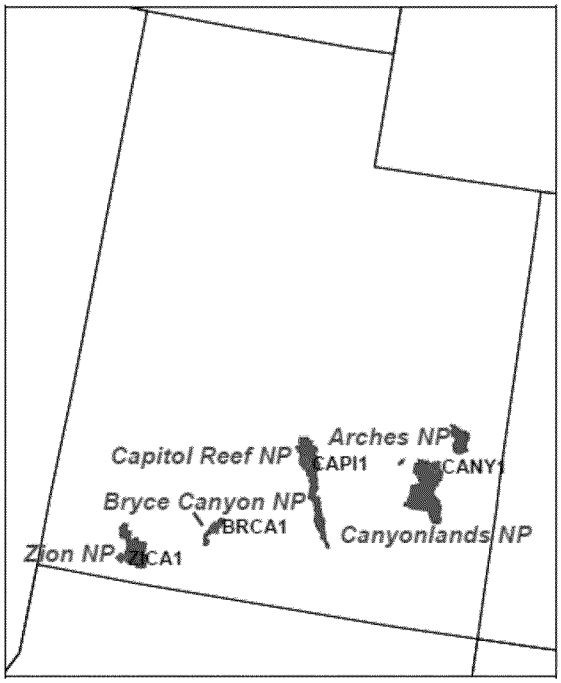


Figure 2.1. Map Depicting Federal Class I Areas and Representative IMPROVE Monitors in Utah

Utah's Department of Environmental Quality's (DEQ) Division of Air Quality (DAQ) is responsible for developing the RH progress report. This progress report compares the current visibility conditions at each of these Class I areas to the 2018 reasonable progress goals to determine if Utah is on track to reach these goals. The progress report also reviews the long-term strategy to determine if there have been any changes that need to be addressed.

In developing the initial RH SIP, DAQ also considered that emission sources outside of Utah may affect the visibility at Utah's Class I areas, and that emission sources within Utah may affect the visibility at Class I areas in neighboring states. Through WRAP, the western states worked together to assess state-by-state contributions to visibility impairment in specific Class I areas, including those in Utah and those affected by emissions from Utah. The sources identified in the initial RH SIP either impacting Utah's Class I areas or Class I areas outside Utah will be reviewed as part of this progress report.

2.1 Progress Towards Reasonable Progress Goals (40 CFR §51.309(d)(10(i))

Based on IMPROVE monitoring data for the first progress period 2005-2009, all of Utah's Class I areas show visibility improvement on the 20% least impaired days, while on the 20% most impaired days, three areas (Arches, Canyonlands and Zion National Parks) show visibility improvement and two areas (Bryce Canyon and Capitol Reef National Parks) do not. The largest contributor to increases at these sites was particulate organic mass which was associated with large fire events in July and August of 2009. These increases were offset by decreases in ammonium nitrate and ammonium sulfate. The most recent 5-year average 2009-2013 shows visibility improvement at all five Class I areas on both the 20% best and the 20% worst days.

The baseline and current visibility conditions as well as the reasonable progress goals for 2018 for the 20% worst and 20% best days are displayed in Table 2.1.

Table 2.1. Utah Class I Area IMPROVE Sites Visibility Conditions for the 20% Most and Least Impaired days.

Class I Area	Baseline (2000-2004) (dv)	Current (2005-2009) (dv)	(2011-2013) (dv)	2018 Preliminary Reasonable Progress Case (PRP18a) (dv)
20% Worst Days				
Arches NP (CANY1)	11.2	11.0	10.8	10.9
Bryce Canyon NP (BRCA1)	11.6	11.9	10.6	11.2
Canyonlands NP (CANY1)	11.2	11.0	10.8	10.9
Capitol Reef NP (CAPI1)	10.9	11.3	10.2	10.5
Zion NP (ZICA1)	12.5[3]	12.3	10.8[4]	N/A[5]
20% Best Days				
Arches NP (CANY1)	3.7	2.8	3.1	3.5
Bryce Canyon NP (BRCA1)	2.8	2.1	1.8	2.6
Canyonlands NP (CANY1)	3.7	2.8	3.1	3.5
Capitol Reef NP (CAPI1)	4.1	2.7	2.6	3.9
Zion NP (ZICA1)	5.0[3]	4.3	4.2[4]	N/A[5]

3.0 REGIONAL HAZE PROGRESS REPORT

The requirements for regional haze progress reports are outlined in 51.309(d)(10)(i). The progress report for Section 309 RH SIPs must be in the form of a formal SIP submittal and at a minimum must contain the following elements:

3.1 40 CFR § 51.309(D)(10)(i) Progress Report Requirements

(A) A description of the status of implementation of all measures included in the SIP for achieving reasonable progress goals for mandatory Class I Federal areas both within and outside the state.

(B) A summary of the emission reductions achieved throughout the state through implementation of the measures described in (A) above.

(C) For each mandatory Class I Federal area within the state, an assessment of the following: the current visibility conditions for the most impaired and least impaired days; the difference between current visibility conditions for the most impaired and least impaired days and baseline visibility conditions; and the change in visibility impairment for the most impaired and least impaired days over the past 5 years.

(D) An analysis tracking the change over the past 5 years in emissions of pollutants contributing to visibility impairment from all sources and activities with the state. Emissions changes should be

[3] The monitor originally intended to represent Zion National Park was the ZION1 IMPROVE monitor, which began operation in 2000. In 2003, a second site, ZICA1, was established approximately 19 miles from the original ZION1 monitor. The second site was installed in part because elevated ammonium nitrate at the original site was influenced by mobile sources from the interstate highway that were not representative of park conditions. Section 6.13.1.1 in the WRAP Report (Appendix A) describes how the baseline for the ZICA1 was determined.

[4] Includes 2009-10 and 2012-13 data only; there were no results available for 2011.

[5] There is no PRP18a established for the new ZICA1 monitor. The PRP18a was originally established for the original ZIONI IMPROVE monitor, which was discontinued on July 29, 2004.

identified by type of source or activity. The analysis must be based on the most recent updated emissions inventory, with estimates projected forward as necessary and appropriate, to account for emissions changes during the applicable 5-year period.

(E) An assessment of any significant changes in anthropogenic emissions within or outside the state that have occurred over the past 5 years that have limited or impeded progress in reducing pollutant emissions and improving visibility.

(F) An assessment of whether the current SIP elements and strategies are sufficient to enable the state, or other states with mandatory Federal Class I areas affected by emissions from the state, to meet all established reasonable progress goals.

(G) A review of the state's visibility monitoring strategy and any modifications to the strategy as necessary.

In the sections to follow, the Utah DAQ will address the various periodic review requirements as outlined above.

3.2 Status of Implementation Control Measures: 40 CFR §51.309(d)(10)(i)(A)

40 CFR §51.309(d)(10)(i)(A) requires "a description of the status of implementation of all measures included in the implementation plan for achieving reasonable progress goals for mandatory Class I Federal areas both within and outside the State."

This section provides a description of the emission reduction measures that were included in the State of Utah's Section 309 RH SIP. A summary of the most significant emission reduction strategies and the status of controls is provided below.

Utah has been and continues to be committed to implementing the long-term strategies adopted into the state's Section 309 RH SIP. The implementation status of these emission reduction measures are described below.

SO_2 Milestone and Backstop Trading Program

As a 309 state, Utah continues to participate in the Regional SO_2 Milestone and Backstop Trading Program. Utah has been participating in this program since 2003, and in March of 2015, submittedthe annual Regional SO_2 Emissions and Milestone Report for 2013. The report shows that the regional SO_2 emissions of 105,402 tons were below the 2013 milestone of 185,795 tons. Further information on emissions reductions from this program are summarized in Section 3.3 of this report.

The Regional SO_2 Emissions and Milestone Report for 2012 contained the year 2013 assessment as required by Section XX.E.1.d of Utah's SIP. The report determined that it was not necessary to trigger the backstop trading program early because the 2018 milestone had already been met by 2011.

3.4 Assessment of Visibility Conditions: 40 CFR § 51.309(d)(10)(i)(C)

40 CFR § 51.309(d)(10)(i)(C) requires "*for each mandatory Class I Federal area within the State, the State must assess the following visibility conditions and changes, with values for most impaired and least impaired days expressed in terms of 5-year averages of these annual values*

The current visibility conditions for the most impaired and least impaired days;
The difference between current visibility conditions for the most impaired and least days and baseline visibility conditions;
The changes in visibility impairment for the most impaired and least impaired days over the past 5-years."

This section addresses RH rule regulatory requirements for monitored data as measured by IMPROVE monitors representing Federal Class I areas in Utah.

Regional haze progress in Federal Class I areas is tracked using calculations based on speciated aerosol mass as collected by IMPROVE monitors. The RH rule calls for tracking haze in units of deciviews, where the deciview metric was designed to be linearly associated with human perception of visibility. In a pristine atmosphere, the deciview metric is near zero, and a one deciview change is approximately equivalent to a 10% change in cumulative species extinction. To better understand visibility conditions, summaries here include both the deciview metric and the apportionment of haze into extinction due to the various measured species in units of inverse megameters (Mm^{-1}).

3.4.1 Current Visibility Conditions for the Most and Least Impaired Days

EPA guidance for the 2003 RH SIP specifies that 5-year averages be calculated over successive 5-year periods; i.e., 2000-2004, 2005-2009, 2010-2014, etc.[9] EPA's Guidance[10] for the first progress report specifies that current visibility conditions be reported for the most recent 5 years of data available. Therefore, for this report, Utah is presenting information for 2005-2009 as well as 2009-13. The information and data presented in this section are from that "*Western Regional Air Partnership Regional Haze Rule Reasonable Progress Summary Report*" (Appendix A), supplemented by more recent data compiled by the Division of Air Quality from the WRAP TSS.

Tables 3.5 and 3.6 present the calculated deciview values for current conditions at each site, along with the percent contribution to extinction from each aerosol species for the 20% worst and best days for each of the Federal Class I area IMPROVE monitors in Utah. Appendix M of the WRAP Progress Report includes figures that represent the annual and 5-year period averages for the 20% most and least impaired visibility days at each IMPROVE site from 2000 to 2010.

Figure 3.7 presents 5-year average extinction for the first progress period and current conditions for both the 20% worst and best days. Note that the percentages in the tables consider only the aerosol species which contribute to extinction, while the charts also show Rayleigh, or scattering due to background gases

[9] EPA's September 2003 *Guidance for Tracking Progress Under the Regional Haze Rule* specifies that progress is tracked against the 2000-2004 baseline period using corresponding averages over successive 5-year periods; i.e., 2005-2009, 2010-2014, etc. (see page 4-2 in the Guidance document).
[10] *General Principles for the 5-Year Regional Haze Progress Reports for the Initial Regional Haze State Implementation Plans (Intended to Assist States and EPA Regional Offices in Development and Review of the Progress Reports)*, US Environmental Protection Agency, April 2013.

in the atmosphere. Specific observations for the current visibility conditions on the 20% most impaired days are as follows:

- The largest contributors to aerosol extinction at Utah sites were particulate organic mass, ammonium sulfate and coarse mass.
- The highest aerosol extinction in the first progress period (12.3 dv) was measured at the ZICA1 site, where particulate organic mass was the largest contributor to aerosol extinction, followed by coarse mass.
- The lowest aerosol extinction (11.0 dv) in the first progress period was measured at the CANY1 site.

Specific observations for the current visibility conditions on the 20% least impaired days are as follows:

- The aerosol contribution to total extinction on the best days was less than Rayleigh, or the background scattering that would occur in clean air.
- Average extinction (including Rayleigh) ranged from 2.1 dv (BRCA2) to 4.3 dv (ZICA1).
- For all sites, ammonium sulfate was the largest contributor to the non-Rayleigh aerosol species of extinction.

Table 3.5, Utah Class I Area IMPROVE Sites
Current Visibility Conditions, 20% Most Impaired Days

2005-2009 Progress Period

Site	Deciviews (dv)	Percent Contribution to Aerosol Extinction by Species (Excludes Rayleigh) (% of Mm^{-1}) and Rank*						
		Ammonium Sulfate	Ammonium Nitrate	Particulate Organic Mass	Elemental Carbon	Soil	Coarse Mass	Sea Salt
BRCA1	11.9	19% (2)	9% (5)	**45% (1)**	10% (4)	5% (6)	12% (3)	0% (7)
CANY1	11.0	23% (2)	14% (4)	**27% (1)**	7% (5)	7% (6)	20% (3)	0% (7)
CAPI1	11.3	24% (2)	12% (4)	**32% (1)**	8% (5)	7% (6)	17% (3)	0% (7)
ZICA1	12.3	21% (3)	7% (5)	**33% (1)**	9% (4)	7% (6)	22% (2)	0% (7)

*Highest aerosol species contribution per site is highlighted in bold.

2009-13 Current Conditions

Site	Deciviews (dv)	Percent Contribution to Aerosol Extinction by Species (Excludes Rayleigh) (% of Mm^{-1}) and Rank*						
		Ammonium Sulfate	Ammonium Nitrate	Particulate Organic Mass	Elemental Carbon	Soil	Coarse Mass	Sea Salt
BRCA1	10.6	20%	9%	**42%**	8%	5%	14%	1%
CANY1	10.8	21%	18%	**26%**	6%	6%	22%	0%
CAPI1	10.2	25%	15%	**29%**	6%	7%	18%	1%
ZICA1	10.8	23%	7%	24%	6%	9%	**30%**	1%

*Highest aerosol species contribution per site is highlighted in bold.

Table 3.6, Utah Class I Area IMPROVE Sites
Current Visibility Conditions, 20% Least Impaired Days

2005-2009 Progress Period

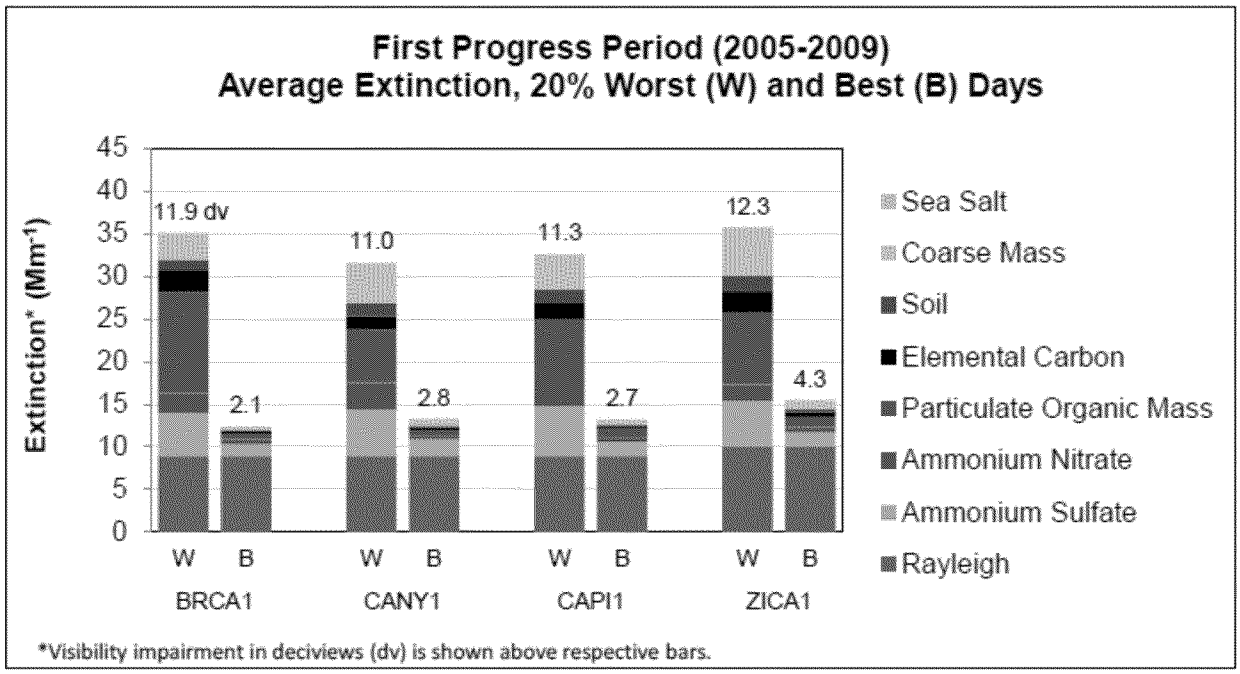
Site	Deciviews (dv)	Percent Contribution to Aerosol Extinction by Species (Excludes Rayleigh) (% of Mm^{-1}) and Rank						
		Ammonium Sulfate	Ammonium Nitrate	Particulate Organic Mass	Elemental Carbon	Soil	Coarse Mass	Sea Salt
BRCA1	2.1	**40% (1)**	15% (3)	22% (2)	7% (5)	4% (6)	11% (4)	1% (7)
CANY1	2.8	**43% (1)**	12% (4)	15% (3)	7% (5)	5% (6)	17% (2)	1% (7)
CAPI1	2.7	**38% (1)**	13% (4)	21% (2)	8% (5)	5% (6)	14% (3)	1% (7)
ZICA1	4.3	**30% (1)**	11% (4)	23% (2)	10% (5)	6% (6)	18% (3)	1% (7)

*Highest aerosol species contribution per site is highlighted in bold.

2009-2013 Current Conditions

Site	Deciviews (dv)	Percent Contribution to Aerosol Extinction by Species (Excludes Rayleigh) (% of Mm^{-1}) and Rank*						
		Ammonium Sulfate	Ammonium Nitrate	Particulate Organic Mass	Elemental Carbon	Soil	Coarse Mass	Sea Salt
BRCA1	1.8	**43%**	15%	20%	6%	4%	11%	0%
CANY1	3.1	**41%**	12%	17%	6%	6%	18%	1%
CAPI1	2.6	**40%**	13%	20%	7%	5%	16%	1%
ZICA1	4.3	**32%**	13%	22%	8%	6%	18%	1%

*Highest aerosol species contribution per site is highlighted in bold.



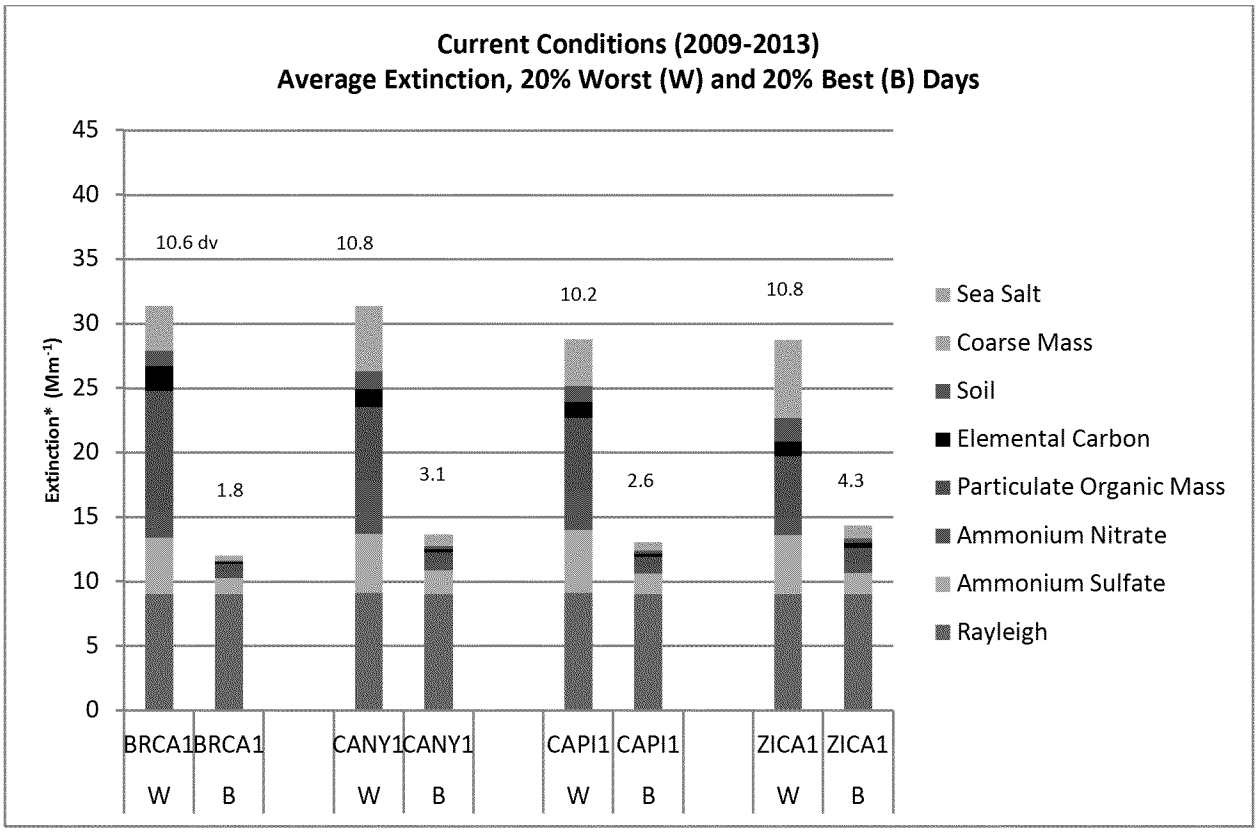


Figure 3.7. Average Extinction for Current Progress Period (2005-2009) for the Worst (Most Impaired) and Best (Least Impaired) Days Measured at Utah Class I Area IMPROVE Sites

3.4.2 Differences Between Current Visibility Conditions for the Most and Least Impaired Days and Baseline Visibility Conditions

Included here are comparisons between the 5-year average baseline conditions (2000-2004), the first progress period (2005-2009), and the most recent 5-year period (2009-2013) extinction.

Table 3.7 presents the differences between the 2000-2004 baseline period average extinction and both the 2005-2009 progress period average and the current 5-year average (2009-2013) for each site in Utah for the 20% most impaired days, and Table 3.8 presents similar data for the least impaired days. Averages that increased are depicted in red text, and averages that decreased are depicted in blue.

Figure 3.8 presents the 5-year average extinction for the baseline, first progress period, and current 5-year average for the worst days, and Figure 3.9 presents the differences in averages by aerosol species, with increases represented above the zero line and decreases below the zero line. Figures 3.10 and 3.11 present similar plots for the best days.

For the 20% most impaired days, the 5-year average Regional Haze Rule (RHR) deciview metric increased between the 2000-2004 and 2005-2009 periods at the BRCA1 and CAPI1 sites and decreased at the CANY1 and ZICA1 sites. The most recent 5-year average shows a decrease at all Class I areas. Notable differences for individual species averages were as follows:

Increases in 5-year average deciviews at the BRCA1 and CAPI1 sites during the first progress period were mostly due to increases in particulate organic mass, with some increases also measured in elemental carbon and soil. Coarse mass also contributed to increases at the CAPI1 site. Increases were offset by decreases in ammonium nitrate and ammonium sulfate at both sites. Ammonium sulfate decreased at all sites except ZICA1 during the first progress period but by 2009-2013 decreased at all sites. Note that data was not collected at the ZICA site during the baseline years, and changes reported here are proportional to average changes in extinction as measured at regional sites.

Increases in ammonium nitrate at CANY1 may be due to decreases in SO_2 emissions that reduce the formation of ammonium sulfate and therefore result in an increase in ammonium nitrate in ammonia limited conditions.

For the 20% least impaired days, the 5-year average deciview metric decreased at all sites. Notable differences for individual species averages on the 20% least impaired days were as follows:

All species at all sites either decreased or stayed the same on the best days between the baseline and both the first progress period and the most recent 5-year average. The largest decreases on the best days were measured in particulate organic mass, ammonium nitrate, ammonium sulfate, and coarse mass.

Table 3.7 Utah Class I Area IMPROVE Sites
Difference in Aerosol Extinction by Species, 2000-2004 Baseline Period to 2005-2009 Progress Period and Current Conditions, 20% Most Impaired Days

2005-2009 Progress Period

Site	Deciview (dv)			Change in Extinction by Species (Mm^{-1})*						
	2000-04 Baseline Period	2005-09 Progress Period	Change in dv*	Amm. Sulfate	Amm. Nitrate	POM	EC	Soil	CM	Sea Salt
BRCA1	11.6	11.9	+0.3	-0.2	-0.3	+2.5	+0.2	+0.1	-0.9	0.0
CANY1	11.2	11.0	-0.2	-0.3	+0.3	-0.9	-0.1	+0.1	+0.8	0.0
CAPI1	10.9	11.3	+0.4	-0.2	-0.7	+1.8	+0.2	+0.3	+0.7	+0.1
ZICA1	12.5	12.3	-0.2	+0.2	-0.3	-0.8	-0.1	+0.1	0.0	+0.1

*Change is calculated as progress period average minus baseline period average. Values in red indicate increases in extinction and values in blue indicate decreases.

Current Conditions 2009-2013

Site	Deciview (dv)			Change in Extinction by Species (Mm-1)*						
	2000-04 Baseline Period	2009-13 Current Conditions	Change in dv*	Amm. Sulfate	Amm. Nitrate	POM	EC	Soil	CM	Sea Salt
BRCA1	11.6	10.6	-1.0	-0.8	-0.4	**0.0**	-0.5	**0.0**	-0.8	0.2
CANY1	11.2	10.8	-0.4	-1.0	**1.0**	-1.3	-0.4	-0.1	**1.2**	0.1
CAPI1	10.9	10.2	-0.7	-1.0	-0.5	-0.1	-0.4	**0.0**	0.1	0.1
ZICA	12.5	10.8	-1.7	-0.6	-0.8	-4.6	-1.3	0.1	0.4	**0.0**

*Change is calculated as current conditions average minus baseline period average. Values in red indicate increases in extinction and values in blue indicate decreases.

Table 3.8 Utah Class I Area IMPROVE Sites
Difference in Aerosol Extinction by Species, 2000-2004 Baseline Period to 2005-2009 Progress Period
20% Least Impaired Days

2005-2009 Progress Period

Site	Deciview (dv)			Change in Extinction by Species (Mm^{-1})*						
	2000-04 Baseline Period	2005-09 Progress Period	Change in dv*	Amm. Sulfate	Amm. Nitrate	POM	EC	Soil	CM	Sea Salt
BRCA1	2.8	2.1	-0.7	-0.1	-0.2	-0.3	-0.2	0.0	-0.1	0.0
CANY1	3.7	2.8	-0.9	-0.3	-0.1	-0.5	-0.1	-0.1	-0.2	0.0
CAPI1	4.1	2.7	-1.4	-0.3	-0.4	-0.5	-0.3	-0.1	-0.4	0.0
ZICA1	5.0	4.3	-0.7	-0.1	-0.2	-0.5	-0.2	0.0	-0.1	0.0

*Change is calculated as progress period average minus baseline period average. Values in red indicate increases in extinction and values in blue indicate decreases.

Current Conditions 2009-2013

	Deciview (dv)			Change in Extinction by Species (Mm-1)*						
	2000-04 Baseline Period	2009-13 Current Conditions	Change in dv*	Amm. Sulfate	Amm. Nitrate	POM	EC	Soil	CM	Sea Salt
BRCA1	2.8	1.8	-1.0	-0.2	-0.2	-0.4	-0.2	**0.0**	-0.2	**0.0**
CANY1	3.7	3.1	-0.6	-0.3	**0.0**	-0.3	-0.2	-0.1	-0.1	**0.0**
CAPI1	4.1	2.6	-1.5	-0.3	-0.5	-0.6	-0.3	-0.1	-0.3	**0.0**
ZICA	5.0	4.3	-0.7	-0.1	-0.1	-0.6	-0.4	**0.0**	-0.1	**0.0**

*Change is calculated as current conditions average minus baseline period average. Values in red indicate increases in extinction and values in blue indicate decreases.

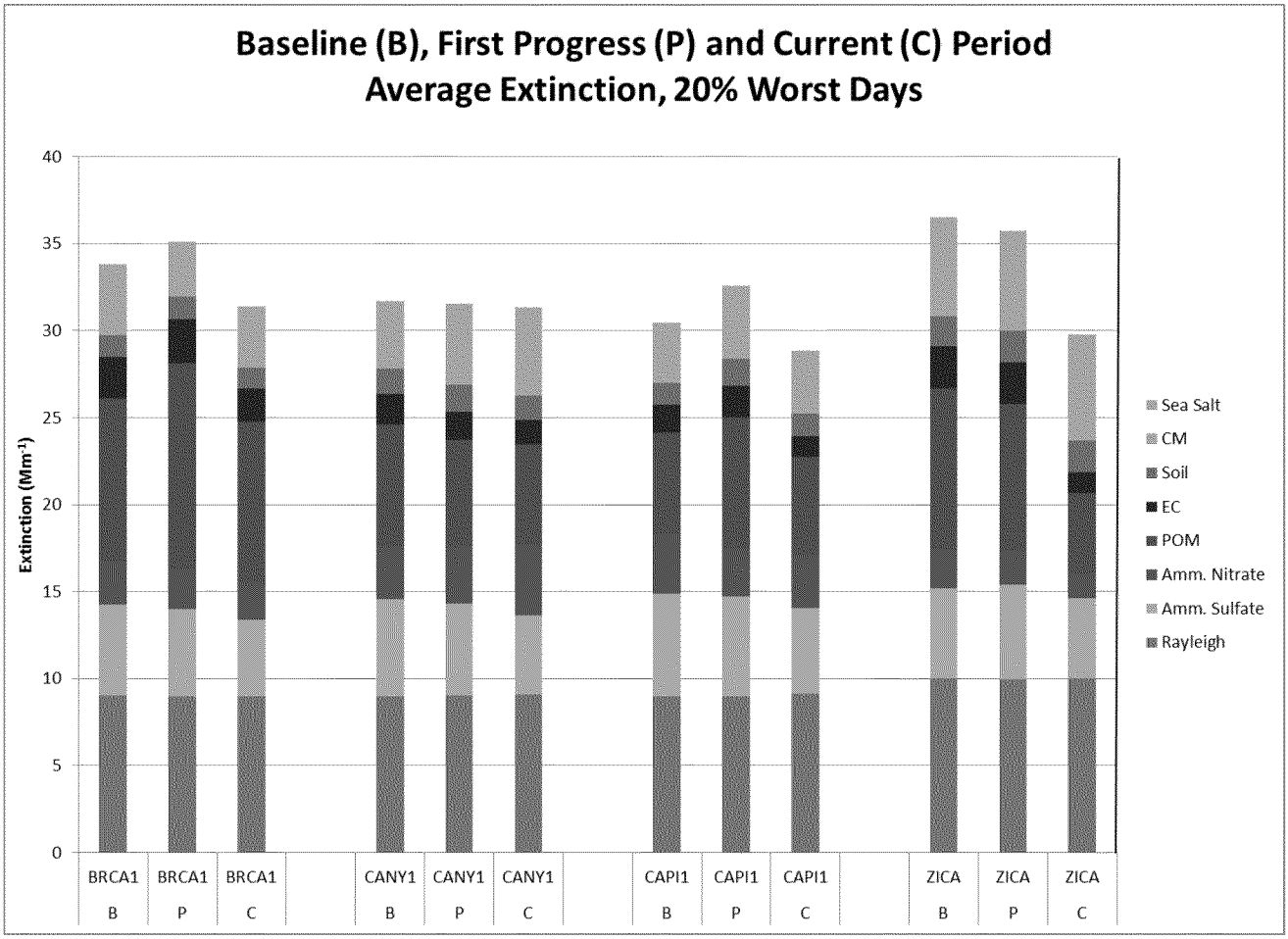
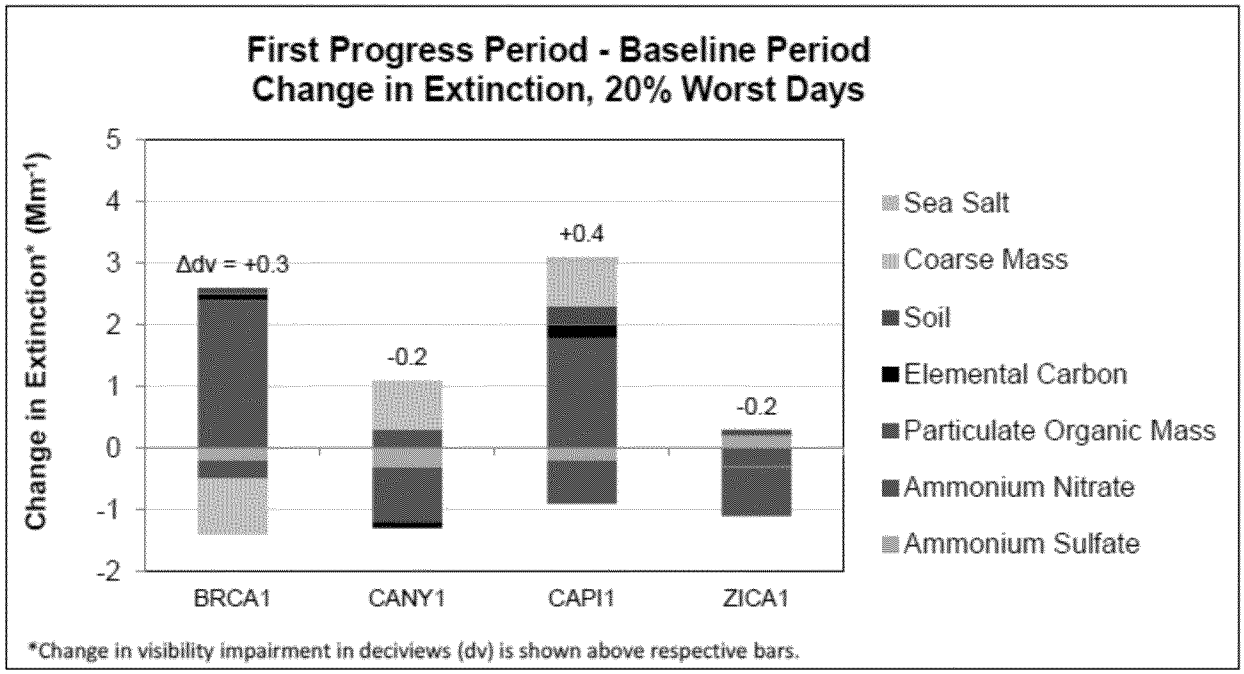


Figure 3.8. Average Extinction for Baseline, Progress Period, and Current Conditions Extinction for Worst (Most Impaired) Days Measured at Utah Class I Area IMPROVE Sites.



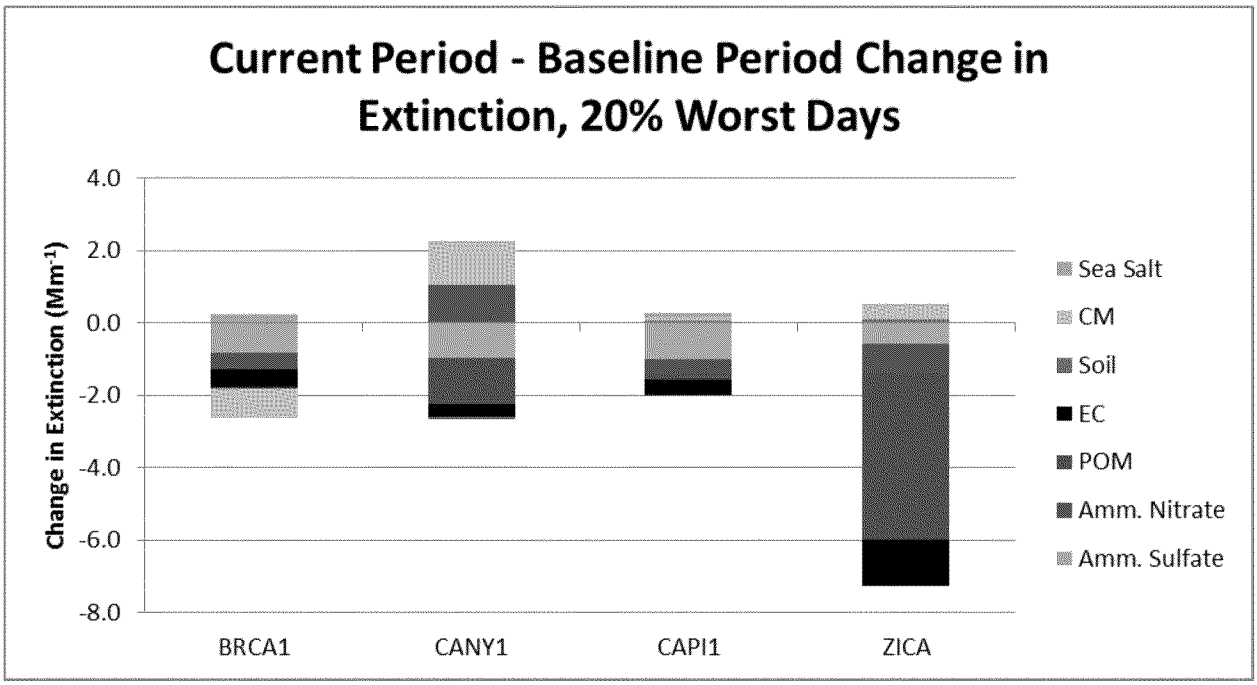


Figure 3.9. Difference between Average Extinction for Current Progress Period (2005-2009) and Baseline Period (2000-2004) for the Worst (Most Impaired) Days Measured at Utah Class I Area IMPROVE Sites.

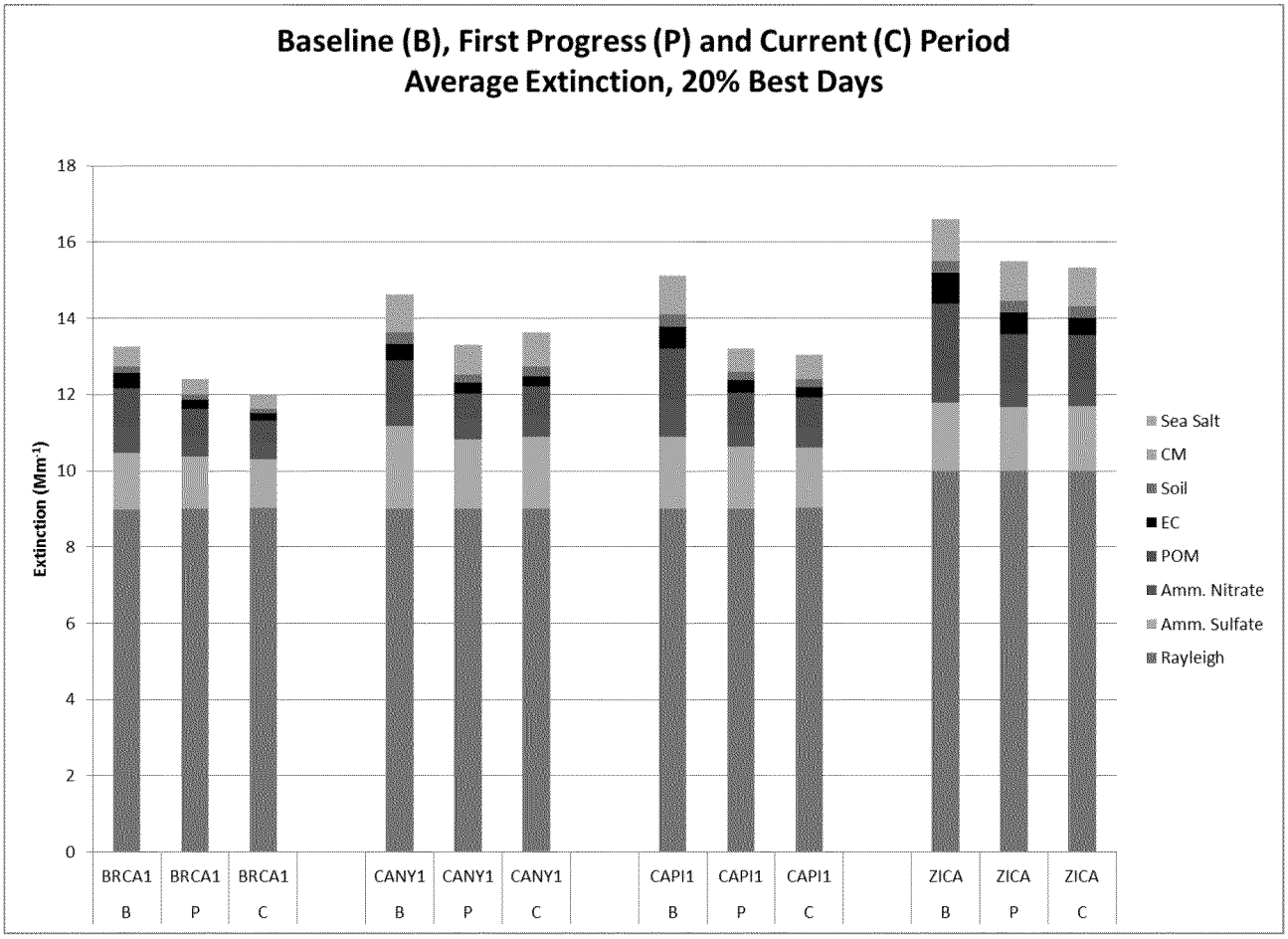
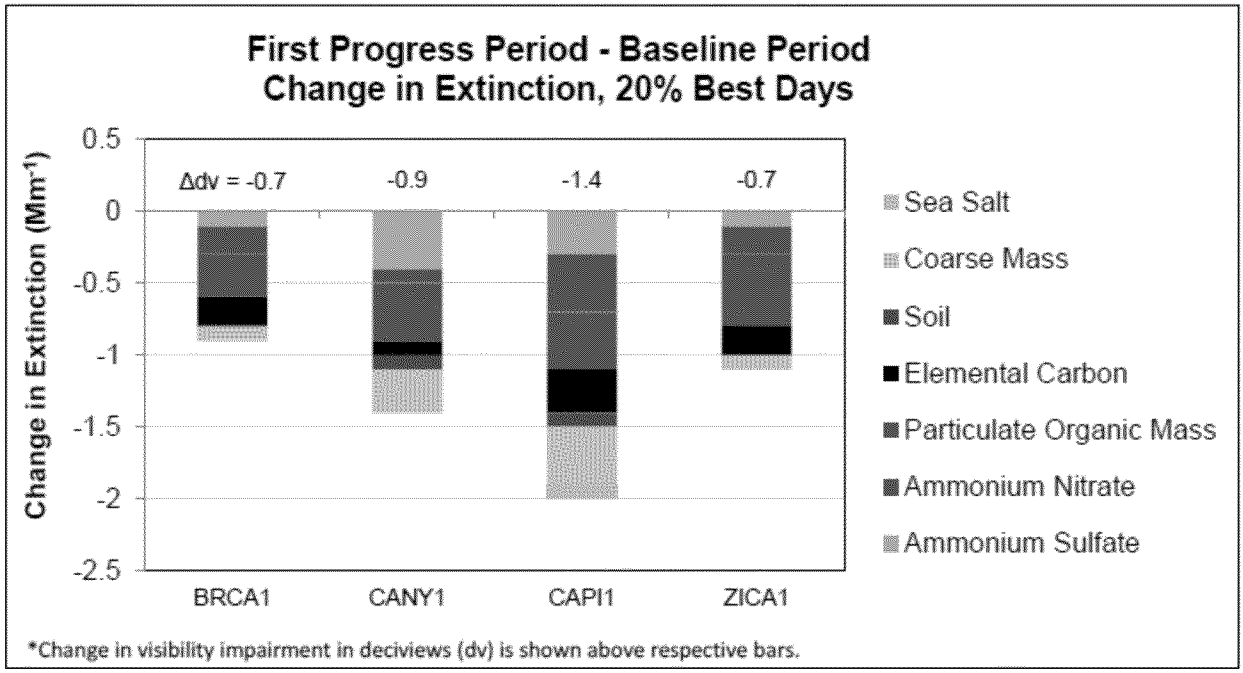


Figure 3.10. Average Extinction for Baseline and Progress Period Extinction for Best (Least Impaired) Days Measured at Utah Class I Area IMPROVE Sites



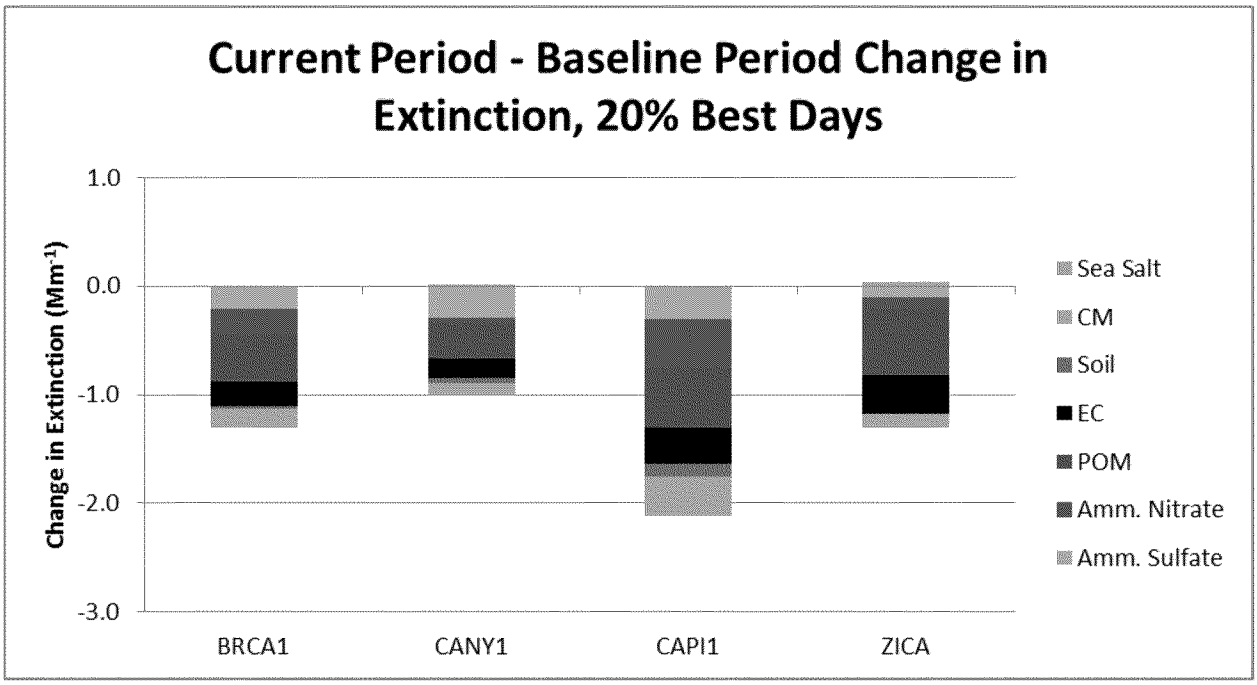


Figure 3.11. Difference Between Average Extinction for Current Progress Period (2005-2009) and Baseline Period (2000-2004) for the Best (Least Impaired) Days Measured at Utah Class I Area IMPROVE Sites

3.6 Changes to Anthropogenic Emissions: § 51.309(d)(10)(i)(E)

40 CFR §51.309(d)(10)(i)(E) requires *an assessment of any significant changes in anthropogenic emissions within or outside the State that have occurred over the past 5 years that have limited or impeded progress in reducing pollutant emissions and improving visibility."*

Table 3.27 displays the average light extinction for the 20% worst days over the 5-year period 2005 through 2009 for all Class I areas in Utah. The table demonstrates that on the 20% worst days in the Class I areas in Utah, particulate organic mass and ammonium sulfate are the major concern for visibility impairment. Appendix M includes monitoring data summaries over the 5-year period 2005-2009 for the 20% worst and best days for each Class I area in Utah.

Table 3.27. Average extinction for 20% Worst Days for the Current Progress Period of 2005-2009

Site	Deciviews (dv)	Percent Contribution to Aerosol Extinction by Species (Excludes Rayleigh) (% of Mm^{-1}) and Rank*						
		Ammonium Sulfate	Ammonium Nitrate	Particulate Organic Mass	Elemental Carbon	Soil	Coarse Mass	Sea Salt
BRCA1	11.9	19% (2)	9% (5)	**45% (1)**	10% (4)	5% (6)	12% (3)	0% (7)
CANY1	11.0	23% (2)	14% (4)	**27% (1)**	7% (5)	7% (6)	20% (3)	0% (7)
CAPI1	11.3	24% (2)	12% (4)	**32% (1)**	8% (5)	7% (6)	17% (3)	0% (7)
ZICA1	12.3	21% (3)	7% (5)	**33% (1)**	9% (4)	7% (6)	22% (2)	0% (7)

The primary sources of anthropogenic particulate organic mass in Utah include prescribed burning, vehicle exhaust, vehicle refueling, solvent evaporation (e.g., paints), food cooking, and various commercial and industrial sources. While particulate organic mass is the most significant contributor to aerosol extinction, the anthropogenic portion is small (see Table 3.23); the emissions are primarily from wildfires and these emissions are highly variable from year to year. The inventory shows increases in anthropogenic primary organic aerosols, but as described in section 3.5 there were a number of methodology changes between 2002 and 2008 so this may not reflect a real change in emissions. Anthropogenic sources of SO_2 include coal-burning power plants and other industrial sources, such as boilers, oil refineries and copper smelters. Stationary point sources account for approximately 90% of SO_2 emissions in Utah. Table 3.19 shows that SO_2 emissions declined by 42% between 2002 and 2008. Table 3.20 shows that NOx emissions declined by 19% between 2002 and 2008. Overall, anthropogenic emissions within Utah have decreased and therefore have not limited or impeded progress in reducing pollutant emissions or improving visibility.

3.7 Assessment of Current SIP Strategy: § 51.309(d)(10)(i)(F)

40 CFR § 51.309(d)(10)(i)(F) requires "an assessment of whether the current implementation plan elements and strategies are sufficient to enable the State, or other States with mandatory Federal Class I areas affected by emissions from the State, to meet all established reasonable progress goals."

Figures 3.21 and 3.22 show the rolling 5-year period averages for the 20% worst days and 20% best days at Utah's Class I areas. These figures demonstrate that visibility continues to improve at these Class I areas.

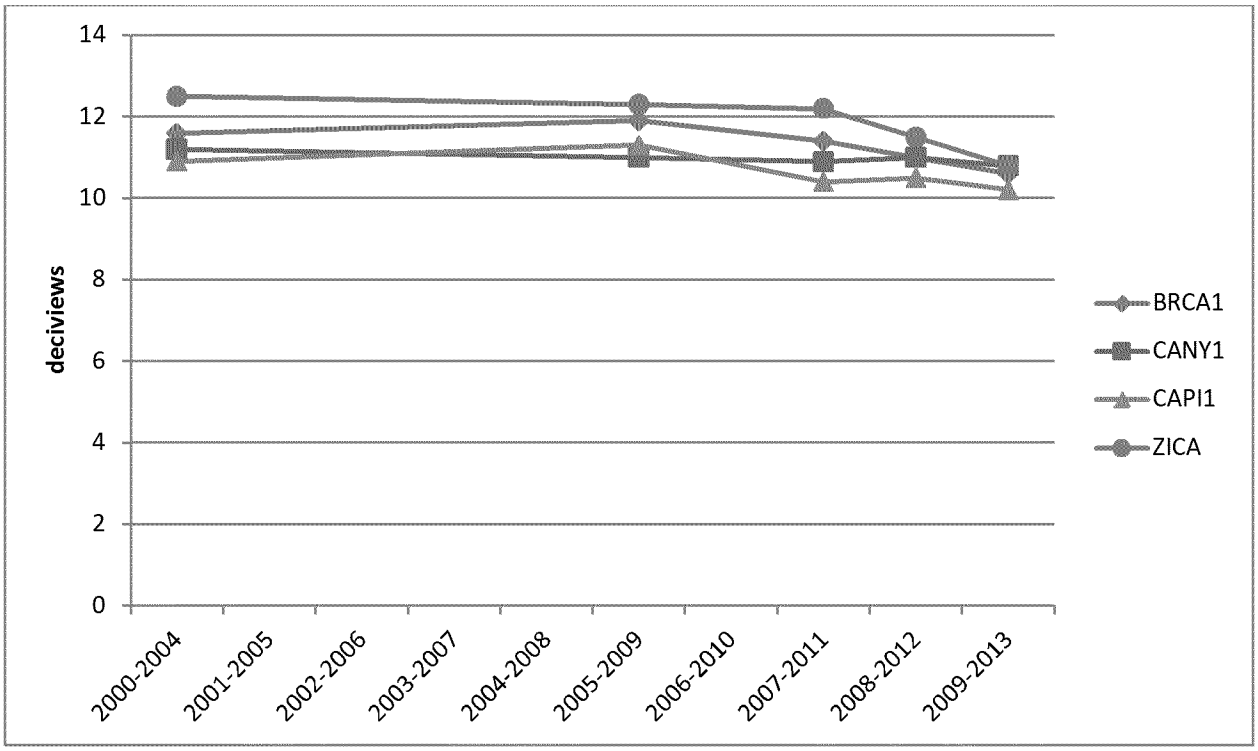


Figure 3.21. 5-Yr Rolling Trends at Utah's Class I Areas, 20% Worst Days

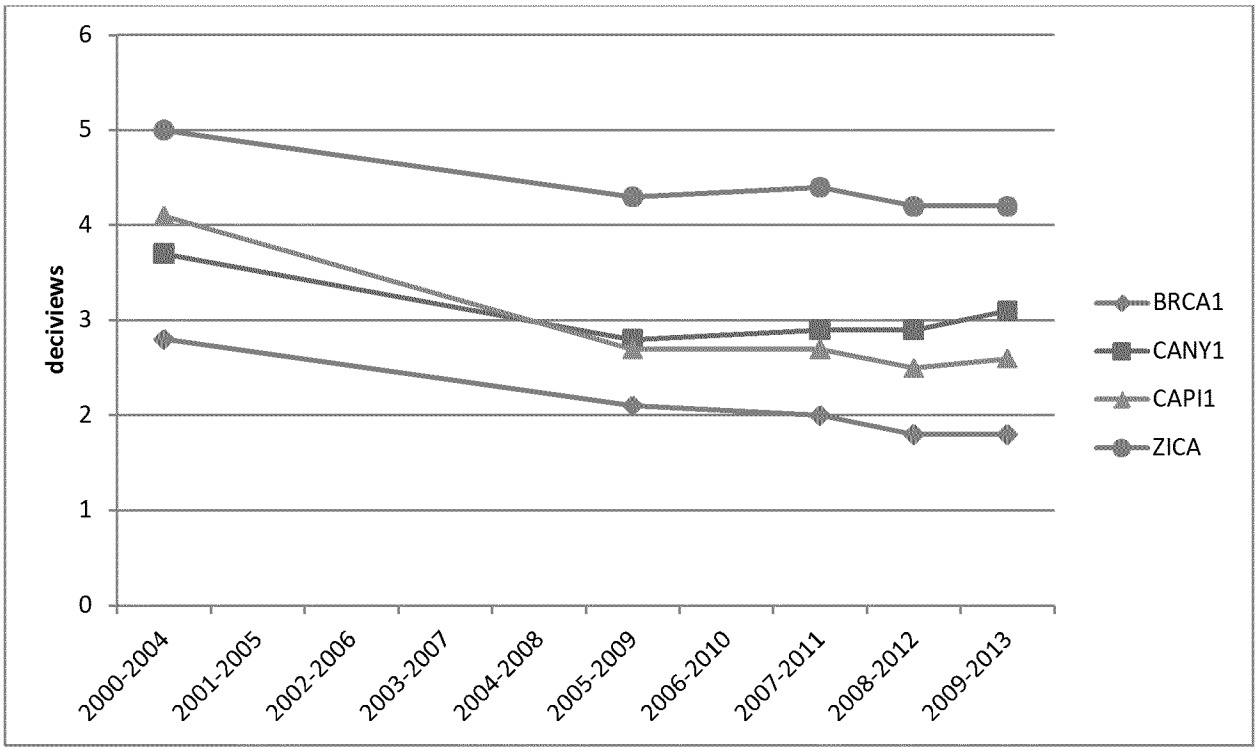


Figure 3.22. 5-Yr Rolling Trends at Utah's Class I Areas, 20% Best Days

As table 3.28 shows, Utah is showing improvement in visibility on the most impaired days and no degradation on the least impaired days between baseline and current monitoring data. The first 5-year progress period evaluated in this report covers the 2005-2009 timeframe, as it represents the most recent successive 5-year averaging period; however, the WRAP TSS has been updated to include data up through 2013. The average of the most recent 5-year average indicates that visibility at Utah's Class I areas is improving on both the 20% worst and 20% best days, and is in fact on course to exceed preliminary reasonable progress (PRP) projections for 2018.

Table 3.28. Utah Class I Area IMPROVE Sites Visibility conditions – 20% Most and Least Impaired Days Including 2010 to 2012 data

Class I Area	Baseline (2000-2004) (dv)	First Progress Period (2005-2009) (dv)	(2009-2013) (dv)	2018 Preliminary Reasonable Progress Case (PRP18a) (dv)
20% Worst Days				
Arches NP (CANY1)	11.2	11.0	10.8	10.9
Bryce Canyon NP (BRCA1)	11.6	11.9	10.6	11.2
Canyonlands NP (CANY1)	11.2	11.0	10.8	10.9
Capitol Reef NP (CAPI1)	10.9	11.3	10.2	10.5
Zion NP (ZICA1)	12.5	12.3	10.8	N/A[14]
20% Best Days				
Arches NP (CANY1)	3.7	2.8	3.1	3.5
Bryce Canyon NP (BRCA1)	2.8	2.1	1.8	2.6
Canyonlands NP (CANY1)	3.7	2.8	3.1	3.5
Capitol Reef NP (CAPI1)	4.1	2.7	2.6	3.9
Zion NP (ZICA1)	5.0	4.3	4.2	N/A (see footnote 15)

The emission reduction strategies in Utah's RH SIP have been implemented and have been effective, as outlined in section 3.2 of this report. Visibility has improved at all Class I areas in Utah as outlined in section 3.4 of this report. Anthropogenic emissions have declined as expected as outline in section 3.5 of this report. After considering these factors, the State of Utah has determined that the current control strategies in the state's Regional Haze SIP are sufficient to improve visibility at Federal Class I areas in the state.

Utah's SIP focused on expected emission reductions in different regions of the state to address the impact of emissions in Utah on Class I areas in other states. These emission reductions were included in the WRAP reasonable progress inventories that were relied upon by other states for their Class I areas. The emission reductions have been occurring as expected and therefore the State of Utah has determined that the current implementation plan elements and strategies are sufficient to enable other States with mandatory Federal Class I areas affected by emissions from the State, to meet all established reasonable progress goals.

Northern Utah, which may impact Federal Class I areas in Idaho, Nevada, and Wyoming, is an urban area with emissions predominately coming from mobile sources. Mobile NO_x emissions in the four main urban counties (Weber, Salt Lake, and Utah) were projected to decrease 42,000 tons/yr or 61% between 2002 and 2018. These emission reductions were projected using EPA's Mobile 6 model and are difficult to quantitatively compare to current inventories that are based on EPA's MOVES model. However, even greater emission reductions will be achieved by 2018 than had been anticipated in Utah's RH SIP due to federal Tier 3 fuel and vehicle standards that were adopted in 2014. BART controls installed at plants in central Utah (as described in Section 3.2 of this report) willhave decreased SO_2 emissions by 27,947 tons

[14] There is no PRP18a established for the new ZICA1 monitor. The PRP18a was originally established for the original ZIONI IMPROVE monitor, which was discontinued on July 29, 2004.

and NO_X emissions by 15,258 tons from the 2002 inventory by 2015. This reduction is significantly greater than the 13,189 tons SO2 and 6,206 tons of NO_X reduction that was projected due to BART in Utah's 2008 SIP and that was included in the PRP 18a regional modeling analysis. And as is the case with northern Utah, southern Utah has an emissions inventory dominated by mobile sources. In Washington County, NO_X emissions from mobile sources were projected to decrease 2,300 tons or 57% between 2002 and 2018. These emissions reductions benefit Federal Class I areas in Colorado, New Mexico and Arizona.

As stated in Section K of the SIP, oil and gas production in eastern Utah is increasing. Approximately 80% of current oil and gas production in Uintah and Duchesne Counties occurs on land that is under the jurisdiction of the Ute Indian Tribe and EPA and is therefore not covered under Utah's SIP. Figure 19 in Utah's SIP shows the expected impact from Utah sources on Class I areas in western Colorado. While oil and gas production is increasing, mobile source NO_X emissions are decreasing in the urban area along the Wasatch Front, and NO_X emissions are decreasing due to BART in Central Utah, showing an overall decreased contribution to nitrate levels in western Colorado. Utah is currently working with EPA and the Ute Tribe to address wintertime ozone levels in the Uinta Basin. DAQ anticipates that the efforts to improve ozone levels will have the co-benefit of improving visibility in Class I areas affected by emissions from eastern Utah. Utah is participating in the Ozone Advance Program to reduce wintertime ozone levels in the Uinta Basin and through that program has implemented a series of regulatory and voluntary measures to reduce VOC and NO_X emissions. New federal strategies to reduce VOC, NO_X and methane emissions from oil and gas sources have been implemented and are benefiting the area. DAQ is currently working with EPA and the Ute Tribe to improve the emission inventory for oil and gas sources in the Uinta Basin to better characterize oil and gas emissions and to account for the significant emission control measures that have been implemented since 2008.

3.8 Assessment of Current Monitoring Strategy: § 51.309(d)(10)(i)(G)

40 CFR § 51.309(d)(10)(i)(G) requires "*a review of the State's visibility monitoring strategy and any modifications to the strategy as necessary.*"

The primary monitoring network for regional haze, both nationwide and in Utah, is the IMPROVE monitoring network. Given that IMPROVE monitoring data from 2000 to 2004 serves as the baseline for the regional haze program, the future regional haze monitoring strategy must necessarily be based on, or directly comparable to the current IMPROVE network. The IMPROVE measurements provide the only long-term record available for tracking visibility improvement or degradation; therefore, Utah intends to continue reliance on the IMPROVE network for complying with the RH monitoring requirement in the RH rule.

There are currently four IMPROVE sites in Utah (Table 3.29), and no modifications to the existing visibility monitoring strategy are necessary at this time.

Table 3.29. Utah CIAs and Representative IMPROVE Monitors

Class I Area	Representative IMPROVE Site	Latitude	Longitude	Elevation (m)
Bryce Canyon NP	BRCA1	37.62	-112.17	2481
Canyonlands NP	CANY1	38.46	-109.82	1798
Arches NP				
Capitol Reef NP	CAPI1	38.30	-111.29	1896
Zion NP	ZICA1*	37.20	-113.15	1215

*Replaced the ZION1 monitoring site in 2003.

3.9 Determination of Adequacy: § 51.309(d)(10)(ii)

40 CFR § 51.309(d)(10)(ii)(d)(10)(ii) requires "*Determination of the adequacy of existing implementation plan. At the same time the State is required to submit any 5-year progress report to EPA in accordance with paragraph (d)(10)(i) of this section, the State must also take one of the following actions based upon the information presented in the progress report:*

(1) If the State determines that the existing implementation plan requires no further substantive revision at this time in order to achieve established goals for visibility improvement and emissions reductions, the State must provide to the administrator a negative declaration that further revision of the existing implementation plan is not needed at this time.

(2) If the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources in another State(s) which participated in a regional planning process, the State must provide notification to the administrator and to the other State(s) which participated in the regional planning process with the States. The State must also collaborate with the other State(s) through the regional planning process for the purpose of developing additional strategies to address the plan's deficiencies.

(3) Where the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources in another country, the State shall provide notification, along with available information, to the Administrator.

(4) Where the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources within the State, the State shall revise its implementation plan to address the plan's deficiencies within one year."

The State of Utah has provided the information required under 40 CFR § 51.309(d)(10)(i) and (d)(10)(ii) in this 5-year progress report. Based on the information in this report, the State of Utah has determined that the current implementation plan elements and strategies are sufficient to meet all established reasonable progress goals established by WRAP. Because EPA disapproved the BART determination for NOx and PM (because the SIP did not fully address the factors that need to be considered as part of a BART determination), the State acknowledges that the BART determinations are in need of revision. The Utah Air Quality Board proposed a revision to Utah's RH SIP on March 4, 2014 to provide a 5-factor analysis to support the BART determination for PM and an alternative to BART for NOx that will provide greater reasonable progress than the most stringent NOx control technology available. DAQ anticipates that the Board will take final action on this proposal in June, 2015 to resolve EPA's concerns.

Exhibit F
PacifiCorp v. EPA, Consolidated Case Nos. 16-9541, 16-9542, 16-9543, 16-9545

Excerpts from EPA's Response to Comments for the Federal Register Notice for Air Quality State Implementation Plans; Approvals and Promulgations: Utah; Revisions to Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze; Partial Approval and Partial Disapproval (Docket ID No. EPA-R08-OAR-2015-0463) (Jun. 1, 2016)

Response to Comments for the Federal Register Notice for Air Quality State Implementation Plans; Approvals and Promulgations: Utah; Revisions to Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze; Partial Approval and Partial Disapproval

Docket No. EPA-R08-OAR-2015-0463

June 1, 2016

*This Response to Comment Document was finalized on June 1, 2016. As shown in the "redline/strikeout" version of this document in the docket for this action, the Agency made non-substantive and formatting edits on June 9, 2016.

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List of Public Comments

Docket ID Number EPA-R08-OAR-2015-0463-xxxx	Commenter Name/Affiliation
-0031	Citizen Commenter
-0032	Anonymous Commenter
-0033	Anonymous Commenter
-0034	Anonymous Commenter
-0035	Anonymous Commenter
-0036	Anonymous Commenter
-0037	Citizen Commenter
-0038	Anonymous Commenter
-0039	Emery County Public Lands Administrator
-0040	Anonymous Commenter
-0041	Citizen Commenter
-0042	Anonymous Commenter
-0043	Citizen Commenter
-0044	Anonymous Commenter
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-0100	Mass Mailer Sample, National Parks Conservation Association (NPCA)
-0101	Mass Mailer Sample, Sierra Club
-0102	Mass Mailer Sample, Healthy Environment Alliance of Utah (HEAL Utah)
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-0116	Anonymous Commenter
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-0123	Citizen Commenter
-0124	Retired National Park Service Manager
-0125	Anonymous Commenter
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-0128	Citizen Commenter
-0129	Citizen Commenter (repeat of -0121)
-0130	Utah Citizens Advocating Renewable Energy (UCARE)
-0131	Citizen Commenter
-0132	Citizen Commenter
-0133	No document for this number
-0134	Anonymous Commenter
-0135	Anonymous Commenter
-0136	Utah Physicians for a Healthy Environment (UPHE)
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-0143	Citizen Commenter
-0144	Citizen Commenter (Sierra Club mass mailer, comment submitted via Regs.gov)

-0145	Citizen Commenter
-0146	Anonymous Commenter
-0147	Citizen Commenter
-0148	Citizen Commenter (Sierra Club mass mailer, comment submitted via Regs.gov, repeat of -0144)
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-0150	Citizen Commenter
-0151	Anonymous Commenter
-0152	Carbon County Board of Commissioners
-0153	NPS Regional Director
-0154	National Park Service (NPS)
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-0156	Colorado Conservation Organizations
-0157	Conservation Organizations, Vicki Stamper Report
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-0163	Utah Associated Municipal Power Systems (UAMPS)
-0164	Citizen Commenter
-0165	Utah Mining Association (UMA)
-0166	Utah Citizens Advocating Renewable Energy (UCARE)
-0167	Conservation Organizations Cover Letter and Exhibits (Conserv Orgs)
-0168	Utility Air Regulatory Group (UARG)
-0169	PacifiCorp, corrected
-0170	Sierra Club, early comments
-0171	Citizen Commenter
-0172	Utah Physicians for Healthy Environment (UPHE) Part 1
-0173	UPHE, Part 2
-0174	Mass Mailer, Distinct Submissions, Sierra Club
-0175	Protect our Winters (POW)
-0176	Colorado Organizations
-0177	Mass Mailer, Industry
-0178	Mass Mailer, Coal Company Employees
-0179	UCARE, Second Submittal

test, I believe, is the evaluation of the 90% results (worst 10% of days at the Park). EPA does not present this modeling test.

Response: The response to this comment is provided in the FRN and elsewhere in this RTC document.

Comment: [NPS Tech, pp. 26-27] 90th Percentile Impact (dv)

UDAQ's Table 7 presents 90th percentile values which have never before been allowed by EPA and were explicitly rejected by EPA in North Dakota as "not rational"[50] and also explicitly rejected in the BART Guidelines:

> The use of 90th percentile value would effectively allow visibility effects that are predicted to occur at the level of the threshold (or higher) on 36 or 37 days a year. We do not believe that such an approach would be consistent with the language of the statute.[187]

For example, this approach converts a perceptible 1.3 dv (98th percentile) impact at Mesa Verde NP to an imperceptible 0.4 dv impact.

Now, EPA "propose[s] to find that it [90th percentile] only marginally supports a conclusion that the BART Alternative achieves greater reasonable progress." Such a proposal is inconsistent with the BART Guidelines and all previous EPA BART actions and should not be given any weight.

In conclusion, we recommend that EPA rely on the 98th percentile "key metric" as consistent with previous decisions. The other metrics do not provide clear weight-of-evidence that the BART Alternative provides greater reasonable progress than the BART scenario. The BART Alternative is not better than BART.

Response: The response to this comment is provided in the FRN. We note that our statements in the North Dakota notice of final rulemaking[188] and BART Guidelines refer to use of the 90th percentile value in the context of determining whether a source is subject to BART.

Comment: [UARG, p. 19] EPA also discounts the 90th percentile impacts analysis "because of the small difference between the two scenarios." *Id.*

Response: The response to this comment is provided in the FRN.

vi. Timing for the Emissions Reductions

Comment: [PacifiCorp, pp. 2, 19, 26] EPA unfairly minimizes the timing of emissions reductions. EPA glosses over the benefits of the timing of the BART Alternative emissions reductions. The emissions reductions associated with the BART Alternative began in 2007 and

[187] 40 CFR Part 51 [FRL–7925–9] RIN 2060–AJ31; 70 FR 39171, 39121 (July 6, 2005).
[188] 77 FR 20894, 20910 (Apr. 6, 2012).

have continued to this day, long before any emissions reductions would occur under the FIP Proposal.

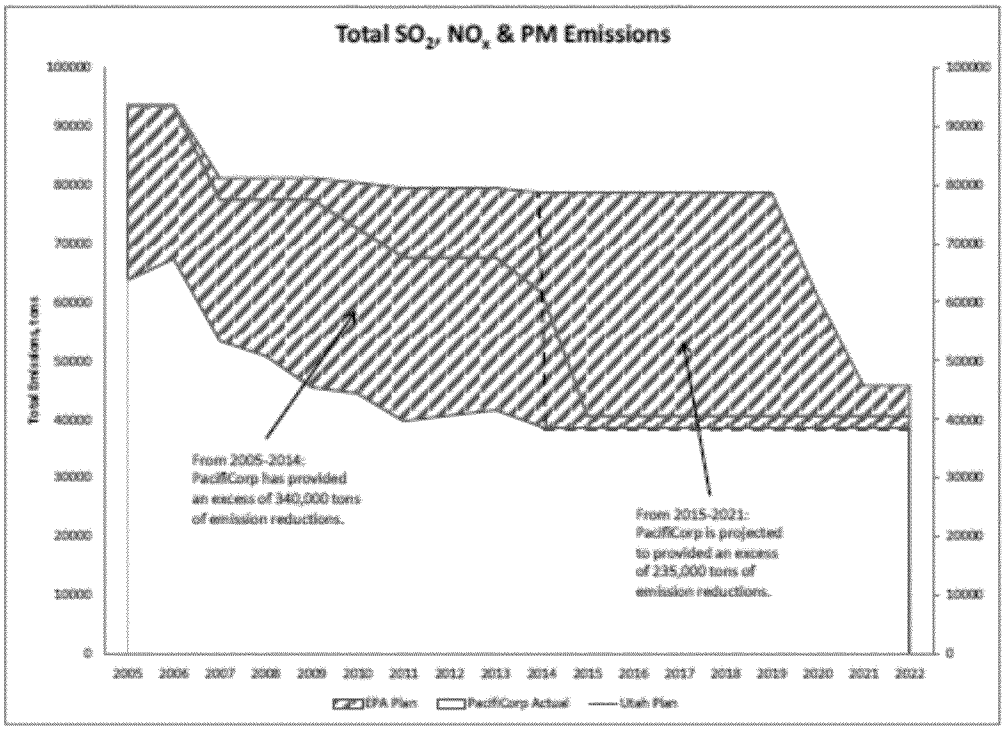
Further, by attempting to impose BART controls EPA is actually requiring both the BART Alternative and BART – reaching well beyond the scope of its authority.

Timing for the Emissions Reductions – In considering the Timing of Emissions Reductions metric, EPA notes simply that "the reductions from the BART Alternative will occur before the BART Benchmark." See 81 FR at 2023. Although this is a true statement on its face, EPA does an extreme disservice to Utah, PacifiCorp, its customers and the general public by including such an underwhelming description of the meaningful and large visibility benefits associated with the timing of emissions reductions under the BART Alternative[189] as compared to the BART Benchmark. In approving the BART Alternative, PacifiCorp strongly encourages EPA to more completely describe both the tremendous scope, and the overwhelmingly positive visibility impact, of the timing of emission reductions under the BART Alternative as compared to the BART Benchmark.

The table below shows the timing of controls installed under the BART Alternative, along with: (i) the total tons of emissions reductions achieved since the date of the installation of the controls; and (ii) the projected emissions reductions to be achieved until the time when the BART Benchmark is expected to be implemented.[190]

[189] In at least three other portions of the Proposed Action, EPA at least acknowledges that the "reductions under the Utah BART Alternative are required under the State SIP by August 2015, as noted in Table 5, providing an **early and on-going visibility benefit as compared to BART**." (emphasis added) See 81 FR 2004, 2018, 2024, and 2030. In addition, EPA states in the Proposed Action that: "Also notable is that combustion control upgrades at the Hunter and Huntington facilities have been achieving significant NO_x reductions **since the time of their installation between 2006 and 2014**." (emphasis added) Id. at 2030. At the critical point of describing in the Proposed Action the timing of reductions as evidence to consider under the Weight-of-evidence analysis, however, EPA could not even be bothered to do more than nominally and incompletely describe that evidence, leaving out the importance, scope and impact of the timing of such significant emissions reductions. This, in turn, led to EPA incompletely evaluating the weight of this evidence when considering the SIP Proposal (even though EPA actually reaches the proper conclusion in proposing to approve the BART Alternative).

[190] EPA projects that the BART Benchmark "likely would be fully implemented sometime between 2019 and 2021." See 81 FR 2004, 2030.



As can be seen, the BART Alternative already has produced a total of 340,000 tons of combined emission reductions beginning in 2007 and continuing through 2014. And these emissions reductions have occurred at a time long before the BART Benchmark ever would be implemented. In addition, the BART Alternative is expected to continue to produce significant emission reductions between now and the time of the BART Benchmark (and beyond). EPA should specifically note the significant visibility benefits associated with the timing of these emissions reductions and assign them great weight under the Weight-of-evidence test.[191] What EPA should not do, however, is brush over the Emission Reduction Timing metric by failing to adequately describe or consider the significant timing benefits as EPA appears to have done in its tepid conclusions regarding the weight of the Emission Reduction Timing metric in evaluating the BART Benchmark.

Even in evaluating its FIP Proposal, EPA cannot escape acknowledging the benefits of the timing of emission reductions achieved under the BART Alternative as compared to the BART Benchmark. Indeed, EPA does not, and cannot, offer any criticism to the contrary and instead concludes that: "we recognize that the reductions from the BART Alternative would occur before the BART Alternative." See 81 FR at 2030. Therefore, even though EPA has employed every tactic it can think of criticize other metrics used to evaluate the BART Alternative under its FIP Proposal, EPA makes no such attempt when it comes to the timing metric. This failure is additional evidence that the timing metric should carry great weight in EPA's weight-of-evidence analysis in support of the BART Alternative and this metric in no way supports the FIP Proposal.

[191] The U.S. Circuit Court of Appeals for the 10th Circuit explicitly acknowledged that the consideration by EPA of emission reductions occurring at an early point in time is a proper part of a clear weight-of-evidence approach to determining greater reasonable progress. *WildEarth Guardians v. E.P.A.*, 770 F.3d 919, 938 (10th Cir. 2014).

As explained above and following Utah's lead in the Utah SIP, EPA has assumed that the SIP Proposal produces a greater reduction in aggregate emission reductions of 2,856 tpy compared to the BART Benchmark. This information, however, presumes that the emission units covered under the BART Alternative have emitted at the maximum amount allowable under applicable permits every minute of every day for 365 days each year. In reality, of course, the units do not function in this manner. Therefore, EPA should also take into account the actual emissions from the affected units in considering the aggregate tpy reductions, at least in considering emissions from 2007 until the present. This information is available above in the chart at page 17. By acknowledging that the SIP Proposal – based on actual emissions data – produced even greater emission reductions than EPA (or Utah) had supposed, this gives EPA even more reason to approve the BART Alternative based on this metric.

Response: In its SIP submittal, Utah relied only on the NO_x reductions at Huntington 1 and 2 and Hunter 2 and 3 that occurred between 2006 and 2011 in arguing that the BART Alternative provides for early and ongoing visibility improvement. Given the timing of these reductions, we agree with Utah that they can be taken into account as early reductions in assessing the Alternative. We do not agree with the commenter, however, that EPA should consider the timing of the total tonnage of emission reductions associated with the BART Alternative as "early" beyond those identified by Utah in its SIP submittal.

We acknowledge that EPA proposed to find that other emission reductions from PacifiCorp's Utah facilities could be taken into account as early reductions. After considering the comments received, however, we have concluded that it would be difficult to assess the relative benefit of the timing of later emission reductions under the BART Alternative, given that regional haze SIPs were was due in 2007 and that under the schedule in the Clean Air Act, BART should have been fully implemented by 2014 at the latest. It is accordingly difficult to characterize emission reductions such as the shutdown of Carbon in 2015 as "early." As this is consistent with Utah's SIP submittal, we have decided to consider only those emission reductions that occurred between 2006 and 2011 as lending weight to the argument that the Alternative will provide for greater reasonable progress.

In assessing the BART Alternative, we have taken into account the likely visibility benefit from the emission reductions under the Alternative that occurred from the installation of controls at Hunter and Huntington between 2006 and 2011. We have given some weight to this metric but do not consider the timing of these reductions to be compelling, however, in light of the remaining evidence regarding the comparative visibility benefits going forward.[192]

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[192] As explained in this response, while we have taken into account the likely visibility benefit of the early emission reductions in our evaluation of the State's greater reasonable progress than BART analysis, the Clean Air Act requires that all SIPs must include "enforceable emission limitations and other control measures, means, or techniques . . . as well as schedules and timetables for compliance, as may be necessary or appropriate to meet the applicable requirements of [the Act]." CAA Section 110(a)(2)(A); 42 USC 7410(a)(2)(A). Furthermore, regional haze SIPs must include emission limits, compliance schedules, and other measures "as may be necessary to make reasonable progress toward meeting the national goal." CAA Section 169A(b)(2); 42 USC 7491(b)(2). Therefore, in addition to disapproving the provisions in the State's SIP that covered the BART Alternative, we also disapproved provisions in the State's SIP that presented references to and information about emission limits that were created outside the SIP process. Additionally, as discussed elsewhere in this document and the FRN, the presumptive

Comment: [PacifiCorp, p. 63] Utah properly considered The Alternative Program provides emission reductions earlier than required, "providing a corresponding early and on-going visibility improvement." *See* Staff Review, Section VII, page 9. The U.S. Circuit Court of Appeals for the 10th Circuit explicitly acknowledged that the consideration of early reductions was proper as part of a qualitative or clear weight-of-evidence approach to determining greater reasonable progress. *WildEarth Guardians v. E.P.A.*, 770 F.3d 919, 938 (10th Cir. 2014).

Response: As explained in the FRN, we agree that consideration of early reductions is allowed under the weight-of-evidence analysis.

Comment: [Conserv Orgs, p. 31] By using emissions for the Carbon units over the 2012 -2013 timeframe in its comparison of emission reductions achievable under the BART Benchmark compared to the BART Alternative, Utah is not meeting the requirements of 40 C.F.R. §51.308(e)(2)(iv) that emission reductions resulting from the BART alternative "will be surplus to those reductions resulting from measures adopted to meet requirements of the CAA as of the baseline date of the SIP."

Response: The RHR regulations specify that "emission reductions resulting from the emissions trading program or other alternative measure will be surplus to those reductions resulting from measures adopted to meet requirements of the CAA as of the baseline date of the SIP."[193] We have interpreted this to mean that the State can take credit for all post-2002 emission reductions as of that baseline date. However, there is some question as to whether Utah should have taken credit for emission reductions at Carbon from a starting point that exceeds its emissions as of 2002. We are not basing our disapproval of the State's Alternative on a determination that it failed to demonstrate that emission reductions were surplus to the baseline date of the SIP, but we do note that a state must take a reasonable approach to assessing whether a BART alternative will provide for greater reasonable progress than BART.

Comment: [Conserv Orgs, p. 32] Utah should not be allowed emissions reduction credit for the shutdown of the Carbon units at emission levels that exceeded the emissions as of the 2002 baseline date of the regional haze plan.

Response: There is some question as to whether Utah should have taken credit for emission reductions at Carbon from a starting point that exceeds its emissions as of 2002. We are not

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emission limits in the BART Guidelines are rebuttable; we did not determine here that those limits represent BART and therefore disapproved references in the SIP to those limits. The limits created outside the SIP and references to the presumptive emission limits that we disapproved included: SIP Section XX, D subsections: 6.d. (references to use of approval orders and permitted limits to establish the emission limits, the statement that "the four EGUs also met the presumptive emission rates for both NO_x and SO_2 established in Appendix Y independently of the alternative programs", and references in Table 5 to "Permitted" (and the NO_x and SO_2 limits in that column), "Hunter 3", all provisions in the "Presumptive BART Rates" column NO_x and SO_2 emissions); 6.e. (the provisions in "Schedule for Installation of Controls" as the dates refer to emissions for sources that are in the proposed BART Alternative; and the discussion immediately following Table 6 that presents information about the emission limits also appearing in State-issued permits).

basing our disapproval of the State's Alternative on a determination that it failed to demonstrate that emission reductions were surplus to the baseline date of the SIP, but we do note that a state must take a reasonable approach to assessing whether a BART alternative will provide for greater reasonable progress than BART.

Comment: [Conserv Orgs, p. 48] The timing of emissions reductions under Utah's BART Alternative also does not support a "greater reasonable progress" finding.[194]

Response: This comment is responded to elsewhere.

Comment: [Conserv Orgs, p. 25] Utah employed arbitrary assumptions in its Projected Emission Reduction Analysis for the BART benchmark. Namely, Utah arbitrarily assumed that if BART, and not the alternative program, were required at Hunter and Huntington, the Carbon plant would have continued operating after April 15, 2015 at uncharacteristically high emissions levels and without complying with mandatory MATS emissions limits, and that PacifiCorp would somehow remove the most recently installed LNB from Hunter Unit 3 and emit NO_x rates higher than its currently permitted limit. As a result, Utah significantly overstated the overall haze-causing emissions that would occur under the BART benchmark scenario.

Response: We respond to these comments elsewhere.

Comment: [Conserv Orgs, p. 55, 56] The Regional Haze Rule Requires Alternative Programs to Achieve Future Emissions Reductions from BART Sources. Utah's BART Alternative does not satisfy these requirements. In fact, the Alternative relies exclusively on past emissions reductions and largely excludes all BART sources in the state by excusing Hunter Units 1 and 2 and Huntington Units 1 and 2 from future emissions reductions under both the alternative program and BART-derived emission limits.

Response: We respond to these comments elsewhere.

Comment: [Conserv Orgs, p. 57, 58] Utah's Alternative Proposal Conflicts with EPA Precedent, Which Requires Actual Emissions Reductions From BART Sources. First, it is important to note that the CAIR program was specifically identified as a potential substitute for BART and specific requirements for this program are enumerated in EPA's regional haze regulations.[195] This is important because the rules governing CAIR are separate from those governing other "alternative programs" to BART. In addition, CAIR is an interstate SO_2 and NO_x "trading program." Utah's ability to rely on a trading scheme is limited to its participation as a 309 state, thus this proposal must instead be evaluated under the "BART alternative" regulations, relating strictly to emissions of nitrogen oxides and PM. Despite these significant differences between the programs, it is clear that the CAIR program was designed as a forward looking program that would require ***future*** emissions reductions to serve as a substitute for BART. In contrast, Utah's BART Alternative is a backward looking program that seeks to rely solely on past emissions reductions that largely resulted from other regulatory programs, i.e. the Carbon units closures resulted from the MATS program, not from regional haze obligations, and

[194] *See* 81 FR 2004, 2018, 2030.
[195] 40 C.F.R. § 51.308(e)(4).

fail to deliver visibility benefits needed to comply with the Regional Haze Rule's BART obligations.

As with CAIR, emissions reductions under CSAPR are forward, rather than backward, looking. And as with EPA's approval of CAIR as a BART alternative, EPA's approval of CSAPR as a BART alternative applies only to states subject to a FIP or SIP ensuring emissions reductions from the CSAPR trading program for the state's EGUs, which necessarily includes EGUs subject to BART.[196] Thus, like CAIR, CSAPR yields future emissions reductions from BART-subject EGUs. Although the Conservation Organizations do not support EPA's determination that CSAPR is a legitimate BART alternative program, it certainly does not provide precedent for Utah's proposed alternative.

Response: As discussed in the FRN, we disagree that the emission trading requirements in 40 CFR 51.308(e)(4) apply Utah's BART Alternative; and since the RHR establishes the baseline date of the SIP as 2002, a RH SIP can take credit for emission reductions that occur post-2002.

Comment: [Conserv Orgs, p. 59] Closer to home, EPA approved a regional SO_2 trading program under 40 C.F.R. § 51.309 (the "309 Program") as satisfying the better-than-BART requirements for SO_2 in Utah, Wyoming, and New Mexico.[197] Again, the 309 Program is designed to achieve emissions reductions from all EGUs in the three participating states and the emissions reductions are guaranteed by a future cap on emissions growth. While the Conservation Organizations disputed EPA's determination that the 309 Program is better than source-specific BART determinations, the program's scope and timing make it fundamentally distinguishable from Utah's alternative.

Response: We agree that the program scope and timing of the regional SO_2 trading program is fundamentally different from Utah's BART Alternative. While we recognize that the 10th Circuit acknowledged it was proper to consider early emission reductions in evaluating a BART alternative program,[198] the regional trading program elements are very different from Utah's BART Alternative. For example, the regional trading program is an ongoing "backstop" trading program, and the program contains overall emission milestones that decline over time. The emissions from sources that are in the program, BART and non-BART, are tracked each year, and if the total emissions from all the sources exceed the overall emission milestones, the trading program is trigger. If the trading program is triggered, the state and local air agencies participating in the program the provide emission allowances to the sources, and the sources' emissions must be covered by allowances. If a source's emissions are going to greater than the allowance provided by the air agency, then the sources needs to either purchase allowances on the market to cover the additional emissions, or reduce its emissions in some other way. The states participating in the program submitted SIPs to EPA that included regulatory details on these trading program elements, and an analysis that EPA approved under the BART alternative regulations. Therefore, we agree with the commenters that backstop trading program's scope and

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[196] *Id.* at 33,647.
[197] *See* Final Rule, Approval, Disapproval and Promulgation of State Implementation Plans; State of Utah; Regional Haze Rule Requirements for Mandatory Class I Areas Under 40 CFR 51.309, 77 Fed. Reg. 74,355 (Dec. 14, 2012).
[198] *WildEarth Guardians v. EPA*, 770 F.3d 919, 938 (10th Cir. 2014).

Comment: [UDAQ, p. 23] BART controls cannot legally be required to be installed after 2018 because it is past the end of the planning period. EPA acknowledges in the proposal to approve Utah's submittal that all the controls required byUtah's RH SIP are installed and, therefore, meet the "requirement that all necessary emissions reductions take place during the period of the first long- term strategy for regional haze." 40 CFR 51.308(e)(2)(iii). EPA states in the proposed FIP that installation of SCR, or the BART controls, would be fully implemented between 2019 and 2021—a minimum of one year after the end of the 2018 planning period end date. Because EPA's proposed FIP would not be fully implemented until after the planning period, this option is contrary to the RHR (40 CFR 51.308(e)(2)(iii)).

Response: The requirement to install controls by the end of the first planning period cited by the commenter applies to states that opt to implement trading programs or alternative measures under §51.308(e)(2) of the RHR. However, we are not adopting our FIP pursuant to this provision, but to §51.308(e)(1) of the RHR which states that "each source subject to BART be required to install controls as expeditiously as possible, but in no event later than 5 years after approval of the implementation plan revision."[531] We anticipate that our final rule will become effective in the summer of 2016, so that the compliance date will fall sometime in the summer of 2021. Accordingly, we find that the compliance dates specified in our FIP are consistent with the requirements of the RHR. We also note that the commenter's theory does not make sense – if approval of the plan revision were considerably delayed for various reasons such as protracted litigation, under the commenter's theory BART could never be implemented. And under section 110(c)(1), EPA is required to promulgate a FIP to address deficiencies in a State's SIP, regardless of the original timeline for the State's SIP.

i. Consideration of Existing Controls

Comment: [PacifiCorp, p. 29] The Eighth Circuit rejected EPA's "existing control" interpretation -- Not only does EPA's "existing controls" approach in the FIP Proposal violate the BART Guidelines, but courts have rejected EPA's approach as well. In *North Dakota*, a power company had installed pollution control equipment two years before EPA conducted its BART determination. *North Dakota v. EPA*, 730 F.3d 750, 760 (8th Cir. 2013). The power company argued EPA should consider the existing controls when calculating cost effectiveness, among other things. EPA refused, unsuccessfully arguing that it "was not required to reconsider cost estimates based on voluntarily installed controls installed after the baseline period." *Id.* at 762. The Eighth Circuit rejected EPA's actions, and its excuses. The *North Dakota* court held 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." *Id.* at 764. The court further held EPA's failure to properly consider the "existing pollution control technology" was contrary to the plain language of the CAA and rejected part of EPA's FIP on this basis. *Id.* at 762-64.

[531] 40 CFR 51.308(e)(1)(iv).