Intermountain Power Service Corporation

May 31, 2022

Submitted via email: rwood@utah.gov

Bryce Bird, Director
Utah Division of Air Quality
P.O. Box 144820
Salt Lake City, UT 84114-4820

RE: Proposed Utah State Implementation Plan for Regional Haze Round Two,
Intermountain Power Services Corporation Comments

Dear Director Bird:

Intermountain Power Service Corporation (IPSC) appreciates the opportunity to comment in support of the Utah State Implementation Plan (SIP) for Regional Haze Round Two developed by the Utah Department of Environmental Quality, Division of Air Quality (UDAQ). This comment also responds to certain of the specific requests for comment on the SIP raised by the Utah Air Quality Board.

The Intermountain Power Agency (IPA) owns the Intermountain Power Project (IPP) and IPSC operates the Project for the Los Angeles Department of Water and Power. IPP is a 1900-megawatt coal-fired, steam electric generation station and allied transmission systems located in central Utah. The Project has been in continuous commercial operations since 1986 and delivers energy to 35 participants in the project that principally serve Utah and Southern California. In 2017, IPA announced plans to transition to natural gas, with a *target date* of 2025 for achieving the transition. IPA and IPSC are in the process of engineering and permitting two 487 megawatt (MW) combined cycle combustion turbines that will combust pipeline grade natural gas and hydrogen gas. Once these units are fully commissioned, IPA will permanently shutter the coal units.

While IPA's objective is to transition to natural gas and hydrogen in 2025, the complexity of the project and potential for delays beyond the reasonable control of IPA and IPSC require contingency planning that would allow IPA to provide for operation of the coal units through 2027. As part of Utah's Regional Haze Round Two SIP, IPA has accepted an enforceable commitment to close on or prior to December 31, 2027, which is the end of the second Regional Haze planning period. Due to contractual obligations to supply power, however, IPA cannot commit to permanent closure of the coal units prior to that date. IPA and IPSC must ensure that the gas units are fully commissioned and operational before permanent closure of the coal units. This comment provides general support for Utah's

Regional Haze SIP and specific support for the SIP provision requiring closure of the IPA coal units on December 31, 2027 without imposition of additional, interim control requirements.

I. Regulatory Background

The Clean Air Act's Regional Haze program is narrowly designed to address visibility impairment in the country's national parks and wilderness areas, referred to as Federal Class I areas. *See* 42 U.S.C. §§ 7491-92. This focus on aesthetics—as opposed to health concerns—is unique to these statutory provisions. For example, when enacting regulations to address regional haze in 1977, Congress "made clear at the outset that this provision [concerning BART] is totally unrelated to any question involving public health." *See* H.R. Rep. 95-294, at 529 (1977). Rather, as Congress explained, "[d]rastically reduced visibility can be expected to undermine the attractiveness of these areas to tourists, thereby cutting tourist travel to those regions." H.R. Rep. 95-294, at 138. Without regulation of visibility impairment, Congress expressed concern that "the economic life blood of many areas may be seriously threatened by any policy of allowing our national parks and other lands to become as polluted as our major industrial cities." *Id*.

The Regional Haze program requires states, in consultation with EPA and the relevant federal land management agencies, to prepare and implement SIPs to reduce pollutants responsible for impairing visibility in Class I areas. To date, EPA has designated a total of 156 national parks and wilderness as Federal Class I protected areas. 40 C.F.R. Part 81. In Utah, five national parks (Arches, Bryce, Canyonlands, Capitol Reef and Zion) are classified as Class I areas. 40 C.F.R. § 81.436. Clean Air Act Section 169A(a)(4) requires EPA to promulgate regulations that assure "reasonable progress" toward the national visibility goal. 42 U.S.C. § 7491(a)(4). The "national goal," however, "is not a mandate," and simply "serves as the foundation for analytical tools to be used by the states to set reasonable progress goals." *Am. Corn Growers Ass'n v. EPA*, 291 F.3d 1, 10 (D.C. Cir. 2002).

EPA finalized the Regional Haze program rules in 1999 and required states to submit initial SIPs no later than December 17, 2007. 64 Fed. Reg. 35,714; 40 C.F.R. § 51.308(b). Section 51.308(f)(3) requires States to set Reasonable Progress Goals (RPGs) for the Class I areas located within the State. Specifically, the rule states that "[t]he long-term strategy and the reasonable progress goals must provide for an improvement in visibility for the most impaired days since the baseline period and ensure no degradation in visibility for the clearest days since the baseline period." 40 C.F.R § 51.308(f)(3). While the rule requires states to provide for improvement, it does not require a certain level of improvement. Indeed, EPA stated in the 2017 Regional Haze rule preamble that "[t]he revisions require states to consider certain factors and provide certain information as they develop their regional haze SIPs, but they do not mandate specific outcomes." 82 Fed. Reg. 3078, 3090 (Jan. 10, 2017). "Where applicable, the revisions also provide states with significant flexibility to take state-specific facts and circumstances into account when developing their long-term strategies." *Id*.

For the first implementation period, the Regional Haze rule provides states with two compliance pathways depending on their locations. States can choose to perform individual point source Best Available Retrofit Technology (BART) determinations for BART-eligible sources[1] as well as evaluate other control strategies under or for states within the Transport Region (addressed by the Grand Canyon Visibility Transport Commission or GCVTC) to comply with the requirements of 40 CFR § 51.309, such as the Western SO2 Backstop Trading Program. Utah is a part of the Transport Region and SIPs from states in the Transport Region must also address BART for stationary-source emissions of nitrogen oxides (NOx) and particulate matter (PM).

Under the Regional Haze program, the first implementation period spanned from 2008 to 2018, in which the first state plans were due in 2007 and the last date for states to submit initial regional haze control plans for all Mandatory Federal Class I Areas was in 2008. Utah, however, participated in early regional haze planning through its involvement with the GCTVC. For example, in 2000, Utah established Sulfur Dioxide (SO_2) milestones, and based on recommendations of the GCVTC, in 2003 Utah's Air Quality Board adopted various sections of the SIP directed at its regional haze obligations. In 2015, Utah submitted its evaluation of BART, along with a revision in 2019, in accordance with 40 CFR § 51.308. IPP was not subject to the first round of BART review as it did not meet the requirements for a BART-eligible source.

Contrary to comments made by other groups, significant and meaningful emissions reductions have occurred in Utah and the western states as whole since the inception of the Regional Haze program. For example, between 1998 and 2018 emissions from the Western power sector of SO_2 have decreased by 84% and NOx emissions have decreased by 71%. SIP, at 41. Moreover, after the first implementation period in Utah, the emissions reductions achieved by control measures implemented included a total of 8,005 tons per year of SO_2 emissions. SIP, at 37. By 2028, it is anticipated that in Utah emissions from EGUs of SO_2 will have declined from 2014 levels by 59%, and NOx emissions by 56%. SIP, at 61-62.

The Regional Haze program is now in the second implementation period. States were required to submit their revised Regional Haze State Implementation Plans by July 31, 2021. The revisions include: (1) calculations of baseline, current, and natural visibility conditions, progress to date, and the uniform rate of progress calculations of visibility conditions; (2) a long-term strategy for regional haze; (3) reasonable progress goals; (4) additional monitoring to assess reasonably attributable visibility impairment, if required, (5) an updated progress report; and (6) a monitoring strategy and other implementation plan requirements. 40 C.F.R. § 51.308(f).

[1] BART-eligible sources are those sources that fall within one of 26 specific source categories, were built during the 15-year window of time from 1962 to 1977, and have potential emissions of at least 250 tons per year of any visibility impairing air pollutant (40 CFR 51.301). *See also* Utah Regional Haze SIP 2019, at 19.

Notably, as EPA underscores, during this second implementation period "**there is no specified outcome or amount of emission reduction or visibility improvement that is directed as the reasonable amount of progress** for any Class I area." EPA Guidance, at 4. Further, EPA notes a state may conclude from its analyses "**that the current level of control is the measure that is necessary to make reasonable progress**." *Id*. at 24, fn. 53.

II. Utah Should Emphasize its Primary Role in Assuring Reasonable Progress Towards the National Visibility Goal

The SIP development and approval processes are moored in the concept of cooperative federalism with states playing the primary role in developing and implementing their SIPs. *Oklahoma v. U.S. EPA*, 723 F.3d 1201, 1204 (10th Cir. 2013) ("The Clean Air Act 'uses a cooperative-federalism approach to regulate air quality.'") (citations omitted). This concept applies equally to regional haze SIPs, *see Am. Corn Growers Ass'n*, 291 F.3d at 8, and a state has "'wide discretion in formulating its plan' for achieving the air quality standards set by EPA." *See Texas v. U.S. EPA*, 829 F.3d 405, 411 (5th Cir. 2016) (quoting *Union Elec. Co. v. EPA*, 427 U.S. 246, 250 (1976)). States do "exercise this authority with federal oversight." *Oklahoma v. EPA*, 723 F.3d at 1204; *see also* 82 Fed. Reg. 3078, 3090. While the Courts of Appeal may disagree on the scope of EPA's review of a state's regional haze SIP submission,[2] there is agreement that EPA's SIP review is more limited given the discretion afforded to states in preparing a SIP. *See Oklahoma*, 723 F.3d at 1226 n. 7 ("EPA has less discretion when it takes actions to reject a SIP than it does when it promulgates a FIP.").

EPA has recognized the discretion provided to the States. For instance, in its August 20, 2019 Memo - Guidance on Regional Haze State Implementation Plans for the Second Implementation Period (EPA 2019 Guidance), EPA stated that the "guidance is intended to provide information about EPA's understanding of the discretion and flexibilities states have within the statutory and regulatory requirements to develop regional haze SIPs, even where states' approaches differ from those provided in this [guidance] document." 2019 Guidance at 1. Rather than strict adherence, EPA demands "reasoned decision-making" as the basis for the regional haze SIPs. *Id*. While recommending factors to consider and analyses to conduct, "States have discretion to balance these factors and considerations in determining what control measures are necessary to make reasonable progress." 2019

[2] *Compare Texas*, 829 F.3d at 411 (Fifth Circuit describing EPA's role as limited "to the ministerial function of reviewing SIPs for consistency with the Act's requirements.'") *with North Dakota v. U.S. EPA*, 730 F.3d at 760-61 (8th Cir. 2013) ("Although the CAA grants states the primary role of determining the appropriate pollution controls within their borders, EPA is left with more than the ministerial task of routinely approving SIP submissions."). The Tenth Circuit has stated that "EPA reviews all SIPs to ensure that the plans comply with the statute" and "may not approve any plan that 'would interfere with any applicable requirement" of this chapter of the United States Code.'" *Oklahoma*, 723 F.3d at 1204 (quoting § 7410(l))). Similarly, the 8th Circuit has held that EPA can review the SIP "to ensure that it was one that was "reasonably moored to the Act's provisions" and was based on 'reasoned analysis.'" *North Dakota*, 730 F.3d at 761 (quoting *Ak. Dep't of Env't Conservation v. EPA*, 540 U.S. 461, 485, 490 (2004)). "In both cases," EPA rejected the state's SIP due a "flaw in the analysis [that] prevented the state from conducting a meaningful consideration of the factor." *North Dakota*, 730 F.3d at 761 ("data flaws that led to an overestimated cost of compliance"); *Oklahoma*, 723 F.3d at 1221 ("flawed cost estimates").

Guidance at 4 (citing the 1999 Regional Haze Rule ("The flexibility for State discretion is, of course, exactly what the regional haze rule provides." 64 Fed. Reg. 35760.))

Throughout the development of the SIPs for the Regional Haze second planning period, EPA has provided guidance to the states on how to approach SIP development. However, on July 8, 2021, the EPA released "Clarifications Regarding Regional Haze State Implementation Plans for the Second Implementation Period." (EPA 2021 Guidance). IPSC encourages Utah to emphasize that EPA's 2021 Guidance was released late in the planning process—after completion of much of the Western Regional Air Partnership (WRAP) modeling—making full consideration impracticable. For this reason, divergence from the EPA 2021 Guidance cannot be the sole or primary basis upon which EPA bases its SIP review.

III. Utah's Reasonable Progress Goals are Well Supported

A. Utah Appropriately Developed its Long-Term Strategy and Reasonable Progress Goals

Pursuant to 40 CFR 51.308(f)(2), Utah is required to develop a long-term strategy (LTS) that addresses visibility impairment for each mandatory Federal Class I area within the state and for each mandatory Class I outside of the state. The LTS must include enforceable emissions limitations, compliance schedules, and other measures that are necessary to make reasonable progress.

The LTS is the "core component" of developing a regional haze submission and the key to developing reasonable RPGs, as "the content of the LTS determines the RPGs." 2019 Guidance, at 46. In other words, the ultimate projection of visibility outcomes from the LTS at the end of the implementation period (in decivews or dv) are the goals the state has established, which should reflect reasonable progress—an improvement in visibility for the most impaired days and no degradation in visibility for the clearest days since the baseline period. *See* 40 CFR § 51.308(f)(3); 2019 Guidance at 46.

Utah's SIP includes all required analyses and inputs required to develop the LTS. We would encourage Utah to include a summary of how it developed the LTS and the RPGs consistent with the regulations and guidance.

(1) Four Factor Analysis:

- Step: A determination of the emission reduction measures required to make reasonable progress by considering the costs of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts of compliance, and the remaining useful life of any potentially affected anthropogenic source of visibility impairment. 40 C.F.R § 51.308(2)(i).

- As Implemented: In Chapters 7 and 8, Utah includes the above-required four factor analyses for the facilities and sources it selected as potentially impacting Class I areas. As a result of these analyses, Utah reached various conclusions on whether additional controls for coal- and natural gas-fired EGUs and non EGUs are appropriate to make reasonable progress. *See e.g.*, SIP, at 147.

(2) State Consultation:

- Step: Consultation with other states that are reasonably anticipated to contribute to visibility in Utah, and include all measures agreed to during these consultations, and consider the emission reductions measures identified by other states. 40 C.F.R § 51.308(f)(2)(ii)(A)-(B).

- As implemented: Utah evaluated facilities outside of the state with a Q/D > 6 and high-ranking weighted emissions potential (WEP) in Arizona, Nevada, California, and New Mexico. SIP, at 96-102. WRAP conducted technical analyses to evaluate interstate emissions impacts which assisted Utah in its evaluation of out of state emission sources. *Id.*, at 35. Utah further determined which states are reasonably expected to contribute to visibility impairment in the Utah Class I areas, and which Utah sources are reasonably anticipated to have visibility impacts in neighboring states' Class I areas. *See Id.*, at 68-7. Utah consulted with these requisite states, including Wyoming, New Mexico, Arizona, and Colorado, and determined no additional controls at these out-of-state facilities would be required. *Id.*, at 149-150; Appendix B. To date, Utah has not been informed of any controls that other states would like to require for Utah facilities. *Id.*

(3) Documentation Requirement

- Step: Utah is required to document the "technical basis" on which the state is relying upon to determine emission reduction measure that are necessary to make reasonable progress. Specifically, Utah is required to document information for its: (a) determination of which Class I areas may be affected by its emissions, including the method it used to quantify potential visibility impacts by sources; and (b) each of the four factor analyses it evaluated, including modeling, monitoring, cost, engineering, and emissions information. 40 C.F.R § 51.308(f)(2)(iii).

- As implemented: Overall, Utah has documented the technical basis on which it is relying upon to determine what emission reductions, if any, are necessary to make reasonable progress. Moreover, Utah permissibly relied upon the technical analyses prepared by WRAP to determine visibility impairment, pollutant contribution and source contribution. In addition, Utah documents the analysis it engaged in when determining relevant sources and affected Class I areas in Chapters 4, 5 and 7; Utah

documents the bases for its evaluation of the four factors, in Chapters 7 and 8, and the information it relied on in Appendix C.

(4) Emissions Information Considered

- Step: The emissions information considered and relied upon in determining the emission reductions necessary to make reasonable progress must include information on emissions in a year at least as recent as the most recent year for which Utah submitted emission inventory information to the Administrator. 40 C.F.R. §51.308(f)(2)(iii).

- As implemented: Utah (and relevant WRAP emission analyses) primarily rely upon 2014 National Emissions Inventory (NEI) emissions data, which was the most recent year of data that the state had submitted to EPA. *See e.g.*, SIP, at 58, 92. In some instances, the state relied on more recent emissions data, which is permissible. *See* Guidance, at 18; SIP, at 93.

(5) Additional 5 Factors to Consider:

- Step: Additional factors must be considered in developing the LTS, and these include, emission reductions due to ongoing air pollution control programs, including measures to address reasonably attributable visibility impairment; measures to mitigate the impacts of construction activities; source retirement and replacement schedules; basic smoke management practices for prescribed fire used for agricultural and wildland vegetation management purposes and smoke management programs; and the anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions over the period addressed by the long-term strategy.

- As implemented: Utah addresses each of these additional factors in detail in Chapter 6, Sections A.5-A.10.

The above-listed approach informed Utah's LTS, which provides a roadmap for determining the RPGs in the Class I areas in the state. Based on the LTS, Utah modeled the RPGs at each Class I area based on average daily visibility condition in 2028 on the 20 percent most anthropogenically impaired days, and the 20 percent clearest days.

B. Utah's Reasonable Progress Goals Reflect Progress Toward the Natural Visibility Conditions

After Utah completed the development of its LTS and RPGs, it compared the projected visibility conditions at the end of the implementation period—in this instance 2028—to the same point on the Uniform Rate of Progress Glidepath (URP). The URP represents the rate of improvement in visibility required to achieve natural visibility

conditions by 2064. This comparison helps Utah assess improvements in visibility overall and, more importantly, whether it is making reasonable progress toward natural visibility conditions as required by the Regional Haze program.

The following tables shows that Utah's RPGs **are all below their respective adjusted URP 2028 visibility value** and reflect a rate of progress of visibility improvement per year **that exceeds the average per year rate needed to achieve natural conditions by 2064**. Moreover, Utah's actual visibility improvements over the period 2014 through 2018 also demonstrate visibility improvement that exceeds the per-year rate needed to achieve natural conditions by 2064. While the URP is not a safe harbor for determining reasonable progress, these improvements demonstrate Utah is making tangible improvements toward natural visibility conditions.

Class I Area	Baseline Visibility (2000-2004)	Uniform Rate of Progress (2028)	RPGs (2028)	Natural Visibility (2064)
Bryce Canyon National Park	8.42	6.68	6.0	4.08
Arches National Park Canyonlands Nation Park	8.79	6.92	6.2	4.13
Capitol Reef National Park	8.78	6.87	6.6	4.00
Zion National Park	10.40	8.35	8.3	5.26

*Data (dv) is for Most Impaired Days

At Bryce Canyon, the 2028 RPG represents a visibility improvement of 2.42 dv from the baseline period and requires less than a 2.0 dv improvement to achieve natural visibility conditions by 2064. **Moreover, the 2028 RPG visibility value is below the URP value—in other words, visibility in 2028 is projected to be better than is required by 2028 to achieve natural visibility conditions by 2064**.

Similarly, in Arches and Canyonlands, the 2028 RPG represents a nearly .75 dv improvement than the 2028 URP level needed to remain on track toward natural visibility by 2064, resulting in an anticipated visibility improvement of over 2.5 dv from baseline visibility conditions.

As visually represented below, Capitol Reef's RPG reflects nearly a two dv improvement from baseline visibility conditions (8.78. baseline, 6.6 RPG) and the RPG value is below the URP value (6.87 URP), as represented by the orange triangle and red URP glidepath, respectfully. Additionally, Visibility in the most recent five-year period (2014-2018) reflects significant improvement as well—approximately 1.6 dv.

At Zion National Park, the 2028 RPG is .3 dv below the URP value and will reflect more than a 2.0 dv improvement from baseline conditions. Collectively, all 2028 RPGs reflect a significant improvement from baseline conditions, are below the 2028 URP value, and will ensure reasonable progress toward improved visibility in Utah.

Class I Area	Uniform Rate of Progress Required	Actual decrease per year (2004-2018)	Projected 2004 to 2028 RPG decrease per year
Bryce Canyon National Park	.072	.13	.10
Arches National Park Canyonlands Nation Park	.078	.15	.11
Capitol Reef National Park	.080	.11	.09
Zion National Park	.086	.12	.088

Utah's average dv decrease (visibility improvement) is summarized in the above table. The required average decrease in dv per year from 2004–2064 to achieve natural visibility conditions is listed in the second column. For both periods of time (2004–2018 and projected 2004–2028 based on the 2028 RPGs), Utah's visibility improvement, per year, exceeds the average per year rate needed to achieve natural conditions by 2064. In the case of Arches and Canyonlands, average actual visibility improvement per year is

nearly double the rate required to achieve natural conditions by 2064. In addition, the projected rate of progress per year, based on the 2028 RPGs, further reflects improvement from the uniform rate of progress required. For example, in Bryce Canyon, the average decrease per year based on the 2028 RPG is nearly .03 dv per year more than the uniform rate of progress required to achieve natural visibility in 2064.

Class I Area	Progress needed from 2004 to 2064	Improvement from 2028 RPGs	Percent of Progress by 2028
Bryce Canyon National Park	4.34	2.42	56%
Arches National Park Canyonlands Nation Park	4.66	2.59	56%
Capitol Reef National Park	4.78	2.18	46%
Zion National Park	5.14	2.1	41%

Finally, Utah can compare the overall amount of dv improvement required to achieve natural visibility conditions by 2064 (across a 60-year period), with the amount of dv improvement that will be achieved by 2028 as a result of the RPGs. As demonstrated above, **of the total dv improvement needed in Bryce Canyon, and Arches and Canyonlands, by 2028 more than 50% of that dv improvement will have occurred**. In other words, from 2028 to 2064, a period of 36 years, less than 50% of the dv improvement needed to reach natural visibility will need to occur. Likewise, in Capitol Reef and Zion, more than 40% of the dv improvement needed by 2064 will have occurred by 2028. All in all, these metrics demonstrate that Utah's reasonable progress goals, informed by its long-term strategy, reflect reasonable progress forward—consistent with the overarching goal of the Regional Haze program.

C. Utah Should Consider Adjusting its URP Glidepath to Ensure Natural Visibility Conditions are Accurately Reflected, and Sources are Not Over-Controlled.

The 2017 Regional Haze rule permits states to adjust the URP, which in turn adjusts the natural visibility condition endpoint in 2064, to account for impacts of dust events, prescribed wildfires, and international sources. IPSC recommends that Utah re-consider its decision not to adjust the URP glidepath, as Utah will be unable to counter future visibility effects from prescribed wildfires and international sources, regardless of available controls. IPSC further encourages UDAQ to emphasize the critical impact that international anthropogenic emissions and natural phenomena, such as dust events and wildfires, play in visibility impairment at Utah's Class I areas—which makes it more difficult to demonstrate the resulting impact on visibility impairment and on natural visibility conditions when reductions are made at Utah sources.

For the first time, the 2017 Regional Haze Rule clarifies that visibility impairment is focused on impacts from anthropogenic sources and the "most impaired days" means those days with the greatest anthropogenic impairment. 82 Fed. Reg. at 3101-02. Visibility impairment in Utah, as well as in Class I areas bordering the state, is seriously affected by international anthropogenic emissions over which neither Utah nor its neighboring states have control. As the Grand Canyon Visibility Transport Commission (GCVTC) highlighted in its recommendations to EPA in 1996, western member states should factor in the effects of international emissions on Class I areas and the visibility impacts from prescribed wildfires and fires "projected to increase significantly through 2040." SIP, at 25. Moreover, as the SIP asserts, the "worst" visibility days for some Class I areas in Utah are impacted by natural emissions—such as wildfires and dust storms. *Id*. at 46.

The regional haze rule specifies that Class I areas should attain "natural conditions" by 2064. SIP, at 23. EPA has further clarified that "natural visibility conditions,"[3] can appropriately account for natural phenomena including wildfires and dust events, 82 Fed. Reg. at 3102, both of which are prevalent in Utah. EPA noted its definition of natural conditions (which is incorporated into the definition of "natural visibility" and in turn "natural visibility conditions") reflects its understanding that "natural conditions not only will vary with time, but that they also may have long-term trends due to changes in the Earth's climate system." *Id*. **Notably, in 2020, an estimated 46,535 fires burned more than 8.4 million acres—predominantly in the western United States**.[4] As the number of wildfires is anticipated to rise each year, with more substantial impacts on air quality and visibility, accounting for these naturally occurring phenomena when measuring natural visibility conditions is critical.

Wildfires are the second largest source of SO_2 emissions in the representative baseline and 2028 projections. SIP at 62. Moreover, while EGUs represent the largest source of $S0_2$ emissions, these emissions are anticipated to decline from the 2014 actual baseline to the 2028 projection;[5] on the other hand, wildland prescribed fires are anticipated to increase by 2028,[6] and wildfire emissions to nearly triple. SIP, at 62 (2014 actual – 375; 2028 projection – 1,295). Likewise, for NOx emissions, EGU emissions are projected to decline by nearly one-half by 2028, whereas wildfire emissions are anticipated to increase from 704 in 2014 to 2,063 by 2028. SIP, at 63.

Based on modeling and simulations conducted by WRAP, Utah can determine approximate source apportionment of international and wildfire emissions for its Class I areas. This modeling "shows that Utah is significantly impacted by international and wildland prescribed fire emissions." SIP at 55. However, the Utah SIP fails to fully explain

[3] The natural visibility condition is calculated as the average of the 2000-2014 annual averages of $dv_{natural}$ from the 20 percent most anthropogenically impaired days. Guidance at 7. Natural visibility condition is intended to represent the estimated visibility conditions that would be experienced in the absence of anthropogenic or human-caused air pollution.
[4] https://sheridanmedia.com/news/33612/the-future-of-fires-in-wyoming-and-the-west/
[5] *See* SIP at 61-62 (2014 actual – 24,011; 2028 projection – 9,866).
[6] *Id*. (2014 actual – 320; 2028 projection – 524).

the extent to which non-U.S. anthropogenic emissions (i.e., international anthropogenic emissions) currently impacts light pollution in Class I areas, and how much these emissions will impact visibility in the future. For example, Figures 29-31 graphically demonstrate projected source contributions to light extinction in Utah's Class I areas. While it appears, for instance, that SO_2 emissions from international sources in Zion National Park will contribute 3 to 4 times greater light pollution than U.S. sources in 2028, the percentages are not provided nor are the graphs adequately explained.[7] Such explanations and data are critical in demonstrating the true extent of emissions and light pollution that Utah cannot control.

Based on the substantial impact of anthropogenic, as well as natural sources, on natural visibility conditions, an adjustment of the URP by Utah would be reasonable and justified—especially as emissions from prescribed fires become increasingly important to manage the risks of wildfires.[8] UDAQ asserts that while glidepath adjustments are available for this planning period, it is "choosing to remain conservative for purposes of this implementation period by not using them." IPSC recognizes that the URP is not a safe harbor for demonstrating reasonable progress; however, failing to account for the contribution of international and prescribed fires when evaluating whether Utah is making reasonable progress could result in the over control of sources. For example, Zion National Park and Capitol Reef National Park have 2028 reasonable progress goals that are close to the unadjusted URP line. This proximity may, in turn, be interpreted to require more controls on sources that have emissions affecting these Class I areas—despite the significant amount of progress already made in these areas (41% and 46%, respectfully). IPSC encourages UDAQ to consider adjusting the URP to accurately demonstrate the amount of reasonable progress made at Utah's Class I areas, ensuring that salient contributing factors to visibility impairment in Utah—completely outside of Utah's control—are not ignored, and that sources are not over-controlled as a consequence.

D. Long-Term Strategy and Reasonable Progress Goals SIP Comments

The reasonable progress goals are not enforceable, but they drive the State's long-term strategy, which "must include enforceable emission limitations, compliance schedules, and other measures as necessary to achieve the reasonable progress goals established" for the state's Class I areas, 40 C.F.R. §51.308(d)(3). "The reasonable progress analysis, including source selection, information gathering, characterization of the four statutory factors (and potentially visibility), balancing of the four factors, and selection of the emission reduction measures that represent reasonable progress, is a technically complex exercise, but also a flexible one that provides states with bounded discretion to design and implement approaches appropriate to their circumstances." 86 Fed. Reg. 19798.

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[7] In contrast, this information is provided in other state's SIPs in conjunction with apportionment graphs like Figures 29-31. For example, in Wyoming's draft SIP, the state recognized SO2 will make up the largest contribution of light extinction at North Absaroka and Washakie in 2028, with international anthropogenic sources contributing to 65% of SO2 pollution at those Class I areas.

[8] UDAQ recognizes particular concern with longer fire seasons and the increasing size and severity of wildfires and recognizes the "increasing importance of prescribed fires." Consequently, UDAQ "does not consider reducing prescribed fires as a reasonable method to reduce visibility impairment." SIP, at 60.

As explained above, IPSC supports Utah's development of the LTS and RPGs for the second implementation period and believes Utah is making reasonable progress toward natural visibility conditions in affected Class I areas. Nevertheless, IPSC encourages Utah to take additional steps prior to finalizing the SIP, to ensure that the information and analysis the state relied on to determine its LTS, and the effectiveness of its RPGs, support Utah's reasoned conclusions.

One area IPSC believes Utah can further strengthen its SIP is the nature and extent to which interstate emissions and visibility pollution are addressed—which is required for purposes of developing the LTS.[9] IPSC recommends Utah expand upon why additional controls at out of state sources are not required for the state to make reasonable progress—taking into account its discussions during interstate consultations, including the existing and future controls anticipated at out of state sources and the results of the four-factor analyses conducted at these sources. A robust explanation of this issue is important, given the requirement of interstate consultation and consideration of out of state controls under the regional haze program—which is committed to state-by-state discretion. *See e.g.*, 40 C.F.R § 51.308(f)(2)(ii)(A)-(B).

Utah's Class I areas are significant impacted by out-of-state emissions, which further necessitates a well-developed explanation of how Utah determined it would not request additional controls from out-of-state sources. For example, at Bryce Canyon National Park, California contributes 35% of ammonium nitrate-caused light extinction, and 19% of the ammonium sulfate-cause light extinction. Moreover, non-WRAP states contribute 14% of Bryce Canyon's ammonium-sulfate caused light extinction, followed by 12% from Arizona, 12% from Wyoming, and 11% from New Mexico. SIP, at 69. UDAQ's own weighted emission potential analysis also demonstrates the contribution out-of-state sources have on Class I areas. For example, the Chemical Lime Nelson Plant in Arizona meets Utah's Q/d threshold of 6 and has a weighted SO_2 emissions potential of 21.8% at Bryce Canyon and 24.8% at Zion—the largest ranking value among Utah's and neighboring states' sources. While the SIP clearly demonstrates Utah is making reasonable progress toward natural visibility, the overall SIP conclusions could be strengthened with additional explanation of how these sources were addressed during interstate consultation and why additional controls are not required to make reasonable progress. [10]

Finally, IPSC encourages Utah to explain which controls, new emission limits, and/or existing limits for each source are included in the LTS and are necessary to make reasonable progress, including supporting information, such as which limits exist in the SIP, are otherwise an enforceable limit (e.g., limit in a permit), or will be implemented prior to the end of the implementation period.

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[9] *See e.g.*, SIP, at 35.

[10] Conversely, Utah contributes to visibility impairment in neighboring states, and UDAQ would also benefit from explaining how such contributions are factored into its four factor analyses, including controls determinations and reasonable progress goals. *See e.g.*, SIP at 74 (showing that Utah contributes 18.81% of nitrate impacts at a Class I site in Colorado, and 26.39% at a site in Wyoming).

IV. Utah's Approach to Source Selection is Reasonable and Consistent with EPA Regulations and Guidance

While developing the SIP and LTS, each state must screen its sources to determine which sources will be evaluated for additional controls. IPSC supports Utah's approach to source selection, including (1) exclusion of IPP from the four-factor analysis and assessment of additional interim controls based on an enforceable commitment to shutter the coal-fired units no later than December 31, 2027; and (2) rejection of a specific cost threshold when assessing the reasonableness of controls.

Unlike the BART requirements in the first round of regional haze planning, Clean Air Act Section 169A(g)(1) applies more broadly to groups of sources or source categories and "does not explicitly require states to consider the four factors on a source-specific basis when determining what amount of emission reductions (and corresponding visibility improvement) constitutes 'reasonable progress.'" 82 Fed. Reg. at 3088. In other words, unlike the first planning period—where states were obligated to assess controls for BART-eligible sources—there is no statutory or regulatory obligation in the second round of regional haze planning to impose controls on sources. *See* EPA 2019 Guidance, at 24, fn. 53.

Utah is proposing to take a conservative approach to source selection and assessment of controls. Specifically, Utah selected sources for further review of controls based on application of a Q/d threshold > 6, despite WRAP's recommendation to use a threshold of 10 and applies a "secondary screening process," as outlined in Chapter 7, Section A.2, to further assess the reasonableness of controls.[11] Such secondary screening consisted of considering current emissions and projected emissions in 2028, well as the appropriateness of including effectively controlled sources and anticipated closures. IPSC supports Utah's consideration of these additional factors, rather than relying solely on the Q/d threshold, when making source selection determinations.

A. IPSC Concurs with Utah's Determination that IPSC Should be Excluded from the Four-Factor Analysis

Based upon its secondary screening process, UDAQ determined it was appropriate to exclude IPP from a four-factor analysis based on acceptance of an enforceable commitment to transition the coal-fired units to natural gas by December 31, 2027. Utah's decision is reasonable and supported by EPA regulation and guidance.

One of the five factors appropriately considered when assessing source selection is a source's retirement or replacement schedule. 40 C.F.R. 51.308(f)(2)(iv)(C). EPA guidance further explains that anticipated source shutdowns could be considered "the most

[11] UDAQ also did an additional level of source screening, which involved evaluating the weighted emissions potential or WEP of sources. *See* SIP, Chapter 7, Section A.3. IPSC also supports UDAQ's consideration of this factor in determining which sources to include in the four-factor analysis, given UDAQ's conservative Q/d approach.

stringent" measure for future reductions necessary to make reasonable progress and may be relied upon either "to forgo a four-factor analysis or shorten the remaining useful life of a source." EPA 2021 Guidance at 10. *See also* 2019 Guidance at 22 (noting that 40 C.F.R. 51.308(f)(2)(iv)(C) can be considered in "selecting sources for control measure analysis, for example by not selecting sources that have an enforceable commitment to be retired or replaced by 2028.").

As the SIP explains, IPA plans to replace the coal-fired units with a combined-cycle natural gas plant before December 31, 2027, which will include state-of-the-art emissions controls, such as SCR. *Id.* Moreover, IPA is planning to invest additional resources to allow the units to burn a mix of natural gas and hydrogen. As a result, "regional haze-related pollutants (PM, SO2, and NOx)" from IPP are "expected to decrease dramatically." *Id.* Utah reasonably determined that the retirement of IPP's coal units within the planning period—as the "most stringent" measure available to make reasonable progress"—was an appropriate basis on which to exclude IPP from assessment of controls under the four-factor analysis.

IPSC also notes that UDAQ has addressed EPA's comments related to IPP by incorporating an enforceable closure data in order to avoid the four-factor analysis.[12] As EPA states, "Utah needs either an enforceable unit shutdown during the planning period to avoid a four-factor analysis or Utah will need to conduct a four-factor analysis."[13] UDAQ has incorporated an enforceable deadline for shutdown during the second Regional Haze planning period and therefore has met its statutory and regulatory obligations.

a. IPA Cannot Accept an Enforceable Closure Date Earlier than December 31, 2027 Because of Contractual Obligations to Supply Power

The Board has requested comment on whether "the closure date for the Intermountain Generation Station should be from a range of January 1, 2026, to December 31, 2027." As an initial matter, IPSC reiterates that IPP is not closing, but transitioning from coal-fired generation to natural gas and hydrogen generation. Although IPA is working towards a closure date for the coal-fired units earlier than December 31, 2027, it must have the flexibility to cause these units to be operated through 2027 in the event the natural gas-fired units have not been fully commissioned by an earlier date and cannot provide power necessary to meet contractual demands.

IPA's primary participant base is made up of California municipalities, and California law prohibits these municipalities from accepting electricity generated from any source with emissions that exceed 1,100 lbs of CO2e/MWh after 2027 (which is substantially less than the CO2 emissions rate of the coal units). *See* SIP, at 94. In order to ensure ample time to meet the 2027 California deadline, the contracts for coal-fired power contemplate that

[12] EPA Comments on the draft Utah Regional Haze State Implementation Plan, Second Planning Period at 10.
[13] *Id.*

the gas-fired units will be online in 2025—and that remains the Project's goal. Indeed, contracts are in place for engineering and construction. But IPA cannot shutter the coal units until the gas-fired units are fully commissioned and proven to be a reliable source of energy. IPA must have the flexibility to cause the coal-fired units to be operated until the end of 2027.

The December 31, 2027 deadline for closure of the coal-fired units comports with EPA's regional haze guidance and Utah is appropriately including the reductions resulting from IPP's transition to natural gas and hydrogen in attaining its reasonable progress goals. Whether these reductions take place in 2025 or 2026 as opposed to 2027 will neither make a meaningful improvement in visibility over the reasonable progress period nor change Utah's progress towards its visibility goals. As noted above, Utah is already making significant progress toward natural visibility; for example, in some Class I areas visibility is anticipated to improve by more than 50% by 2028 from what is required *in total* by 2064. Thus, UDAQ has clearly demonstrated reasonable progress is being made, and iposing an arbitrary deadline prior to December 31, 2027 could have devastating consequences for IPP as it transitions to natural gas and hydrogen.

b. IPSC Concurs with Utah's Determination that IPSC is Effectively Controlled and Further Controls are Not Reasonable Prior to Transition to Natural Gas and Hydrogen

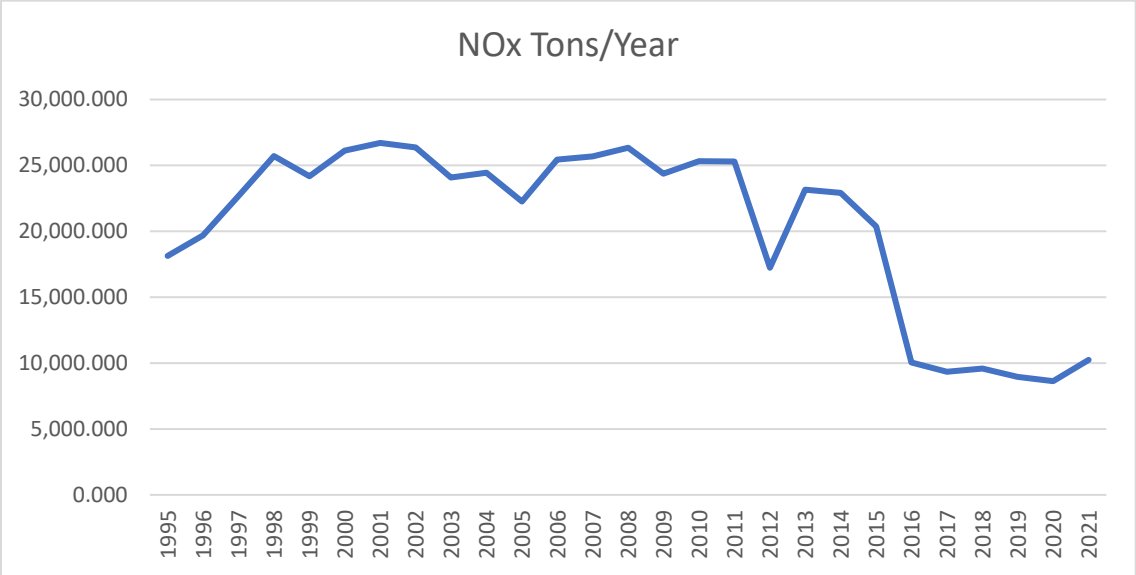
IPSC recognizes that the National Park Service (NPS) commented during consultation that IPP should "explore opportunities to improve the efficiency of the existing SO2 scrubbers considering NOx emissions for the remaining useful life of the facility."[14] Although it is not entirely clear to what NPS is referring with this comment, IPSC concurs with UDAQ's response that the facility's existing SO_2 scrubbers are sufficient and IPSC strongly disagrees that any efficiency improvements or additional controls are even feasible in light of the short remaining operating window for the coal units.

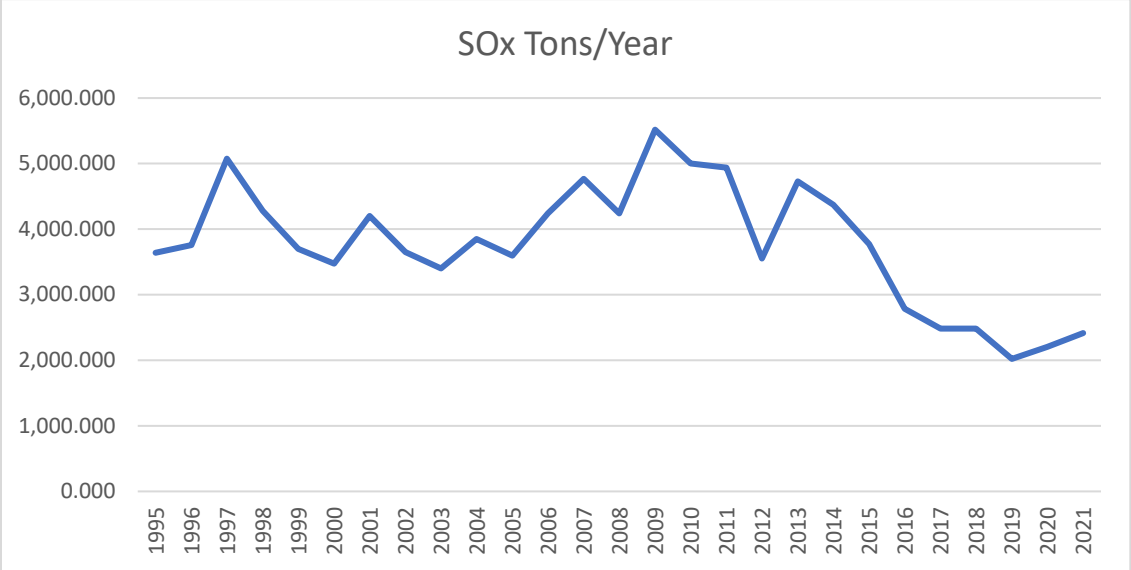
IPP currently operates highly efficient control systems for both NOx and SO_2 emissions from the coal-fired units. Based on existing operation of these controls, there are no further upgrades or efficiency improvements that could be made given the short remaining useful life of the coal-fired units. EPA acknowledges that timing of controls for sources slated to close is a critical factor in assessing the reasonableness of requiring controls during this interim period: "Given the **combination of the time required for EPA to review and act on the SIP and the reasonable time required for the source to come into compliance once EPA has approved the emission limit, the remaining time period in which additional controls, if required, could provide a visibility benefit prior to shutdown of the**

[14] NPS' comment also notes that in order to impose additional controls at IPP during this planning period, IPSC must first be given the opportunity to conduct its own four-factor analysis. *See* SIP, at 153. IPSC disagrees with NPS' threshold argument that a four-factor analysis would be appropriate in this case; however, to the extent that any such controls are considered, IPSC concurs that this procedural step is required prior to UDAQ (or EPA) imposing additional controls at IPP. This analysis would have to factor in the high cost of additional controls relative to the remaining useful life at this facility.

source would be very limited." 2019 Guidance at 20 (emphasis added). Utah appropriately considered these factors and concluded that no additional control upgrades are appropriate at IPP.

IPP has been operating its coal-fired units at partial load for the last five to seven years, which as demonstrated by the charts below has resulted in substantially lower overall mass emissions of both NOx and SO_2 during the last regional haze planning period:





Operating at lower loads and cycling creates complexities for emission control (particularly for NOx), and it is unlikely that this dynamic will shift between now and closure of the units. Indeed, the inability to obtain adequate coal recently has required IPSC to shut down one unit altogether for periods of time and run the second unit at lower load in order to stockpile coal for summer months when southern California will need the

electricity. Despite these challenges, IPSC managed its emission rates in compliance with its permit limits as a result of aggressive control optimization programs. The only remaining efficiency improvements to the existing control equipment for both NOx and SO_2 would require capital improvements—and there is simply not enough time for engineering, procurement, and construction of these upgrades before the coal units are shuttered.

i. NOx Control at IPP

IPA currently operates highly efficient low NOx burners (LNB) and overfire air (OFA) on its two coal-fired units. Each unit was designed with 48 Mark IV Low NOx Dual Register burners (4 levels of burners, front and back wall, 6 burners per level) designed and constructed by Babcock & Wilcox. The Mark IV Low NOX Dual Register burners were replaced with Babcock & Wilcox Dual HD Register Phase 5 LNBs along with RJM Flame Stabilizers on Unit 1 in 1992 and with Advanced Burner Technologies Opti-Flow burners on Unit 2 in 2004. In 2003, sixteen OFA, eight on the front wall and eight on the rear wall, were installed above the top level of burners on Unit 1 and in 2004 on Unit 2.

IPSC employs an aggressive NOx management system at IPP. IPSC assesses combustion efficiency by reviewing daily the amount of carbon in the fly ash—greater amounts of carbon indicate poor combustion—and adjusting operations accordingly. Combustion optimization testing by an outside contractor also is performed after each major outage to assure the best possible balance between NOx and CO values and the burners are adjusted to optimize these values. A detailed discussion of the optimization system is included as Attachment A. Furthermore, in 2017 IPA also invested approximately $1 million in a combustion performance monitoring system that allows for manual NOx control adjustments on the monitoring and feedback system. This system, discussed in more detail in Attachment B, provides real-time combustion parameters from 18 points within the boilers that allows for improvement tuning of primary, secondary and tertiary air flows through the LNBs.

Any additional NOx control would require an elaborate assessment of which controls are technically feasible for use on IPP's boilers. The modeling itself would take six months to a year, and then additional engineering and design of a final control is currently running over a year. Construction would have to take place during a major outage—but there are only two planned major outages currently scheduled, one at each of the boilers: Unit 1 is scheduled for 2023 and Unit 2 is scheduled for 2024. For these reasons, any additional efficiency or control improvements are simply not possible during the window between SIP approval and closure of the coal units.

ii. SO_2 Control at IPP

IPP operates a multi-module counterflow wet spray limestone flue gas desulfurization (WFGD) scrubbers for SO_2 control, with removal efficiency between 90% and 96%. The scrubbers meets the applicable alternative SO_2 emission limit in the Mercury Air Toxics Standards, and as EPA has acknowledged, these limits "are low enough that it is

unlikely that an analysis of control measures for a source already equipped with a scrubber and meeting one of these limits would conclude that even more stringent control of SO2 is necessary to make reasonable progress." EPA 2019 Guidance at 23.

IPSC carefully monitors the Ph and the optimal amount of limestone in the scrubber module to ensure that scaling and unit degradation is not occurring. While adding additional reagent manually might be theoretically possible, it is not technically feasible under current operating conditions. A system that would add reagent automatically would constitute a capital project and similar to NOx controls, would not be possible in light of the short period of time for engineering, design, and construction prior to permanent closure of the units.

B. A Cost-Per-Ton Threshold is Not Appropriate for Assessing Reasonableness of Controls for Second Planning Period

The Board also has requested comment on "the need for a cost threshold" when assessing controls. Utah appropriately considered the "costs of compliance" in determining reasonable progress goals and implementing the four-factor analysis. 42 U.S.C. § 7491(g); 40 CFR 51.308(f)(2)(i). A bright-line cost effectiveness threshold is not required or necessary when assessing the reasonableness of controls as part of SIP development for the Regional Haze second planning period. The imposition of arbitrary thresholds limits UDEQ's discretion and is inconsistent with past practice.

Utah historically has not imposed bright line cost-effectiveness thresholds in its decision making—from Reasonably Available Control Technology (RACT) determinations and Best Available Control Technology (BACT) under nonattainment SIPs to BART determinations under the first Regional Haze planning period SIP. Rather, UDAQ appropriately reviews each source individually and compares the identified cost per ton of pollutant removed to removal costs for similar pollution control equipment and other, similarly situated facilities and in the case of Regional Haze, the visibility improvement. It makes little sense to presume that a single cost effectiveness threshold should apply across all control equipment and all industries. Indeed, EPA requires an explanation of why such thresholds are appropriate and consistent with the requirement to make reasonable progress. EPA 2019 Guidance at 38. Moreover, even when states use such thresholds, they often include or exclude controls for sources based on more detailed reviews. *See e.g.* 77 Fed. Reg. 24385, 24386 (Apr. 24, 2012) (discussing various states' cost effectiveness thresholds for BART and decisions that diverged from established cost effectiveness thresholds). It is simpler and more efficient to provide UDAQ the discretion to make source-specific determinations rather than presuming that costs above or below a threshold are reasonable or not reasonable to make reasonable progress. Ultimately, as EPA has noted: "The Regional Haze Rule does not require States to use a set threshold in evaluating cost effectiveness and the lack of a cost effectiveness threshold does not render [a State's] . . . determinations unreasonable." *Id.*

V. Technical Corrections

IPSC notes a few technical errors in the Utah SIP and encourages the UDAQ to review these sections and make changes prior to final submission to the EPA. The technical corrections are noted below:

- Page 65 – "Table 19: Utah PM2.5 Emission Inventory – RepBase 2 (2014-2018) AND 2028otbA2" PM2.5 should be PM10.

Thank you for the opportunity to submit these comments. If you have any questions or require additional information, please contact Mike Utley at (435) 864-6489.

Sincerely,

Jon A. Finlinson
President and Chief Operations Officer

MU/HBI:he

18986514_v1

ATTACHMENT A
NOx Combustion Optimization

NOx Optimization at Intermountain Power

Daily NOx checks include observing on the Plant Information Computer (PI) data which include load, number of pulverizers in-service and location of pulverizers in-service. EcoMaterial Technologies, the company who purchases our on spec flyash, sample our flyash several times daily with the results showing loss of ignition (LOI) and color of the flyash which help indicate proper or improper fuel to air ratio and pulverizer grind (see example below).

IPSC Plant Baghouse Testing Report

Unit #1			Unit #2		
Date	5/16/2022		Date	5/16/2022	
Time	7:00 AM		Time	7:00 AM	
	EAST	WEST		EAST	WEST
LOI			LOI	1.60%	1.90%
AEA			AEA	14	12
Color			Color	6/2	6/2
Remarks	Offline	Offline	Remarks	Saved	Saved

Unit #1			Unit #2		
Date	5/16/2022		Date	5/16/2022	
Time	3:00 PM		Time	3:00 PM	
	EAST	WEST		EAST	WEST
LOI			LOI		
AEA			AEA		
Color			Color		
Remarks	Offline	Offline	Remarks		

Color Explaination	Load	Unit 1	Unit 2
7/2 to 6/2 = Good	Morning	0	308
6/1 to 5/2 = Poor	Midday	0	
5/2 to 5/1 = Bad	Evening	0	

The EcoMaterial lab data is entered into an Excel spreadsheet along with PI data showing unit load, pulverizer loading, coal and primary air biases on the pulverizers, combustion oxygen setpoint verse actual, east and west duct O2 values, overfire air usage, along with the NOx values. This is used as a diagnostic tool to locate possible causes of off-target NOx values.

It should be noted that with higher ambient temperatures, the unit operators run the available lower level pulverizers for best NOx results but with cold ambient temperatures, upper mills are used to help with heat carryover for corrosion protection on the secondary air heaters and baghouse inlets.

Summer typical winter typical

Combustion optimization testing using Storm Technologies as our contractor is performed after each major outage to try and reach the best balance between NOx and CO values. Flue gas is sampled by a 56 point grid set up at the economizer outlet for O2, CO and NOx. The burners are adjusted to optimize these values.

Garry Christensen (performance engineer)

ATTACHMENT B
IPSC Combustion Monitoring and Tuning System

Capital Project IGS17-03- Combustion Monitoring and Tuning System

First phase- Capital Project IGS15-29 Combustion Grid- probe standpipes (18 point grid)

IPSC has installed an on-line monitoring system for optimizing boiler combustion parameters. This system provides combustion parameters from 2- 3 x 3 grids (eastside & westside), 18 points total. Gas analyzers specifically designed for use in coal fired boilers with dust laden conditions provide key combustion information (CO, O2 and temperature) for tuning primary, secondary and tertiary air flows through the low NOx burners (48 burners per unit).

Additionally, Intermountain has a program to market and sale low carbon content fly ash to the ready-mix concrete market. The sale of fly ash also reduces handling and disposal costs. Intermountain has sold over 5,137,000 tons of fly ash to date.

Phase 1

IGS15-29 Combustion Grid- probe standpipes (18 point grid)

2015-2016, IGS15-29, installed 4/2016, Unit 1, cost $31,000

2016-2017, IGS15-29, installed 4/2017, Unit 2, cost $45,000

Total Cost $76,000

Phase 2

IGS17-03 Combustion Monitoring and Tuning System

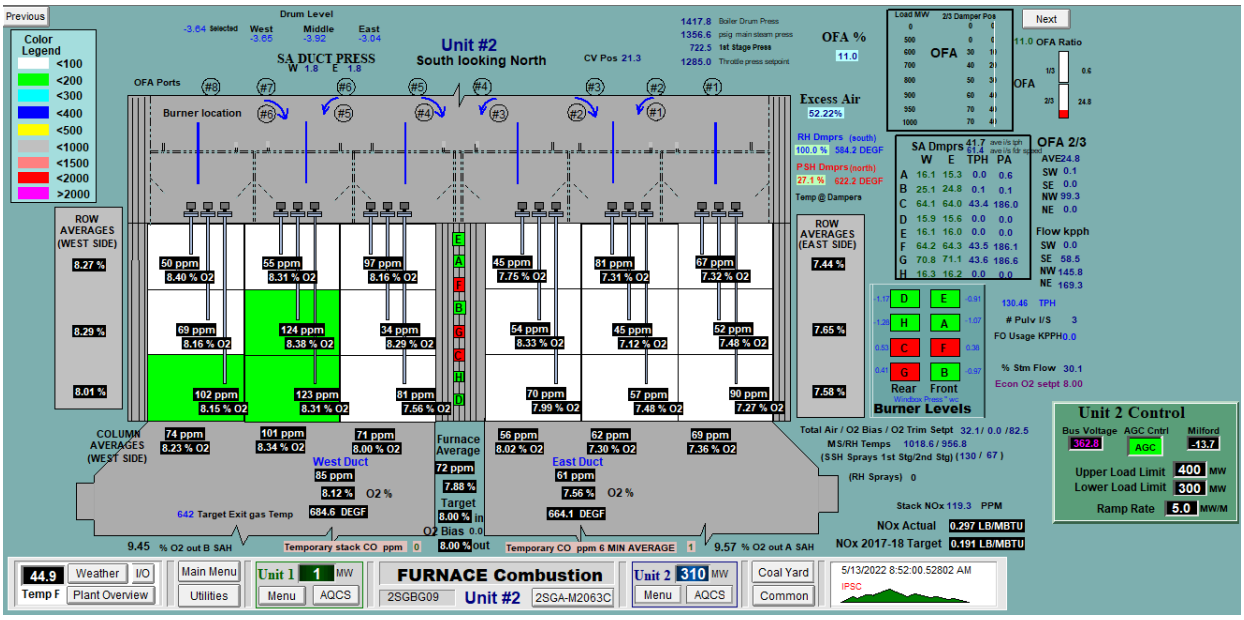
2017-2018, IGS17-03, installed 4/2018, Unit 1, cost $450,000

2018-2019, IGS17-03, installed 4/2019, Unit 2, cost $450,000

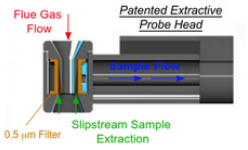
Total Cost $900,000

Total Capital Expenditures: $976,000

Combustion Monitoring System Manufacturer- Delta Measurement & Combustion Controls



DELTA Measurement & Combustion Controls



Delta Measurement & Combustion Controls is a manufacturer of single point carbon monoxide monitors, (DMCCO-Single Point) specifically designed for use on utility boilers. The cost effective design makes it ideal for use in a grid format, designed for optimizing combustion.

Each DMCCO monitor includes a Stainless Steel insertion probe, manufactured to customer desired length. Each monitor includes a full array of gas conditioning, including a two stage chiller, automatic moisture removal and static second stage drying of the process gas. CO monitoring is done by Internal IR bench.

System includes Auto Zero of the IR bench, and automatic purging system for probe reliability.

Today's stringent environmental regulations often require Electric Power Plants to operate at much lower O2 levels than in the past. Good combustion across the furnace becomes critical under these conditions. CO measurement is a proven way to inform the plant of combustion conditions. O2 alone is not effective as O2 probes are often unreliable and often affected by in-furnace air leakage. DMCC-CO monitors are a proven way to improve combustion – reduce NOx, LOI and slagging as well as improve efficiency.

Delta Measurement & Combustion Controls

DELTA
Measurement & Combustion Controls

NO and NOx Monitoring Systems

MULTI-Gas
COMBUSTION ANALYZER

ENHANCED COMBUSTION CONTROL | IMPROVES EFFICIENCY | SUPPORTS ENVIRONMENTAL COMPLIANCE

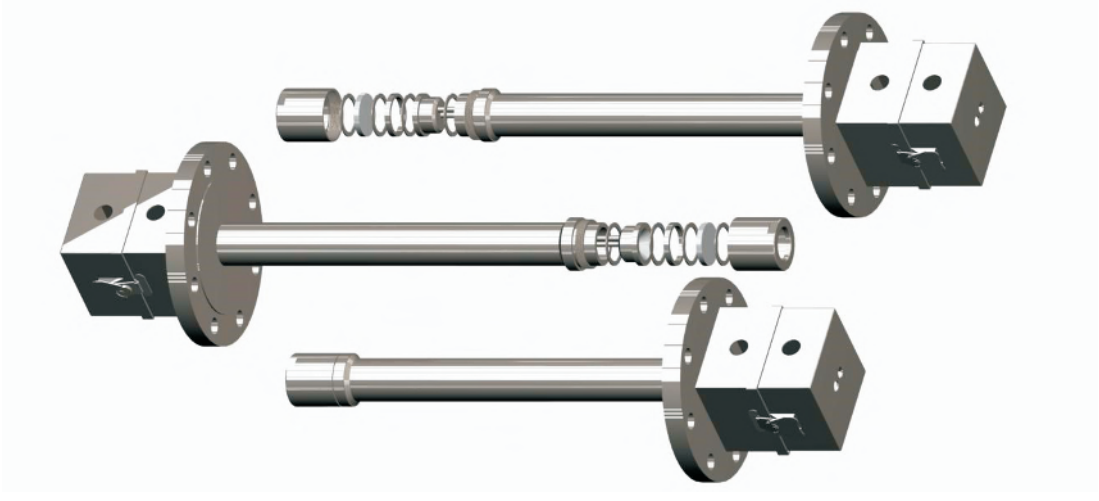
DELTA
Measurement & Combustion Controls, LLC

NO and NOx Monitoring Systems

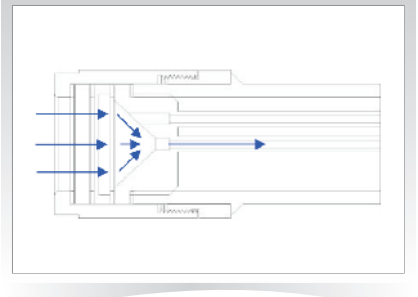
DMCCO provides highly reliable NO and NOx systems using their custom extractive probe design and localized cabinet.

- ☑ Measurement method uses precise chemiluminescent analyzer technology.
- ☑ SCR inlet and outlet NOx measurement and control.
- ☑ Replaces existing high maintenance analyzers and elaborate extractive sampling systems.

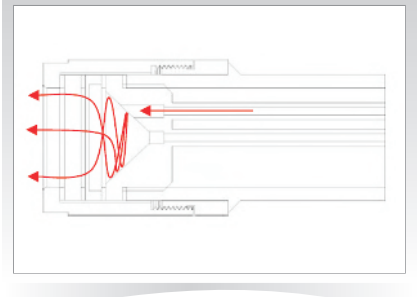
Probe design offers years of maintenance free operation in high ash and high sulfur environments.



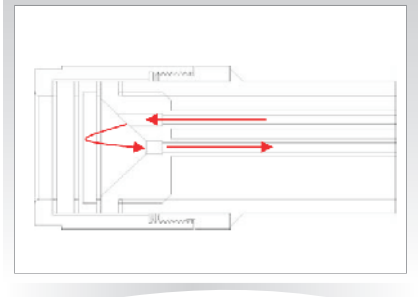
Sample



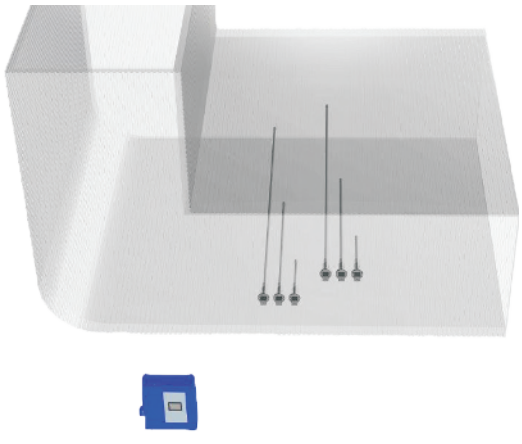
Purge (Drain Closed)

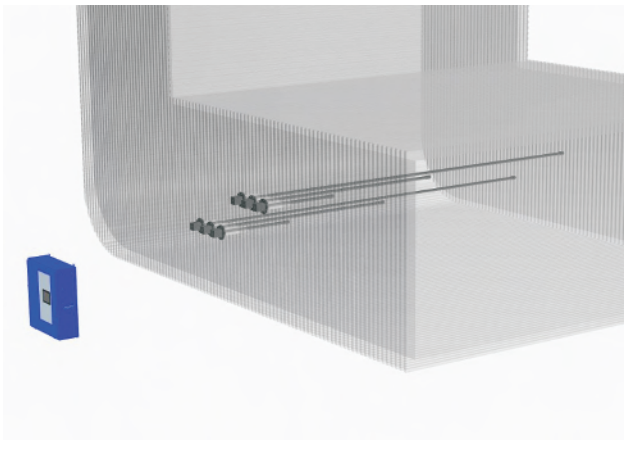


Purge (Drain Open)

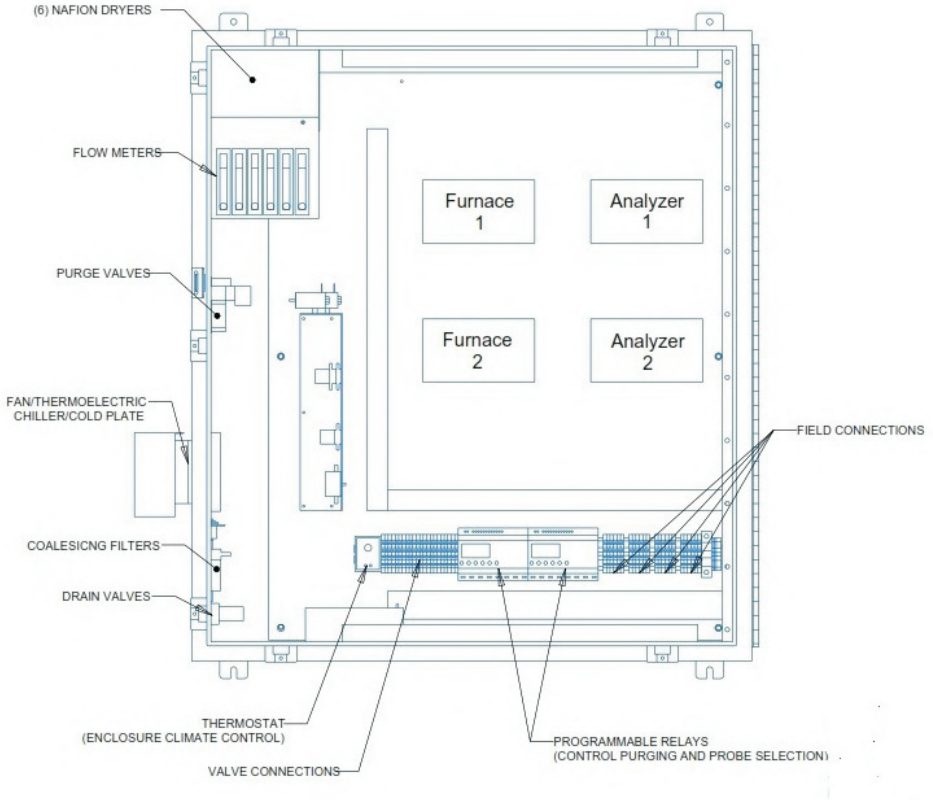


Various length probes can be installed in a grid formation. Local Cabinet can be mounted close to the extraction probes for simple and low-cost installation.





Cabinet Layout for Multi Zone NOx Analyzers



General Specifications-ANALYZER

Product Type	NO monitoring system for low level continuous monitoring of NO and NOx in flue gas.
Coverage	Single zone and multi point
Measuring Range	0 to l000 ppm
Monitoring Distance	Up to 100 feet maximum gas-sample line length
Front Panel	**Indicator lights:** **INSTRUMENT ON –** Display is lit and LED on analyzer is lit when power is on.
Detector Type	Chemiluminescence
Sensitivity	0.25% of reading
Zero Calibration Drift	±0.2 ppm
Span Calibration Drift	± % of reading
Temperature Drift	±0.2% of reading per degrees C
System Noise	Less than 40dB(A) at 10 feet
Conditioned Signal	4–20 mA (non-isolated unless provided with an independent
Power Safety Mode	Fully automatic system reset; all programmed parameters retained
Operating Temp	32 to 122 °F (0 to 50 °C)
Ambient Humidity	5% to 90% RH (non-condensing)
Altitude Limit	2000 Meters

Sample Gas Conditions-SAMPLE PROBE

Flow Rate	0.20 lpm
Process Gas Temp	Up to 950 °F (0 to 510 °C) continuous, HT versions avail.
Process Pressure	From -0.5 psi to 1.0 psi
Process Gas Constituents	Common with coal-fired effluent

Connections-PROBE to ANALYZER

Pneumatic Connection	0.25 inch high temp, thick wall, PTFE tubing

DELTA
Measurement & Combustion Controls

1009 Classic Road Apex, NC
919-363-4837
919-623-7133
www.deltameasurement.com