VIA ELECTRONIC MAIL

Ms. Jean Boling
Indiana Department of Environmental Management
Office of Air Quality, Room 1003
100 North Senate Avenue
Indianapolis, Indiana 46204
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November 15, 2021

RE: Sierra Club, National Parks Conservation Association, The Coalition to Protect America's National Parks, Just Transition Northwest Indiana, Hoosier Environmental Council, Izaak Walton League, and Save the Dunes Comments on Indiana Department of Environmental Management's Proposed Regional Haze State Implementation Plan ("Proposed SIP") for Second Implementation Period

Dear Ms. Boling,

Please accept these comments submitted on behalf of Sierra Club, National Parks Conservation Association, The Coalition to Protect America's National Parks, Just Transition Northwest Indiana, Hoosier Environmental Council, Izaak Walton League, and Save the Dunes ("Conservation Organizations") regarding the Indiana Department of Environmental Management's ("IDEM's") proposed Regional Haze State Implementation Plan ("Proposed SIP") for the Second Implementation Period.

We incorporate by reference and are attaching the technical report of Joe Kordzi, "Review of Indiana Regional Haze SIP," dated November 2021 ("Kordzi Report").

Sierra Club is a national nonprofit organization with 67 chapters and about 830,000 members dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. The Sierra Club has long participated in Regional Haze rulemaking and litigation across the country in order to advocate for public health and our nation's national parks.

National Parks Conservation Association ("NPCA") is a national organization whose mission is to protect and enhance America's national parks for present and future generations. NPCA performs its work through advocacy and education. NPCA has over 1.64 million members and supporters nationwide with its main office in Washington, D.C. and 24 regional and field offices. NPCA is active nation-wide in advocating for strong air quality requirements to protect our parks, including submission of petitions and comments relating to visibility issues, regional haze State Implementation Plans, global warming and mercury impacts on parks, and emissions from individual power plants and other sources of pollution affecting national parks and communities. NPCA's members live near, work at, and recreate in all the national parks, including those directly affected by emissions from Indiana's sources.

The Coalition to Protect America's National Parks (Coalition) is a non-profit organization composed of over 2,000 retired, former and current employees of the National Park Service (NPS). The Coalition studies, speaks, and acts for the preservation of America's National Park System. As a group, the Coalition collectively represents over 40,000 years of experience managing and protecting America's most precious and important natural, cultural, and historic resources.

The Hoosier Environmental Council is Indiana's largest environmental public policy organization, working to advance environmental health & justice, protect land & water, and foster climate solutions. HEC has strived to improve air quality through initiatives, projects, and legal action related to reducing air pollution from coal plants, confined animal feeding operations, outdoor wood boilers, oil refineries, and waste facilities, among other sources.

Just Transition Northwest Indiana's (JT NWI) mission is to educate and organize Northwest Indiana communities and workers, and elevate their stories in support of a just transition to a regenerative economy that protects our environment, climate and future generations. JT NWI works on issues related to

NIPSCO's forthcoming energy transition in Michigan City, as well as environmental justice issues caused by polluting industries along the Lake Michigan shoreline.

For nearly 100 years, Izaak Walton League's mission has been to conserve, restore, and promote the sustainable use and enjoyment of our natural resources, including soil, air, woods, waters, and wildlife. The League has championed for the purity of water, the clarity of air, and the wise stewardship of the land and its resources.

Save the Dunes protects and advocates for the Indiana dunes, Lake Michigan and the surrounding natural areas for the betterment of the environment and the people who live, work, and recreate in Northwest Indiana. Improving air quality in the region is a key aspect of fulfilling this mission.

As explained in detail below, we have serious concerns regarding IDEM's proposed Regional Haze SIP for the Second Implementation Period. In addition to the errors identified in the attached Kordzi Report, IDEM must correct the following flaws:

1. IDEM arbitrarily and unlawfully failed to conduct reasonable progress analyses or consider emissions reductions for many of the state's largest sources of visibility impairment, including the entire electric generation unit ("EGU") sector.
2. Rather than conduct four-factor analyses for Indiana's EGUs, as required by the Clean Air Act and the Regional Haze Rule, IDEM impermissibly relied on unenforceable and unverifiable emission reductions from planned retirements or reductions in utilization at Indiana EGUs.
3. IDEM impermissibly exempts EGUs from further control analysis based on the state's purported compliance with the Uniform Rate of Progress.
4. The proposed SIP fails to properly establish reasonable progress goals and fails to consider the statutory reasonable progress factors for EGUs, and instead relies on factors that Congress did not intend for states to consider to exempt those sources from reasonable, cost-effective controls.
5. IDEM improperly defers making any four-factor determinations based on purported emission reductions from existing Clean Air Act programs.
6. IDEM's control evaluation for the state's EGU sector fails to satisfy the Regional Haze Rule's requirement that the state include the "robust" technical demonstration showing that no additional controls are reasonable.
7. As explained below and in the attached Kordzi Report, IDEM failed to evaluate cost-effective and achievable emission reductions for several of Indiana's largest sources, including Gibson, Rockport, Warrick, Clifty Creek, Petersburg, Cayuga, and A.B. Brown. If the state had conducted four-factor analyses for those sources, it is clear that cost-effective controls are available.

8. For the sources for which IDEM did include four-factor analyses, the agency cherry picked emitting units from the facilities and did not consider all emitting units.
9. IDEM's analyses for control analyses for the following seven sources, Greencastle facility, Indiana Harbor East and West Steel Mills Burns Harbor Steel Mill, U.S. Steel Gary Facility, SABIC Plastics, Warrick Newco (formerly Alcoa Warrick) and Cokenergy, rely on inaccurate and missing information, inflated costs and shortened useful life factors and otherwise are woefully inadequate and fundamentally inconsistent with the Clean Air Act and the Regional Haze Rule.
10. IDEM failed to consider all emission control options for those sources evaluated, including the most stringent measures.
11. IDEM's proposed SIP fails to include documentation necessary to independently review the availability of cost-effective controls.
12. IDEM's interstate consultation is inconsistent with the requirements of the Regional Haze Rule.
13. IDEM's must reevaluate, consider and incorporate the Federal Land Managers' comments.
14. The proposed SIP fails to evaluate environmental justice or disproportionately impacted communities impacts, resulting in a proposed SIP that does not reduce emissions and minimize harms to environmental justice and other disproportionately impacted communities, as strongly encouraged by the EPA's clarifying memo.

As it currently stands, IDEM's Regional Haze SIP does not meet the legal requirements of the Clean Air Act or federal regulations, and therefore cannot be approved by EPA. We urge IDEM to revise the plan to address the fundamental flaws identified in these comments and the attached Kordzi Report.

I. LEGAL FRAMEWORK

A. The Clean Air Act's Visibility Provisions and the Regional Haze Rule

The Clean Air Act establishes "as a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution." 42 U.S.C. § 7491(a)(1). To that end, EPA issued the Regional Haze Rule, which requires the states (or EPA where a state fails to act) to make incremental, "reasonable progress" toward eliminating human-caused visibility impairment at each Class I area by 2064. 40 C.F.R. § 51.308(d)(1), (d)(3). Together, the Clean Air Act and EPA's Regional Haze Rule require states to periodically develop and implement state implementation plans ("SIPs"), each of which must contain a long-term strategy encompassing *enforceable* "emission limits, schedules of compliance and other measures as may be necessary to make reasonable progress toward the national goal." 42 U.S.C. § 7491(b)(2); *see also* 42 U.S.C. § 7410(a)(2); 40

C.F.R. § 51.308.

In developing its long-term strategy, a state must consider its anthropogenic sources of visibility impairment and evaluate different emission reduction strategies including and beyond those prescribed by the BART provisions.[1] A state should consider "major and minor stationary sources, mobile sources and area sources."[2] At a minimum, a state must consider the following factors in developing its long-term strategy:

> (A) Emission reductions due to ongoing air pollution control programs, including measures to address reasonably attributable visibility impairment;
> (B) Measures to mitigate the impacts of construction activities;
> (C) Emissions limitations and schedules for compliance to achieve the reasonable progress goal;
> (D) Source retirement and replacement schedules;
> (E) Smoke management techniques for agriculture and forestry management purposes including plans as currently exist within the State for these purposes;
> (F) Enforceability of emission limitations and control measures; and
> (G) The anticipated net effect on visibility due to projected changes in point, area, and mobile emissions over the period addressed by the long-term strategy.[3]

Additionally, a state:

> Must include in its implementation plan a description of the criteria it used to determine which sources or groups of sources it evaluated and how the four factors were taken into consideration in selecting the measures for inclusion in its long-term strategy.[4]

In developing its plan, the state must document the technical basis for the r SIP, including monitoring data, modeling, and emission information, including the baseline emission inventory upon which its strategies are based.[5] All of this information is part of a state's revised SIP and subject to public notice and comment. A state's reasonable progress analysis must consider the four factors identified in the Clean Air Act and regulations. *See* 42 U.S.C. § 7491(g)(1); 40 C.F.R. § 51.308(f)(2)(i) ("the costs of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts of compliance, and the remaining

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[1] 40 C.F.R. § 51.308(f).

[2] *Id.* § 51.308(f)(2)(i).

[3] *Id.* § 51.308(f)(2)(iv).

[4] 40 C.F.R. § 51.308(f)(2)(i).

[5] 40 C.F.R. § 51.308(f)(2)(i).

useful life of any potentially affected anthropogenic source of visibility impairment.").

Notably, the statute does *not* list visibility improvement as a fifth factor in the reasonable progress analysis, and in implementing those statutory factors, EPA has made clear that it is *not* appropriate to reject a cost-effective control measures based on purportedly insufficient visibility benefits. In determining whether each state's haze plan satisfies the statutory mandate to make reasonable progress, EPA reviews adherence to the above-mentioned criteria and whether the state follows the requirements to consult with other states and federal land managers, and reasonably considers the four statutory factors for reasonable progress. 40 C.F.R. §§ 51.308(d)(1)(iii)-(iv); (d)(3); (f).

B. EPA's 2017 Revisions to the Regional Haze Rule

On January 10, 2017, the EPA revised the Regional Haze Rule to strengthen and clarify the reasonable progress and consultation requirements of the rule. *See generally* 82 Fed. Reg. 3078. In particular, the rule revisions make clear that states are to *first* conduct the required four-factor analysis for its sources, considering the four statutory factors, and *then* use the results from its four-factor analyses and determinations to develop the reasonable progress goals.[6] Thus, the rule "codif[ies]" EPA's "long-standing interpretation" of the SIP "planning sequence" States are required to follow:

> (1) [C]alculate baseline, current and natural visibility conditions, progress to date and the [Uniform Rate of Progress] URP;
> 2) [D]evelop a long-term strategy for addressing regional haze by evaluating the four factors to determine what emission limits and other measures are necessary to make reasonable progress;
> (3) [C]onduct regional-scale modeling of projected future emissions under the long-term strategies to establish RPGs and then compare those goals to the URP line; and
> (4) [A]dopt a monitoring strategy and other measures to track future progress and ensure compliance.[7]

Thus, the Regional Haze Rule makes clear that a state must conduct four-factor analysis and cannot rely on uniform rate of progress as an excuse for failing to perform the core functions of the law:

> The CAA requires states to determine what emission limitations, compliance schedules and other measures are necessary to make reasonable progress by considering the four factors. The CAA does not

[6] 82 Fed. Reg. 3,078, 3,090-91 (Jan. 10, 2017).
[7] *Id.* at 3,091.

> provide that states may then reject some control measures already determined to be reasonable if, in the aggregate, the controls are projected to result in too much or too little progress. Rather, the rate of progress that will be achieved by the emission reductions resulting from all reasonable control measures is, by definition, a reasonable rate of progress. … [I]f a state has reasonably selected a set of sources for analysis and has reasonably considered the four factors in determining what additional control measures are necessary to make reasonable progress, then the state's analytical obligations are complete if the resulting RPG for the most impaired days is below the URP line. *The URP is not a safe harbor*, however, and states may not subsequently reject control measures that they have already determined are reasonable.[8]

Moreover, for each Class I area within its borders, a state must determine the uniform rate of progress, which is the amount of progress that, if kept constant each year, would ensure that natural visibility conditions are achieved in 2064. 40 C.F.R. § 51.308(d)(1)(i)(B). If a state establishes reasonable progress goals that provide for a slower rate of improvement in visibility than the uniform rate of progress, the state must provide a technically "robust" demonstration, based on a careful consideration of the statutory reasonable progress factors, that "there are no additional emission reduction measures for anthropogenic sources or groups of sources" that can reasonably be anticipated to contribute to visibility impairment in affected Class I areas.[9]

Although many states addressed the Clean Air Act's BART requirements in their initial regional haze plans, EPA's 2017 revisions to the Regional Haze Rule make clear that BART was not a once-and-done requirement. Indeed, states "will need" to reassess "BART-eligible sources that installed only moderately effective controls (or no controls at all)" for any additional technically-achievable controls in the second planning period.[10]

To the extent that a state declines to evaluate additional pollution controls for any source relied upon to achieve reasonable progress based on that source's planned retirement or decline in utilization, it must incorporate those operating parameters or assumptions as enforceable limitations in the second planning period SIP. The Clean Air Act requires that "[e]ach state implementation plan . . . *shall*" include "enforceable limitations and other control measures" as necessary to "meet the applicable requirements" of the Act. 42 U.S.C. § 7410(a)(2)(A). The

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[8] *Id. at* 3,093 (emphasis added).
[9] 40 C.F.R. § 51.308 (f)(2)(ii)(A).
[10] 82 Fed. Reg. at 3,083; *see also id.* at 3,096 ("states must evaluate and reassess all elements required by 40 CFR 51.308(d)").

Regional Haze Rule similarly requires each state to include "enforceable emission limitations" as necessary to ensure reasonable progress toward the national visibility goal.[11] Therefore, where the state relies on a sources' plans to permanently cease operations or projects that future operating parameters (*e.g.*, limited hours of operation or capacity utilization) will differ from past practice, or if this projection exempts additional pollution controls as necessary to ensure reasonable progress, then the state "must" make those parameters or assumptions into enforceable limitations. [12]

Finally, the state's SIP revisions must meet certain procedural and consultation requirements.[13] The state must consult with the Federal Land Managers ("FLMs") and look to the FLMs' expertise of the lands and knowledge of the way pollution harms them to guide the state to ensure SIPs do what they must to help restore natural skies. The rule also requires that in "developing any implementation plan (or plan revision) or progress report, the State must include a description of how it addressed any comments provided by the Federal Land Managers."[14]

C. EPA's July 8, 2021 Regional Haze Clarification Memorandum

On July 8, 2021, EPA issued a memo which additionally clarified certain aspects of the revised Regional Haze Rule and provided further information to states and EPA regional offices regarding their planning obligations for the Second

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[11] *See* 40 C.F.R. § 51.308(d)(3) ("The long-term strategy must include enforceable emissions limitations, compliance schedules, and other measures as necessary to achieve the reasonable progress goals established by States having mandatory Class I Federal areas.")

[12] 40 C.F.R. §§ 51.308(i); (d)(3) ("The long-term strategy must include enforceable emissions limitations, compliance schedules . . ."); (f)(2) (the long-term strategy must include "enforceable emissions limitations"); *see also* August 2019 Guidance at 22 ("in selecting sources for control measure analysis," the state may choose "not selecting sources that have an enforceable commitment to be retired or replaced by 2028"); *id*. at 34 (To the extent a retirement or reduction in operation "is being relied upon for a reasonable progress determination, the measure would need to be included in the SIP and/or be federally enforceable.") (citing 40 C.F.R. § 51.308(f)(2)); 2019 Guidance at 43 ("[i]f a state determines that an in-place emission control at a source is a measure that is necessary to make reasonable progress and there is not already an enforceable emission limit corresponding to that control in the SIP, the state is required to adopt emission limits based on those controls as part of its long-term strategy in the SIP via the regional haze second planning period plan submission.").

[13] For example, in addition to the Regional Haze Rule requirements, states must also follow the SIP processing requirements in 40 C.F.R. §§ 51.104, 51.102.

[14] *Id.* § 51.308(i)(3).

Planning Period.[15] EPA's July 2021 "Clarification Memo" confirms that certain aspects of IDEM's proposed SIP are fundamentally flawed and cannot be approved. Particularly relevant here, EPA made clear that States must secure additional emission reductions that build on progress already achieved, there is an expectation that reductions are additive to ongoing and upcoming reductions under other CAA programs.[16] In evaluating sources for emission reductions, EPA emphasized that:

> Source selection is a critical step in states' analytical processes. All subsequent determinations of what constitutes reasonable progress flow from states' initial decisions regarding the universe of pollutants and sources they will consider for the second planning period. States cannot reasonably determine that they are making reasonable progress if they have not adequately considered the contributors to visibility impairment. Thus, while states have discretion to reasonably select sources, this analysis should be designed and conducted to ensure that source selection results in a set of pollutants and sources the evaluation of which has the potential to meaningfully reduce their contributions to visibility impairment.[17]

Thus, it is generally not reasonable to exclude from further evaluation large sources or entire sectors of visibility impairing pollution. Moreover, the Clarification Memo reiterates that the fact that a Class I area is meeting the Uniform Rate of Progress is "not a safe harbor" and does not excuse the state from its obligation to consider the statutory reasonable progress factors in evaluating reasonable control options.[18]

For sources that have previously installed controls, states should still evaluate the "full range of potentially reasonable options for reducing emissions," including options that may "achieve greater control efficiencies, and, therefore, lower emission rates, using their existing measures."[19] Moreover, "[i]f a state determines that an in-place emission control at a source is a measure that is necessary to make reasonable progress and there is not already an enforceable emission limit corresponding to that control in the SIP, the state is required to adopt emission limits based on those controls as part of its long-term strategy in the

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[15] July 8, 2021 Memo from Peter Tsirogotis to Regional Air Directors, Clarifications Regarding Regional Haze State Implementation Plans for the Second Implementation Period at 3, https://www.epa.gov/visibility/clarifications-regarding-regional-haze-state-implementation-plans-second-implementation [hereinafter, "2021 Clarification Memo"].

[16] *Id*. at 2.

[17] *Id*. at 3.

[18] *Id*. at 2.

[19] *Id*. at 7.

SIP via the regional haze second planning period plan submission."[20] This means that so-called "on-the-way" measures, including anticipated shutdowns or reductions in a source's emissions or utilization, that are relied upon to forgo a four-factor analysis or to shorten the remaining useful life of a source "*must* be included in the SIP" as enforceable emission reduction measures.[21] In addition, the Clarification Memo makes clear that a state should generally not reject cost-effective and otherwise reasonable controls merely because there have been emission reductions since the first planning period owing to other ongoing air pollution control programs or merely because visibility is otherwise projected to improve at Class I areas. Finally, the Clarification Memo confirms EPA's recommendation that states take into consideration environmental justice concerns and impacts in issuing any SIP revision for the second planning period.

In sum, EPA's 2021 Clarification Memo makes clear that the states' regional haze plans for the second planning period must include meaningful emission reductions to make reasonable progress towards the national goal of restoring visibility in Class I areas. The Clarification Memo confirms that IDEM's efforts to avoid emission reductions—by asserting, for example, that reductions are not necessary because visibility has improved, because reductions are anticipated at some later date or due to implementation of another program, or because a source has some level of control—is at odds with Indiana's haze obligations under the Clean Air Act and the Regional Haze Rule itself.

II. IDEM'S PROPOSED SIP FAILS TO MEET THE BASIC REQUIREMENTS OF THE REGIONAL HAZE RULE.

Section 51.308(f)(2)(i) of the Regional Haze Rule requires a SIP to include a description of the criteria the state has used to determine the sources or groups of sources it evaluated for potential controls. In its proposed SIP, IDEM states that it identified sources for which four-factor control analyses would be required based on the Q/d metric—*i.e.*, emissions divided by distance to a Class I area.[22] Based on 2016 emissions, IDEM established a screening threshold Q/d value of 5 to screen out sources with either low emissions or located at far distances from Class I areas that would not have visibility impacts.[23] All of the sources IDEM identified "had their highest modeled visibility impacts on Mammoth Cave in Kentucky due to its relatively close proximity to the state."[24] Applying that Q/d threshold, IDEM identified 20 sources for further evaluation, and asked each of the identified

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[20] *Id*. at 8.
[21] *Id*. at 8-9 (emphasis added).
[22] Indiana Department of Environmental Management ("IDEM"), Proposed Regional Haze State Implementation Plan ("SIP") for Second Implementation Period at 42-43 (Proposed SIP").
[23] *Id*. at 43.
[24] *Id*.

facilities to provide data necessary to conduct an evaluation of cost-effective emission controls.[25]

Although IDEM indicated that it would require four-factor reasonable progress analyses for each of the facilities exceeding the Q/d value of 5 threshold, the agency then summarily declined to require four-factor analyses for any of the EGUs, even though they generally have the greatest visibility impacts at nearby Class I areas and together account for 11 of the 20 top sources on the Q/d list.[26] IDEM explained its exemption of the state's EGUs from any further analysis by asserting that the agency "has addressed Indiana's EGUs with a vigorous analysis, reviewing emissions and modeled visibility impairment results along with expected retirements and shutdowns of coal-fired boilers that will be accounted for in subsequent regional haze implementation periods."[27] In particular, IDEM exempted EGUs from further based on the relevant utility's stated intent—through state integrated resource planning processes or public statements—to retire some coal units by 2028.[28] IDEM also asserts that "new emission control equipment or emissions limitations is not desired as a cost-effective method and will only drive utility rates even higher."[29] Separately, IDEM suggests that additional controls for the EGUs are not necessary to ensure reasonable progress toward natural visibility in Class I areas because visibility monitoring indicates that visibility is improving, and the state is on track to meet the Regional Haze Rule's goal of achieving natural visibility in all Class I areas by 2064.[30]

IDEM summarizes its rationale for exempting EGU's from any control analyses:

> the EGU sector was evaluated in great detail for the first implementation period of the RH Rule. Based on industry-wide emission control measures mandated by strict regulations and far less reliance on coal over the past decade or more due to alternative power generation; numerous shutdowns and fuel conversions of boilers has occurred to which tens of thousands of tons of NOx and SO_2 emissions have been reduced in just Indiana alone. Emission trends for both NOx and SO_2 have shown dramatic decreases in emissions and as a result, IDEM is not requiring four-factor analyses for its EGUs.

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[25] *Id*. at 44, Table 7-1.
[26] *Id*.
[27] *Id*.
[28] *Id*. at 51.
[29] *Id*. at 57.
[30] *Id*. at 227.

> The EPA RH SIP Guidance Document states the "key flexibility of the RH program is that a state is not required to evaluate all sources of emissions in each implementation period."
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> IDEM intends to conduct a review of the EGU sector for the January 31, 2025 progress report, pursuant to 40 CFR 51.308 (g). If necessary, IDEM will evaluate EGUs more in depth for the third implementation period of the RH Rule, to be submitted in 2028. As such, Indiana has focused its visibility impact analyses on non-EGU sources, such as steel mills, cement kilns, plastic manufacturing facilities, and aluminum smelter and electric services operations.[31]

That explanation is unsupported by the record, arbitrary and capricious, and inconsistent with the Clean Air Act and the Regional Haze Rule, for numerous reasons.

A. IDEM Failed to Conduct Any Independent Emission Control Analyses for Any Sources.

The most significant omission in the proposed SIP is IDEM's failure to independently evaluate and analyze emission reduction measures for any source that may be necessary to make reasonable progress based on a four-factor analysis. The RHR requires, in part, that a state's long-term strategy meet the following requirements:

> *The State* must evaluate and determine the emission reduction measures that are necessary 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. The State should consider evaluating major and minor stationary sources or groups of sources, mobile sources, and area sources. *The State* must include in its implementation plan a description of the criteria it used to determine which sources or groups of sources it evaluated and how the four factors were taken into consideration in selecting the measures for inclusion in its long-term strategy. In considering the time necessary for compliance, if the State concludes that a control measure cannot reasonably be installed and become operational until after the end of the implementation period, the State may not consider this fact in

[31] *Id*. at 44; *see also* August 20, 2019 Memorandum from Peter Tsirigotis to Regional Air Division Directors, Regions 1-10, Guidance on Regional Haze State Implementation Plans for the Second Implementation Period [hereinafter, "2019 Guidance"].

> determining whether the measure is necessary to make reasonable progress.

40 C.F.R. § 51.308(f)(2)(i).

Although IDEM developed a list of sources for which the agency requested information relating to a four-factor analysis, it is clear that the agency did not, in fact, independently evaluate and analyze emission reduction measures for any source. As the Regional Haze Rule makes clear, the *state* has a duty to conduct a "robust" analysis of potential reasonable progress controls, and must "document the technical basis, including modeling, monitoring, cost, engineering, and emissions information, on which the State is relying to determine the emission reduction measures that are necessary to make reasonable progress in each mandatory Class I Federal area it affects."[32]

IDEM's proposed SIP fails to satisfy the Clean Air Act and the Regional Haze Rule's analytical requirements, in several ways. First, in excluding the entire EGU source category, IDEM arbitrarily failed to consider the "relevant factors" and articulate a rational connection between the evidence in the record and the agency's final decision.[33] Specifically, in developing a long-term strategy and evaluating the emission reductions necessary to ensure reasonable progress toward the national visibility goal, IDEM must consider the Clean Air Act's mandatory reasonable progress four factors—*i.e.*, "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"—and . *See* CAA 169A(g)(1); 40 C.F.R. § 51.308(d)(3); (f)(2)(i). Moreover, the state has an obligation to explain "the criteria it used to determine which sources or groups of sources it evaluated and how the four factors were taken into consideration in selecting the measures for inclusion in its long-term strategy."[34]

IDEM's rationale for exempting of the entire EGU source category from any control analyses fails to meet that standard. Notably, IDEM's reasonable progress and long-term strategy determinations for the EGU sector fail to mention, let alone meaningfully evaluate the statutory reasonable progress factors. Instead, and as discussed in more detail below, IDEM relies on its purported "flexibility" under EPA's 2019 Guidance to decide not to evaluate all sources of emissions for controls,

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[32] 40 C.F.R. § 51.308(f)(2)(iii).
[33] *Motor Vehicle Mfrs. Assn. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) ("[T]he agency must examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'").
[34] 40 C.F.R. § 51.308(f)(2)(i).

especially sources that are planning to retire.[35] As an initial matter, EPA's 2019 Guidance does not, and cannot, supersede the explicit requirements of the Clean Air Act or the Regional Haze Rule to consider the four statutory factors in evaluating emission reductions necessary to assure reasonable progress.[36]

In any event, IDEM's analysis does not even comport with the 2019 Guidance itself. Indeed, the Guidance makes clear that it a state opts to exempt sources from further control analysis based on a retirement schedule, the source must "have an enforceable commitment to be retired or replaced by 2028."[37] As discussed, IDEM's proposed SIP unlawfully fails to make any of the Indiana EGU retirements (upon which the state relies) enforceable. IDEM further asserts that it has discretion to omit consideration of EGU controls because that sector was evaluated in detail for the first implementation period of the Regional Haze Rule. Not so. Indiana's EGUs were subject to the Clean Air Interstate Rule and its successor, the Cross-State Air Pollution Rule. Under those rules, individual EGUs were *not* evaluated for their SO_2 or NOx, emissions. Absent enforceable retirement provisions included in the SIP, IDEM must perform four-factor control analyses for each EGU that meets its Q/d source selection criteria.

Second, as discussed more fully below and in the attached Kordzi technical report, the technical and emissions inventory data that IDEM did include in the proposed SIP for EGUs contains several significant errors and unsupported assumptions and appears to be designed to reach the respective utilities' preferred results: a determination that any additional controls are unnecessary. It does not appear, however, as though IDEM made any attempt to independently review, evaluate, or verify recent emissions. The agency's record is similarly devoid of any independent review conducted by IDEM of the respective EGU's emission controls

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[35] Proposed SIP at 44-45.

[36] *See, e.g.*, 42 U.S.C. § 7491(g)(1) ("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.") (emphasis added); *see also State Farm*, 463 U.S. at 43 (agency action is arbitrary and capricious if, among other things, "the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise"); *see also North Dakota v. EPA*, 730 F.3d 750, 761 (8th Cir. 2013) (citing *Alaska Dep't of Envtl. Conservation v. EPA,* 540 U.S. 461, 485, 490 (2004) (EPA must ensure that the state's regional haze plan is "reasonably moored to the Act's provisions" and based on "reasoned analysis" of the facts)).

[37] 2019 Guidance at 22.

or any cost analyses. This lack of basic documentation not only precludes IDEM or any independent reviewer from verifying the respective utility modeling or control cost analyses, but it is contrary to the Clean Air Act and the Regional Haze Rule itself. [38] IDEM has a legal obligation to submit a SIP that complies with the Clean Air Act—which includes, among other things, requiring enforceable emission limitations necessary to ensure reasonable progress.[39] And as explained below, and in the attached Kordzi Report, there are, in fact, cost-effective and reasonable post-combustion controls or upgrades for several of the state's EGUs, including Gibson, Rockport, Warrick, Clifty Creek, Petersburg, Cayuga, and A.B. Brown, as well as more stringent control options not considered for those sources reviewed by the state. In short, IDEM's reasonable progress analyses and long-term strategy for Indiana EGUs is arbitrary, unlawful, and unapprovable because the agency failed to consider the relevant statutory and regulatory factors, and failed to articulate a rational connection between the facts in the record and the agency's final decision. [40]

B. IDEM Erroneously Relied on Unenforceable and Unverifiable Emission Reductions for the State's Largest Sources.

Along with its unlawful reliance on the URP to excuse any further emission reductions, IDEM repeatedly points to "anticipated" emission reductions or source retirements to avoid a meaningful analysis of potential cost-effective controls for the state's largest sources.[41] This blanket reliance on remaining useful life to excuse further analysis is flawed in at least four ways.

First, to the extent that IDEM declines to evaluate additional pollution controls for any source based on that source's planned retirement or decline in utilization, Indiana must incorporate those operating parameters or assumptions as enforceable limitations in the second planning period SIP. The Clean Air Act requires that "[e]ach state implementation plan . . . *shall*" include "enforceable limitations and other control measures" as necessary to "meet the applicable requirements" of the Act. 42 U.S.C. § 7410(a)(2)(A). The Regional Haze Rule similarly requires each state to include "enforceable emission limitations" as necessary to ensure reasonable progress toward the national visibility goal.[42] Moreover, where a source plans to permanently cease operations or projects that future operating parameters (*e.g.*, limited hours of operation or capacity utilization) will differ from past practice, and if this projection is relied upon to determine whether additional pollution controls are necessary to ensure reasonable progress,

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[38] *See id.*

[39] 42 U.S.C. §§ 7410(a)(2)(A); 7491(b)(2).

[40] *State Farm*, 463 U.S. at 43; *see also North Dakota v. EPA*, 730 F.3d at 761 (A state's regional haze plan must be "reasonably moored to the Act's provisions" and based on "reasoned analysis" of the facts).

[41] *See, e.g.*, Proposed SIP at 34.

[42] *See generally* 40 C.F.R. § 51.308(d)(3).

then the state "must" make those parameters or assumptions into enforceable limitations.[43] Underscoring this requirement of enforceability, reasonable progress goals (RPGs) adopted by a state with a Class I area must be based only on emission controls measures that have been adopted and are enforceable.[44] Because IDEM explicitly relies on "expected" EGU retirements as part of its long-term strategy to ensure reasonable progress,[45] the agency must, at a minimum, make those retirement decisions federally enforceable with compliance deadlines for retirement by the end of the second planning period, 2028. [46]

Second, even where a facility has an enforceable closure date, IDEM is obligated to consider whether there are cost-effective control measures that could be implemented in the meantime.[47] Once again, EPA's July 2021 Clarification Memo is

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[43] 40 C.F.R. §§ 51.308(i); (d)(3); (f)(2).

[44] 40 C.F.R. § 51.308(f)(3).

[45] Proposed SIP at 229.

[46] 42 U.S.C. § 7410(a)(2); 40 C.F.R. §§ 51.308(i); (d)(3)("The long-term strategy must include enforceable emissions limitations, compliance schedules . . ."); (f)(2) (the long-term strategy must include "enforceable emissions limitations"); *see also* August 2019 Guidance at 22 ("in selecting sources for control measure analysis," the state may choose "not selecting sources that have an enforceable commitment to be retired or replaced by 2028"); *id*. at 34 (To the extent a retirement or reduction in operation "is being relied upon for a reasonable progress determination, the measure would need to be included in the SIP and/or be federally enforceable.") (citing 40 C.F.R. § 51.308(f)(2)); 2019 Guidance at 43 ("[i]f a state determines that an in-place emission control at a source is a measure that is necessary to make reasonable progress and there is not already an enforceable emission limit corresponding to that control in the SIP, the state is required to adopt emission limits based on those controls as part of its long-term strategy in the SIP via the regional haze second planning period plan submission.").

[47] *See, e.g*., 40 C.F.R. § 51.308(f)(2)(i) (The State must evaluate and determine the emission reduction measures that are necessary 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."); *see also* 82 Fed. Reg. at 3088 ("Consistent with CAA section 169A(g)(1) and our action on the Texas SIP, a state's reasonable progress analysis must consider a meaningful set of sources and controls that impact visibility. If a state's analysis fails to do so, for example, by . . . failing to include cost-effective controls at sources with significant visibility impacts, then the EPA has the authority to disapprove the state's unreasoned analysis and promulgate a FIP.").

Even if a source has a limited remaining useful life, EPA's Guidance contemplates that states consider cost-effective operational upgrades. Regional Haze Rule Guidance § II.B.3(f) ("If a control measure involves only operational changes, there typically will be only small capital costs, if any, and the useful life of

instructive. There, the agency made clear that in evaluating reasonable progress for all sources, states should consider the "full range of potentially reasonable options for reducing emissions . . . may be able to achieve greater control efficiencies, and, therefore, lower emission rates, using their existing measures."[48] As discussed below, there are some types of control measures that are likely to be cost-effective even within shorter time-frames.

Third, as the Clarification Memo again makes clear, a state's reasonable progress goals **are a function of the** emission reduction ***measures "in states' long-term strategies***, as well as other measures required under the CAA (that have compliance dates *on or before the end of 2028*)." [49] In its proposed SIP, IDEM improperly relies on emission reductions that will *not* take place during the planning period, and for which the agency admits that it has not quantified the benefits.[50]

Fourth, IDEM relies heavily on market conditions for its view that coal pollution will decline (relying on reductions in coal "due to alternative power generation").[51] But just this year, gas prices have increased and Indiana coal EGUs have increased their output as the utilities shift away from gas-burning generation. Relying on unenforceable market trends is simply inappropriate when the Clean Air Act and Regional Haze Rule require enforceable provisions to ensure compliance with the reasonable progress goals.

C. IDEM Impermissibly Exempts EGUs From a Four-Factor Analysis Based on the State's Purported Compliance with the Uniform Rate of Progress.

IDEM attempts to justify its decision to defer further emission reductions for every major source in the state by pointing out that the Class I areas affected by Indiana's EGUs appear to be trending below these areas' glide path or URP.[52] EPA has made clear, however, that meeting or exceeding the glide path or URP does *no*t obviate the need for states to conduct a robust analysis and making a technical demonstration that additional controls or emission reductions are not reasonable. "[A]n evaluation of the four statutory factors is required . . . regardless of the Class I area's position on the glidepath . . . . the URP does not establish a 'safe harbor' for

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the source or control equipment will not materially affect the annualized cost of the measure.").

[48] 2021 Clarification Memo at 7.

[49] *Id*. at 6 (emphasis added).

[50] Proposed SIP at 34.

[51] *Id*. at 44.

[52] Proposed SIP at 227.

the state in setting its progress goals."[53] Rather, states must "determine what emission limitations, compliance schedules and other measures are necessary to make reasonable progress by considering the four factors" and must not reject "control measures determined to be reasonable" based on the degree of progress.[54] Indeed, in the Clarification Memo, EPA reiterated that the uniform rate of progress is "not a safe harbor," and that it is not appropriate to reject cost-effective emission reductions on the basis that visibility in a particular Class I area is on the glide path. Instead, states are required to "evaluate and determine emission reduction measures that are necessary to make reasonable progress *by considering the four statutory factors*."[55] Here, IDEM's decision to defer reasonable and cost-effective controls to another planning period, simply because the affected Class I areas are on the glidepath, is contrary to the Clean Air Act and the Regional Haze Rule.

Moreover, IDEM's "glide path" rationale is misplaced because the agency failed to evaluate the Clean Air Act's reasonable progress factors in determining whether emission reductions may be necessary to ensure reasonable progress towards natural visibility in each Class I area that Indiana sources affect, as required by the Regional Haze Rule.[56] Indeed, the Regional Haze Rule explicitly requires Indiana to make meaningful reductions to ensure reasonable progress towards the national goal of restoring visibility. In so doing, Indiana must provide a "robust demonstration," including documenting the criteria used to determine which

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[53] 81 Fed. Reg. 66,331, 66,631 (Sept. 27, 2016); *see also* 81 Fed. Reg. 296, 326 (Jan. 5, 2016) (determining, as part of the reasonable progress federal implementation plan for Texas, "the uniform rate of progress is not a 'safe harbor' under the Regional Haze Rule."); EPA, Responses to Comments at 120, Promulgation of Air Quality Implementation Plans; State of Texas; Regional Haze and Interstate Visibility Transport Federal Implementation Plan: Best Available Retrofit Technology and Interstate Transport Provisions, EPA Docket No. EPA-R06-OAR-2016-6011 (June 2020) ("EPA has repeatedly and consistently taken the position that meeting a specific reasonable progress goal is not, itself, a "safe harbor," and does not relieve the state of the obligation to consider additional measures for reasonable progress. If it is reasonable to make more progress than the URP, a state must do so, as EPA explained in the 1999 regional haze rule) (citing 64 Fed. Reg. at 35732); *see also* 81 Fed. Reg. at 66,370 ("EPA's longstanding interpretation of the regional haze rule is that 'the URP does not establish a 'safe harbor' for the state in setting its progress goals.") (quoting 79 Fed. Reg. 74818, 74834)).

[54] 82 Fed. Reg. at 3093; see also 81 Fed. Reg. at 66,631.

[55] 2021 Clarification Memo at 15-16 (emphasis added).

[56] *See* 40 C.F.R. § 51.308(f)(2) ("Each State must submit a long-term strategy that addresses regional haze visibility impairment for each mandatory Class I Federal area within the State *and for each mandatory Class I Federal area located outside the State that may be affected by emissions from the State*.") (emphasis added); *id*. § 51.308(f) (3)(ii)(A)-(B).

sources or groups or sources were evaluated and how the four factors were taken into consideration. Given Indiana's sources' impacts to Mammoth Cave in Kentucky and other Class I areas, IDEM must provide the "robust demonstration," based on a consideration of the four statutory reasonable progress factors, that no further emission reductions are cost effective and reasonable for the power plants that affect visibility in Class I areas outside the state. And again, as discussed further below, the attached Kordzi Report evaluated each of Indiana's power plants, and concludes that there are cost-effective control measures available, or at a minimum, that those facilities should have their emissions limits tightened to ensure current levels do not rise.

Finally, IDEM's improper reliance on the URP to defer any control determinations is compounded by its erroneous adoption of the projected deciview improvement at nearby Class I areas, included in EPA's 2028 modeling update, as the state's reasonable progress goal.[57] "Reasonable progress goals," however, are a function of the reasonable progress achievable through the adoption of emission controls and reductions, based on a consideration of the four statutory factors: (1) the costs of compliance, (2) the time necessary for compliance, (3) the energy and non-air quality environmental impacts of compliance, and (4) the remaining useful life of any potentially affected sources.[58] As EPA's Clarification Memo makes clear, reasonable progress goals "are ***the modeled result of the measures in states' long-term strategies***, as well as other measures required under the CAA (that have compliance dates on or before the end of 2028). RPGs ***cannot be determined before states have conducted their four-factor analyses*** and determined the control measures that are necessary to make reasonable progress."[59] Here, IDEM failed to conduct any analysis or require any emission reductions as part of its SIP, and therefore its selection of EPA's projected deciview improvements from *other* Clean Air Act measures not included in the state's SIP, is arbitrary and capricious and contrary to the Regional Haze Rule.

D. IDEM Improperly Defers Making any Four-Factor Determinations for EGUs Based on Purported Emission Reductions from Existing Clean Air Act Programs.

In addition to its reliance on "anticipated" and unenforceable emission reductions,[60] IDEM relies heavily on "the continued implementation of various air quality rules and programs" to ensure reasonable progress.[61] IDEM's reliance on existing air quality programs is misplaced. First, as discussed below and in the attached Kordzi Report, there are cost-effective pollution control measures that are

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[57] Proposed SIP at 37-38.
[58] 42 U.S.C. § 7491(g)(1); 40 C.F.R. § 51.308(d)(1)(i)(A), (d)(3).
[59] 2021 Clarification Memo at 6.
[60] *Id*.
[61] *Id*. at 38.

readily achievable for several of Indiana's EGUs. Moreover, several of those EGUs are capable of achieving on a continuous basis better emission rates than they are currently displaying. Second, reasonable progress requires that states consider the four statutory factors and adopt and include in their SIPs enforceable emission limitations to achieve reasonable progress toward the elimination of all anthropogenic pollution in Class I areas. This means that states must secure meaningful emission reductions that build on progress already achieved, there is an expectation that reductions are additive to ongoing and upcoming reductions under other CAA programs. Indeed, as EPA's Clarification Memo makes clear:

> a state should generally not reject cost-effective and otherwise reasonable controls merely because there have been emission reductions since the first planning period owing to other ongoing air pollution control programs or merely because visibility is otherwise projected to improve at Class I areas. More broadly, we do not think a state should rely on these two additional factors to summarily assert that the state has already made sufficient progress and, therefore, no sources need to be selected or no new controls are needed regardless of the outcome of four-factor analyses.[62]

E. Several Individual Indiana EGUs Merit Reasonable Progress Controls

Although IDEM correctly notes that several Indiana power plants have announced *unenforceable* plans to retire, several of those power plants have nearly a decade or more in their remaining useful life—even if these unenforceable retirement intentions come to fruition—they remain some of the states' largest emitters of haze-forming pollutants. As such, the potential closure of those EGUs does not excuse IDEM from the responsibility to conduct a four-factor analysis for those sources and determine whether reasonable progress could be made through cost-effective controls. [63]

The attached Kordzi Report makes clear that there are cost-effective and reasonable controls or upgrades for many of the state's largest sources of haze-causing pollution, including Gibson, Rockport, Warrick, Clifty Creek, Petersburg, Cayuga, and A.B. Brown. Ultimately, IDEM's reasonable progress analyses must be based on accurate information and analyses that are consistent with the Act and EPA's implementing regulations.

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[62] 2021 Clarification Memo at 13.
[63] *Id.*

1. Gibson

The five-unit, 3,646 megawatt (MW) Gibson coal burning plant is one of the largest coal-burning facilities in the world. As calculated by IDEM, only Rockport has a larger Q/d value among Indiana sources.[64] IDEM notes that Duke, the operator of Gibson, filed a non-binding integrated resource plan in 2019 that stated that Gibson Unit 4 would retire around 2026. But that information is irrelevant because Indiana IRPs are not enforceable and aren't reviewed by the Indiana Utility Regulatory Commission (or any regulatory body). Demonstrating the futility of relying on IRP-announced retirements, Duke has subsequently extended the projected life of Gibson Unit 4 back to 2034, while moving up a tentative plan to retire Unit 5 in 2026 instead.[65] Gibson Unit 5 is a co-owned unit, though, and so even if Duke wished to retire that unit in 2026, the approval of the other owners would be required, putting aside the issue that there is no enforceable requirement that Unit 5 or any Gibson unit retire this decade. Although there is no legal requirement preventing any of the Gibson units from operating through and beyond 2028,[66] IDEM arbitrarily and unlawfully excluded Gibson's emissions from its reasonable progress modeling analysis.

While all five Gibson units have SCRs, these SCRs are underperforming, as demonstrated in the Kordzi Report.[67] For example, Gibson Unit 1 SCR system show NOx emissions becoming increasingly erratic and ranging from approximately 0.10 – 0.15 lbs/MMBtu.[68] Units 2-5 indicate approximately the same erratic behavior and low efficiency.[69] Modern SCR systems should be able to consistently operate at 0.05 lbs/MMBtu or lower. Therefore, IDEM should require that the Gibson Units 1-5 undergo four-factor analyses for upgrades to their SCR systems. Considering that the systems are already installed, it is likely that substantial pollution reductions can be achieved very cost-effectively with little to no capital costs, by simply running the SCR systems more efficiently, more frequently, and/or using more reagent. As for Unit 5, which may retire in 2026 (again, IDEM assumed the

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[64] Proposed SIP, Table 7-1.

[65] *See Petition of Duke Energy Indiana, LLC Pursuant to Ind. Code Ss 8-1-2-42.7 & 8-1-2-61, for Auth. to Modify Its Rates & Charges for Elec. Util. Serv. Through A Step-in of New Rates & Charges Using A Forecasted Test Period; (2) Approval of New Schedules of Rates & Charges, Gen. Rules & Reguls., & Riders; (3) Approval of A Fed. Mandate Certificate Under Ind. Code S 8-1-8.4-1; (4) Approval of Revised Elec. Depreciation Rates*, Indiana Utility Regulatory Commission, Docket No. 45253, 2020 WL 3630515, at *70 (June 29, 2020) (approving for depreciation purposes only Duke Indiana's plan to extend the life of Gibson unit 4 and retire Gibson unit 5 earlier).

[66] Proposed SIP at 58.

[67] Kordzi Report at 11-12.

[68] Kordzi Report at 11-12.

[69] Kordzi Report at 11-12.

retirement of the incorrect unit), these SCR system improvements can likely be implemented immediately or in a matter of months and should be pursued for Unit 5 as well, regardless of Duke and the other co-owners' non-binding intention to retire that unit.

The FGD systems at Gibson Units 1-5 appear to be able to achieve 95% reduction of SO2 on a continuous basis, though the units sporadically depart from that removal efficiency level.[70] IDEM should perform a four-factor analysis to determine if requiring a mandatory 95% removal requirement as an enforceable limit would be cost-effective. Because these FGD systems are already in operation and Gibson generally achieves this removal efficiency for most hours already, such a binding, enforceable limit is almost certainly cost-effective.

2. Rockport

The 2,600 MW AEP Rockport facility consists of two EGUs, each 1,300 MW in size. As calculated by IDEM, Rockport has the largest Q/d value among Indiana sources.[71] Both units have SCR and DSI installed to control NOx and SO2, respectfully. These SCR and DSI systems are underperforming and a four-factor analysis is required.

As shown in the Kordzi Report, the DSI systems at Rockport, which came online in 2016, have exhibited erratic removal efficiencies ranging from below 40% to at times above 60% removal of SO_2.[72] There is likely room for optimization and IDEM should require four-factor analyses in order to determine the cost-effectiveness of optimization options, including continuous achievement of 60% removal efficiency via an enforceable limit. Because such optimization would not likely require any additional capital expense, optimization of the DSI systems at Rockport would likely be quite cost-effective.[73]

The Rockport SCR systems have also been underperforming. Since coming online in July 2017, Rockport Unit 1's NOx emissions have fluctuated significantly, ranging from approximately 0.08 – 0.15 lbs/MMBtu, although recently, several months have been as low as 0.065 lbs/MMBtu.[74] Unit 2's SCR system has only been operating since June 2020 and so public data is limited. Rockport's consent decree requires that the units met 30-day averages of 0.09 lbs/MMBtu.[75] However, as noted

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[70] Kordzi Report at 11.
[71] Proposed SIP, Table 7-1.
[72] Kordzi Report at 12-13.
[73] *Id.* § 6. Because IDEM did not request or include in the record source-specific cost or control analyses from any of the EGU sources, it is not possible to conduct a comprehensive analysis of available controls.
[74] Kordzi Report at 13-14.
[75] Kordzi Report at 13-14.

in the Gibson example, modern SCR systems should be able to continuously operate at 0.05 lbs/MMBtu or lower. Therefore, IDEM should require four-factor analyses to investigate optimizing these SCR systems. Because such optimization would not likely require any additional capital expense, it is very likely that requiring continuous achievement of 0.05 lbs/MMBtu or even 0.065 lbs/MMBtu (which Rockport Unit 1 plainly can achieve) on such massive coal burning EGUs would be very cost-effective.

3. Warrick

The Alcoa Warrick facility consists of four EGUs. Units 1-3 are 167 MW each and Unit 4 is 323 MW. Each unit is fitted with a wet scrubber. Units 1-3 have typical combustion controls and Unit 4 has an SCR system.

During 2016 – 2020, the Warrick wet scrubber FGDs have performed very well, with typical efficiencies of 98% or greater. Because there is no evidence in the proposed SIP that these removal efficiencies are required by a binding legal requirement, IDEM should conduct a four-factor analysis to determine the cost-effectiveness of such an SO2 limit for Warrick. Such a binding requirement is almost certainly cost-effective because Warrick already achieves this efficiency in most hours.

Units 1-3 at Warrick lack post-combustion controls and exhibit very high NOx emissions, averaging approximately 0.30 lbs/MMBtu in recent years.[76] IDEM must therefore require that a NOx four-factor analysis be performed on these units.

Warrick Unit 4 is listed as having an SCR system, but since 2013, the SCR has either not been operated at all or had failed to control NOx emissions.[77] Except for a few brief periods, Unit 4's NOx emissions are very similar to those from Units 1-3, which are not fitted with SCR systems.[78] Before 2013, the SCR for Unit 4 was capable of reducing NOx emissions to reasonable levels in line with other SCR controls.[79] Thus, IDEM should require a four-factor analysis to investigate optimizing the Unit 4 SCR system to at least be able to achieve emission limits in the years before 2013. Assuming the SCR system for Unit 4 still functions but is being unused, it is likely such an optimization would not require any additional capital expense and therefore is likely very cost-effective. If the SCR on Unit 4 is no longer functional, the four-factor analysis should assess the cost-effectiveness of optimizing the existing Unit 4 SCR or replacing it, if it does not function properly.

[76] Kordzi Report at 15-16.
[77] Kordzi Report at 16.
[78] Kordzi Report at 16.
[79] Kordzi Report at 16.

4. Clifty Creek

The Clifty Creek coal burning facility consists of six EGUs, each 217 MW. All six units have FGD systems. Units 1-5 have SCR systems. Unit 6 is fitted with overfire air for NOx control only.

From 2016 – 2020, the Clifty Creek wet scrubbers have performed very well, with typical efficiencies of 97% or greater.[80] Because there is no evidence in the proposed SIP that these removal efficiencies are required by a binding legal requirement, IDEM should conduct a four-factor analysis to determine the cost-effectiveness of such an SO2 limit for Clifty Creek. Such a binding requirement is almost certainly cost-effective because Clifty Creek already achieves this efficiency in most hours.

For NOx, Clifty Creek operates its SCR systems for Units 1-5 during ozone season only.[81] When these SCR systems are running, they appear to result in good NOx reductions with sustained emissions of 0.06 lbs/MMBtu or better for Units 1-3 and 0.07 lbs/MMBtu or better for Units 4-5.[82] Thus, the only thing preventing these units from continuous performance at these levels (or better), is a binding emissions limit requiring that they do so. IDEM should therefore require that these units undergo NOx four-factor analyses to determine the cost-effectiveness of continuous optimized SCR operation at Clifty Creek. Visibility impairing emissions are year-round concerns at Class I areas and nothing in the Clean Air Act or Regional Haze Rule suggests that a partial year emission reduction requirement can satisfy reasonable progress requirements. As such, year-round reductions that satisfy a four-factor analysis should be required.

In addition to mandating continuous use for existing SCR controls at Clifty Creek, Unit 6 should also be required to undergo a NOx four-factor analysis for SCR. In its July 23, 2021 comments, the National Park Service notes that it applied EPA's Control Cost Manual SCR workbook to recent AMP data for Clifty Creek Unit 6 and estimated that addition of SCR could remove over 1,000 ton/yr NO_X at $6,100/ton. However, the NPS used an interest rate of 5.5%. Adjusting this value to 3.25%, which is appropriate,[83] results in a figure of $4,862/ton.[84] This is a cost-effective figure and IDEM should require that a SCR be installed on Unit 6.

5. Petersburg

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[80] Kordzi Report at 16-17.
[81] Kordzi Report at 17-18.
[82] Kordzi Report at 17-18.
[83] Kordzi Report at 27.
[84] Kordzi Report at 18.

The Petersburg coal burning facility consists of four EGUs. Unit 1 is 282 MW, Unit 2 is 523 MW, and Units 3 and 4 are each 671 MW. All four Petersburg units are fitted with wet scrubbers to control SO_2. Units 2 and 3 are fitted with SCR, and Units 1 and 4 are fitted with combustion controls only for NO_X.[85] Petersburg operates under consent decree with the EPA. IDEM calculated that Petersburg has the third highest Q/d value among all Indiana sources.[86]

The SCR systems on Units 2 and 3 are being run consistently but are nevertheless underperforming.[87] Petersburg Unit 2's NOx emissions range between approximately 0.07 – 0.09 lbs/MMBtu and Unit 3's emissions have been slightly higher than that.[88] These SCR systems should be able to consistently meet a NOx emission limit of 0.05 lbs/MMBtu or better. Therefore, IDEM should require a NOx four-factor analysis to investigate upgrades to these SCR systems. It is likely such upgrades would be very cost-effective because increased performance may not require any capital expenditures.

Under the consent decree, Petersburg is allowed to forgo SNCR on Unit 4 if Units 1 and 2 retire by July 1, 2023. Whether the consent decree excuses an obligation to reduce pollution at Unit 4 or not, the consent decree does not preclude consideration of additional, more stringent controls to ensure reasonable progress for the Petersburg facility. In fact, the State of Indiana is required to consider stricter NOx controls on Unit 4 to ensure reasonable progress. IDEM must consider more stringent controls at Unit 4, which is not equipped with SCR systems or any post-combustion controls. IDEM should therefore require a NOx four-factor analyses for Unit 4. In its July 23, 2021 comments, the NPS notes that it applied EPA's Control Cost Manual SCR workbook to recent AMP data for Unit 4 and estimated that addition of SCR could remove over 3,000 ton/yr NO_X at $4,500/ton. This is a cost-effective figure and IDEM should require this control on Unit 4.[89]

6. Cayuga

The Cayuga facility consists of three remaining EGUs. The third, Unit 4, is a gas turbine and is not reviewed. Units 2 and 3 are coal-fired EGUs each of which is 531 MW. Both units are fitted with wet scrubbers and SCR systems.[90] The scrubbers appear to perform well and are operated continuously.[91]

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[85] Kordzi Report at 18.
[86] Proposed SIP, Table 7-1.
[87] Kordzi Report at 19-21.
[88] Kordzi Report at 19-21.
[89] Kordzi Report at 22.
[90] Kordzi Report at 22.
[91] Kordzi Report at 23-24.

The Cayuga SCR systems on both remaining coal units appear to be run only during ozone season.[92] Further, when the SCRs are operated during ozone season, they do not perform optimally, with NOx emissions ranging from approximately 0.07 – 0.10 lbs/MMBtu.[93] IDEM should therefore require a NOx four-factor analysis for Units 1 and 2. It is likely running the SCR systems continuously during the entire year and at a level of 0.05 lbs/MMBtu or better would satisfy a four-factor analysis and be very cost-effective in part because no capital costs would be required.[94] As stated above, the Regional Haze Rule calls for reductions in visibility impairing emissions across the year, not limited to ozone season, to make reasonable progress.

7. A.B. Brown

The A. B. Brown facility consists of four EGUs. Units 3 and 4 are gas-fired turbines of 88 MW each and are not reviewed. Units 1 and 2 are coal burning EGUs and are 266 MW each. Both coal units are fitted with dual alkali scrubbers and SCR systems. IDEM notes at Table 8-5 that Units 1 and 2 are scheduled to retire in 2023, but these projected retirements must either be made enforceable in the proposed SIP or the units must undergo four-factor analyses.

The SCR systems on Units 1 and 2 are severely underperforming.[95] The NOx emissions are very erratic and typical NOx emissions range from approximately 0.07 to 0.25 lbs/MMBtu,[96] well above the 0.05 lbs/MMBtu level expected for a well-operated SCR system. In short, IDEM must make A.B. Brown's anticipated retirement dates enforceable, or require a NOx four-factor analysis for Units 1 and 2. Even with a shortened remaining useful life based on retirement, it is likely that any upgrades to or optimization for the A.B. Brown SCR systems would be very cost-effective.

F. IDEM's Analysis of Non-EGU Sources Similarly Fails to Meet the Basic Requirements of the Regional Haze Rule.

For the non-EGUs, IDEM's proposed SIP fails to satisfy the Clean Air Act and the Regional Haze Rule's analytical requirements in numerous ways. As discussed in detail in the Kordzi Report and presented below, IDEM made a half-hearted attempt at meeting the analytical requirements. For example, IDEM cherry-picked emitting units from the facilities and did not consider all emitting units. Furthermore, IDEM's reasonable progress analyses must be based on accurate information that is consistent with the Act and regulations. IDEM must

[92] Kordzi Report at 23-24.
[93] Kordzi Report at 23-24.
[94] Kordzi Report at 23-24.
[95] Kordzi Report at 24-25.
[96] Kordzi Report at 24-25.

also require that the facilities submit all information relied on. IDEM also relied on inflated interest rates and shortened remaining useful life factors, which in turn result in inaccurate cost per ton figures. Finally, IDEM must consider all emission control options and not ignore those that are more stringent. As demonstrated in the Kordzi report, by correcting IDEM's faulty assumptions for cost-effective controls and adding emission reduction SIP measures from Indiana's large emissions sources to satisfy the four-factor analysis, would ensure reasonable progress toward natural visibility in the Class I areas affected by the State's sources. As explained below, many aspects of the control analyses for Greencastle Facility, Indiana Harbor East and West Steel Mills Burns Harbor Steel Mill, U.S. Steel Gary Facility, SABIC Plastics, Warrick Newco (formerly Alcoa Warrick) and Cokenergy do *not* comply with applicable Clean Air Act requirements.

1. Star Industries, Inc. dba Buzzi Unicem USA: Greencastle Facility.

At the Greencastle plant, Lone Star Industries operates one semi-dry kiln. The raw materials are ground and blended with water to form a slurry for feed to the kiln, however, unlike a traditional wet plant, in a semi-dry process like Greencastle's, the slurry is injected into a crusher/drier that flashes off the water content of the slurry and renders a dried material that is then transported to a preheater/precalciner.[97] Current NOx emissions controls utilize staged combustion, which is equipped with multi-channel low-NOx burners in both the kiln and calciner.[98]

As discussed in detail in the Kordzi Report, there are numerous issues with IDEM's cost-effectiveness analysis. First, Greencastle only considered SNCR, it did not consider the more effective control for NO_X, which is SCR.[99] Second, rather than using the 30-year useful life assumption, IDEM accepted Greencastle's 15-year assumption, which increases the cost per ton.[100] Third, IDEM's use of the 15-year assumption is also at odds with EPA's CCM recommendation. Fourth, as detailed in the Kordzi Report, the proposed SIP lacks detailed supporting information for Greencastle.[101] Thus, "IDEM should have included a full four-factor report for all controls considered in its SIP in which all of this information is integrated, parameter selection is discussed, assumptions are justified, and worked examples of the full cost analyses are provided. This issue was raised by the FLMs in a quote that IDEM provided to Buzzi Unicem in that email, but the problem remains unaddressed."[102]

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[97] Proposed SIP at 117.
[98] *Id.* at 118.
[99] Kordzi Report at 26-27.
[100] *Id.* at 26, 28.
[101] *Id.* at 26.
[102] *Id.*

Fourth, of significant concern, and contrary to the public notice and comment requirements for adopting SIPs,[103] the record indicates that prior to public notice and comment, IDEM already had its mind made up regarding what it planned for controls for Greencastle (as well as other sources) – which was nothing.[104] IDEM explained that it would use a "…weight of evidence demonstration consistent with this overarching principle [that the RH program is iterative] to support the state's decision not to require additional control measures for the selected sources..."[105] Moreover, IDEM admitted it would put on a good show in "addressing the FLMs comments as thoroughly as possible" but only to "show that Indiana has seriously evaluated the selected sources in accordance with the RH Rule and section 169A(g)(1) of the CAA which lists four factors that must be taken into consideration in determining reasonable progress" not do actually require any controls.[106] This is not how the Clean Air Act's notice and comment process for Regional Haze SIPs works. First, use of a "weight of evidence" approach to get out of the Act's required four-factor reasonable progress analysis is not contemplated by the Act. Second, if IDEM had already made up its mind *before* the consultation with the FLMs, there is no way the state could genuinely and meaningfully consult with the FLMs. It was a ruse. Similarly, with IDEM's mind already made up prior to the start of public notice and comment, the state similarly is making a mockery of the public notice and comment process. While a state indicates in a proposed SIP what it *proposes,* a state *must* be open to receiving comments from and changing its mind: both in consultation with the FLMs and comments from the public. IDEM's decision to require no controls at this and other sources is simply untenable, and would lead to a SIP disapproval by EPA.

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[103] 40 C.F.R. Part 51, Subpart F, Procedural Requirements.

[104] Appendix P at 3, IDEM includes an email to Buzzi Unicem transmitting concerns raised by the FLMs. In its transmittal email, IDEM makes clear its position on the subject of controls at least pertaining to the Greencastle Facility and possibly all sources in Indiana:

> Since the RH program is an iterative program that provides states with the flexibility to develop a cohesive strategy that demonstrates reasonable progress over time toward natural visibility by 2064, Indiana offered a weight of evidence demonstration consistent with this overarching principle to support the state's decision not to require additional control measures for the selected sources. The state continues to stand behind this decision, however, it is important to address the FLMs comments as thoroughly as possible to show that Indiana has seriously evaluated the selected sources in accordance with the RH Rule and section 169A(g)(1) of the CAA which lists four factors that must be taken into consideration in determining reasonable progress.

[105] *Id.*

[106] *Id.*

Fifth, SCR is feasible for cement kilns and IDEM must consider it. Indeed, as discussed in the Kordzi Report, there is information in the proposed SIP record that shows that SCR is feasible at this kiln, and yet IDEM ignored it.[107] IDEM should evaluate SCR as part of the four-factor analysis for the Greencastle kiln. In addition, catalytic ceramic filtration systems are another potential control option at this facility and should likewise be considered.[108] Moreover, not only will catalytic ceramic filtration control NO_X but also PM, SO_2 and toxics. Catalytic ceramic filtration is routinely used at glass plants and in other countries' (EU) cement facilities.

Sixth, there are numerous problems with the SNCR cost estimates. As highlighted in the Kordzi Report, the proposed SIP lacks the required analytical documentation necessary for public review and to support IDEM's proposed decision. Furthermore, IDEM allowed Buzzi Unicem to use a cost algorithm designed to be used to estimate costs for coal, oil, and gas-fired utility and industrial boilers with specific size limitations. Buzzi Unicem used the wrong cost analysis worksheet as its operations do not involve a coal-fired burner. IDEM must correct this serious error.

Seventh, IDEM also allowed Buzzi Unicem to use an incorrect interest rate of 5.75%, which, as explained in the Kordzi Report, is inconsistent with the requirements in EPA's Control Cost Manual and higher than the Bank Prime Interest rate.[109]

Eighth, the proposed SIP lacks documentation to justify the assumed 15-year SNCR equipment life.[110] As the Kordzi Report explains, "increasing the equipment life will greatly improve the already very cost-effective figure of $1,679/ton IDEM accepts."[111] Alternatively, IDEM could base the SCR and SNCR cost analyses on a shorter life and include an enforceable commitment to retire the kiln by the end of the 15-year period.[112]

2. Cleveland-Cliffs Steel - Indiana Harbor East (Indiana Harbor East), Cleveland-Cliffs Steel - Indiana Harbor West (Indiana Harbor West).

IDEM presents its proposed SIP analysis for the Indiana Harbor East and Indiana Harbor West facilities in two different sections. While the Kordzi Report

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[107] Kordzi Report at 27.
[108] Attachments for Klafka reports on alternative submissions by NPCA and SC for GCC Rio Grande (Exhibit 2) and Holcim cement (Exhibit 3).
[109] Kordzi Report at 27; *see also* EPA Control Cost Manual, Section 1, Chapter 2, Cost Estimation: Concepts and Methodology (Nov. 2017), at 16.
[110] Kordzi Report at 28.
[111] *Id.* at 28.
[112] *Id.*

and these comments focus on the East facility, the topics discussed are largely transferrable to similar sources present at the other steel mills as the sources and IDEM's treatment of them are similar.[113] Therefore, IDEM should assume these comments apply to these sources at the other steel mills unless otherwise stated.[114]

Cleveland-Cliffs Steel, LLC operates as a contractor at the Cleveland-Cliffs Indiana Harbor Works (CC-IH), facility in East Chicago, Indiana. The Indiana Harbor East is an integrated steel mill, with the secondary operation, Indiana Harbor West, co-located with a number of other on-site contractors.[115] Operations at Harbor East include raw material handling, sintering, ironmaking, steelmaking, and manufacturing of hot rolled and cold rolled products, as well as on-site utility generation.

As the Kordzi Report initially explains, IDEM entirely missed key information in evaluating controls, information readily available as a result of EPA's 2016 report on steel mills.[116] Significantly, IDEM failed to consider all available controls at the following emission units:

- **No. 5 Boiler House.** Without technical reasoning, IDEM rejected SCR controls and as discussed in the Kordzi Report, IDEM should include SCR in its NOX four-factor analyses of the steel mill boilers because similar boilers have been retrofitted with SCR.[117]

- **Blast Furnace Stoves.** IDEM incorrectly concludes the LNBs are technically infeasible at the blast furnace stoves.[118] The Kordzi Report includes examples of facilities with such controls, including another Cleveland-Cliffs facility.[119] Therefore, as the Kordzi Report explains "IDEM should require that the four-factor analyses for all furnaces in the steel mills reviewed in this SIP include consideration of LNBs."[120]

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[113] *Id.*
[114] *Id.*
[115] Proposed SIP at 125.
[116] Kordzi Report at 28-29, referencing "Evaluation of PM 2.5 Emissions and Controls at Two Michigan Steel Mills and a Coke Oven Battery" prepared as an aid to states and EPA in BART evaluations. Evaluation of PM 2.5 Emissions and Controls at Two Michigan Steel Mills and a Coke Oven Battery, Final Report, by RTI International 3040 Cornwallis Road Research Triangle Park, NC 27709-2194 (Feb. 7, 2006), https://www.epa.gov/sites/production/files/2016-05/documents/detroit_steel_report_final_20060207.pdf.
[117] Kordzi Report at 29.
[118] *Id.* at 29.
[119] *Id.* at 29-30.
[120] *Id.* at 30.

- **Lime Kilns.** IDEM incorrectly notes that no controls for the Preheater and Rotary Lime Kilns 1 and 2 are available. As the Kordzi Report points out, this is incorrect for several reasons: "EPA has previously found that SNCR is technically feasible for rotary lime kilns with preheaters and has required NOx emissions limits corresponding to the installation of that control in a BART determination…; there is considerable information concerning the application of SNCR to lime kilns with preheaters; and "the Control Cost Manual also discusses this specific type of application of SNCR."[121] Moreover, IDEM fails to present any information on why SCR would not be a technically feasible control for these kilns.[122] Indeed, "…SCR has been successfully installed at lime kilns and there is no obvious fundamental reason why the installation at lime kilns installed in a steel mill should alter that feasibility determination. IDEM should therefore require that these technologies be assessed in a four-factor review."[123]

- **Walking Beam Furnaces (Nos. 4, 5, 6).** Once again IDEM incorrectly proposes that there are no feasible NOx controls for these three walking beam furnaces. Despite IDEM's attempt to dismiss controls, "there is a long history with a number of readily available references attesting to the feasibility and installation of SCR on walking beam furnaces."[124] Thus, IDEM should require that a NOx four-factor analysis for the walking beam furnaces include consideration of SCR. Due to the similarity in sources, this analysis should extend to the reheat furnaces at Indiana Harbor West, the reheat and walking beam furnaces at Burns Harbor, and the 84" hot strip mill reheat furnaces at the U.S. Steel Gary facility."[125]

IDEM must also correct the numerous flaws in the Indiana Harbor East cost analyses. First, IDEM must recalculate the four-factor analyses for the Cleveland-Cliff facilities using the current Bank Prime rate, not a historical rate that does not currently apply.[126] Second, without adequate justification, Cleveland Cliffs uses retrofit factors of 1.3 and 1.5 in its four-factor analyses. IDEM should either require

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[121] *Id.* at 30.
[122] *Id.*
[123] *Id.*
[124] Kordzi Report at 30 (For instance, the California Steel Industries Fontana facility has a gas-fired walking beam furnace with SCR installed see here: https://mafiadoc.com/download/tenova-regenerative-flameless-burners-on-_5a8163891723dd119e7df7b9.html, and here: https://www.researchgate.net/publication/272175333_Tenova_Regenerative_flameless_burners_on_California_Steel_Industries%27_new_walking_beam_furnaces.
[125] Kordzi Report at 31.
[126] *Id.* at 31.

actual documentation that demonstrates that the problems Cleveland-Cliffs would encounter in installing the controls are in fact unusual, or revise the Cleveland-Cliff four-factor analyses using a retrofit factor of 1.0.[127] Third, unless Cleveland-Cliffs can provide information that documents why baghouses installed at its facility should be treated differently from those in other industries, it should use an equipment life of 30 years (not 20 years), or IDEM should update its cost analyses accordingly.[128] Finally, Indiana state law exempts the emission control equipment from sales tax, thus IDEM must remove the sale tax costs that Cleveland Cliffs inappropriately included.[129]

3. Revised Indiana Harbor East Cost Analyses

Using the figures presented in Appendix Q (Cleveland-Cliff's response to FLM comments), and correcting for the interest rate, equipment life, and retrofit factor issues described in the previous comment, results in the following revised cost-effectiveness calculations shown below and in the Kordzi Report for ULNB on Walking Beam Furnaces 5 and 6:[130]

Figure 1. Revised Cost-Effectiveness for ULNB for Walking Beam Furnace 5[131]

Cost Item	Cleveland-Cliffs	Revised	Comments
TCI	$5,012,000.00	$3,855,400.00	Adjust retrofit factor to 1.0
Annual operating costs	$82,500.00	$82,500.00	
Overhead (60% of labor & materials)	$49,500.00	$49,500.00	
Admin (2% capital costs)	$100,240.00	$77,108.00	
Property tax (1% of capital costs)	$50,120.00	$38,554.00	
Insurance (1% of capital costs)	$50,120.00	$38,554.00	
Capital recovery	$419,504.40	$203,179.58	Adjust to 3.25% and 30 yrs

[127] *Id.* at 31-32.
[128] *Id.* at 32.
[129] *Id.*
[130] These revised costs are present in the file entitled, "Steel Mills.xlsx," Exhibit 4. Note that sales tax was not removed.
[131] Kordzi Report at 33.

Cost Item	Cleveland-Cliffs	Revised	Comments
Total annual indirect operating costs	$669,484.40	$406,895.58	
Total annual costs	$751,984.40	$489,395.58	
Emission reduction (tons)	82.4	82.4	
Cost-effectiveness ($/ton)	$9,126.02	$5,939.27	

Figure 2. Revised Cost-Effectiveness for ULNB for Walking Beam Furnace 6[132]

Cost Item	Cleveland-Cliffs	Revised	Comments
TCI	$5,012,000.00	$3,855,400.00	Adjust retrofit factor to 1.0
Annual operating costs	$82,500.00	$82,500.00	
Overhead (60% of labor & materials)	$49,500.00	$49,500.00	
Admin (2% capital costs)	$100,240.00	$77,108.00	
Property tax (1% of capital costs)	$50,120.00	$38,554.00	
Insurance (1% of capital costs)	$50,120.00	$38,554.00	
Capital recovery	$419,504.40	$203,179.58	Adjust to 3.25% and 30 yrs
Total annual indirect operating costs	$669,484.40	$406,895.58	
Total annual costs	$751,984.40	$489,395.58	
Emission reduction (tons)	109.5	109.5	
Cost-effectiveness ($/ton)	$6,867.44	$4,469.37	

As the Kordzi Report concludes

[132] Kordzi Report at 33-34.

> …SCR is technically feasible and should be assessed in four-factor analyses for these sources. However, the above revised cost-effectiveness analyses indicate that ULNB is cost-effective for the walking beam furnaces and should be minimally required, if SCR proves to not be cost-effective. It should be further noted that these revised analyses are done assuming Cleveland-Cliff's cost and emission figures, which as indicated earlier in this report are undocumented.[133]

4. Cleveland-Cliffs Burns Harbor, LLC Burns Harbor Steel Mill

Burns Harbor is an integrated steel mill located in Burns Harbor, Indiana. Operations include raw material handling, coke plant operations, ironmaking, steelmaking, and manufacturing of hot rolled, cold rolled, and hot-dipped galvanized sheet products.[134]

As noted above, a number of the sources present at the Burns Harbor facility are similar to those at the East and West Harbor facilities and comments concerning those sources are offered above. Thus, the Kordzi Report focuses on several SO_2 analyses of sources at the Burns Harbor facility.

First, IDEM erred in eliminating wet scrubbers from consideration for the coke ovens.[135] IDEM wrongfully suggests the scrubbers were eliminated because they would produce substantial amounts of sulfate-impacted wastewater requiring additional wastewater treatment processes at the facility.[136] Contrary to IDEM's assertions, this is not a technical infeasibility issue.[137] As the Kordzi Report explain, the cost of an onsite wastewater treatment plant is commonly considered when costing wet scrubbers for EGUs.[138] IDEM's proposed SIP should consider wet scrubbing in its four-factor analysis for the coke batteries and the boilers. Previous comments concerning the application of SCR on boilers are also relevant to this source.[139]

Second, IDEM Should Assess the Coke Oven Gas Export Line Itself for NOx Controls. On page 149, IDEM seems to argue that because the NOx emissions generated from coke oven gas fired in downstream emission units are addressed at the units that burn that gas, it is not appropriate to evaluate NOx emission control measures on the coke oven gas export line itself.[140] However, if it is more efficient

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[133] Kordzi Report at 34.
[134] Proposed SIP at 146.
[135] Kordzi Report at 34.
[136] *Id.*
[137] *Id.*
[138] *Id.*
[139] *Id.*
[140] *Id.* at 35.

to treat the NOx emissions from the coke oven gas line rather than at the separate downstream units, then IDEM should do so.[141] In fact, that is the approach IDEM takes when assessing SO_2, as it includes a coke oven gas desulfurization plant.[142] It is difficult to project applicable NOx controls when no figures or diagrams of the Burns Harbor facility have been supplied, but it would seem that SCR should be assessed and that the application would be very similar to the installation of SCR in the ducting at an EGU.[143] If the coke oven gas is below the typical SCR temperature window, reheat and/or low temperature catalyst can be utilized.[144] Therefore, IDEM should either present evidence why it is technically infeasible to separately control NOx from the coke oven gas line, or require that a four-factor analysis be performed on the coke oven gas line itself, and that SCR be included in the control investigation.[145]

Third, IDEM must correct the flaws in the cost analyses, including use of the current Bank Prime rate at the time of its four-factor analysis unless a firm-specific interest rate is documented.[146] Fourth, as discussed in detail in the Kordzi Report, EPA has consistently assumed a thirty-year equipment life for scrubber retrofits, scrubber upgrades, SCRs, and SNCR installations.[147] In order to ensure a consistent and apples-to-apples comparison, IDEM should also assume a 30 year life for the coke oven gas desulfurization controls or provide documentation that a shorter life is appropriate.[148] Fifth, Cleveland-Cliffs only assumed a SDA control efficiency of 90%, while the Kordzi Report explains that this technology is typically capable of performing at 95% or higher.[149] IDEM should provide documentation why this level of control cannot be met or assume this level of control. Sixth, without justification, Cleveland Cliffs applied an inflated contingency of 25% directly to the Total Capital Investment (TCI) for its desulfurization plant.[150] As the Kordzi Report explains, IDEM should therefore use a more reasonable value, such as 15%.[151] Seventh, regarding control efficiency at the sulfur recovery plant, the company assumes 86.4%, which is considerably lower than control efficiencies at other sulfur plants.[152]

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[141] *Id.*
[142] *Id.*
[143] *Id.*
[144] *Id.*
[145] *Id.*
[146] *Id.*
[147] *Id.* at 35-36.
[148] *Id.*
[149] *Id.* at 36.
[150] *Id.*
[151] *Id.*
[152] *Id.*

Because sulfur recovery plants can typically achieve at least 98% control, IDEM's proposed SIP should use this number.[153]

The Kordzi Report used the information presented by Cleveland-Cliff's in response to FLM comments and corrected for the issue he identified and derived the below cost-effectiveness calculations for SDA on Batteries 1 and 2 Underfire:[154]

Figure 3. Revised Cost-Effectiveness for SDA on Battery 1 Underfire[155]

Cost Item	Cleveland-Cliffs	Revised	Comments
TCI	$60,594,532.00	$60,594,532.00	
Annual operating costs	$1,309,176.00	$1,309,176.00	
Total labor and materials	$317,968.00	$317,968.00	
Overhead (60% of labor & materials)	$190,780.80	$190,780.80	
Admin (2% capital costs)	$1,211,890.64	$1,211,890.64	
Property tax (1% of capital costs)	$605,945.32	$605,945.32	
Insurance (1% of capital costs)	$605,945.32	$605,945.32	
Capital recovery	$5,071,762.33	$3,193,331.84	Adjusted to 3.25% and 30 yrs
Total annual indirect operating costs	$7,686,324.41	$5,807,893.92	
Total annual costs	$8,995,500.41	$7,117,069.92	
Reported 2028 emissions (tons)	1,617.0	1,617.0	Table 3-1 in FFA Report
SDA Control Efficiency (%)	90.0	95.0	Adjusted to 95%

[153] *Id.*

[154] Note that the TCI for SDA on Battery 2 was difficult to determine and may not exactly match Cleveland-Cliffs' figure because the tables in Appendix R were poorly reproduced. These revised costs are present in the file entitled, "Steel Mills.xlsx." Note that sales tax was not removed.

[155] Kordzi Report at 37.

Cost Item	Cleveland-Cliffs	Revised	Comments
Emission reduction (tons)	1,455.3	1,536.2	
Cost-effectiveness ($/ton)	$6,181.20	$4,633.06	

Figure 4. Revised Cost-Effectiveness for SDA on Battery 2 Underfire[156]

Cost Item	Cleveland-Cliffs	Revised	Comments
TCI	$54,730,400.00	$54,730,400.00	
Annual operating costs	$1,341,452.00	$1,309,176.00	
Total labor and materials	$317,968.00	$317,968.00	
Overhead (60% of labor & materials)	$190,780.80	$190,780.80	
Admin (2% capital costs)	$1,094,608.00	$1,094,608.00	
Property tax (1% of capital costs)	$547,304.00	$547,304.00	
Insurance (1% of capital costs)	$547,304.00	$547,304.00	
Capital recovery	$4,580,934.48	$2,884,292.08	Adjusted to 3.25% and 30 yrs
Total annual indirect operating costs	$6,960,931.28	$5,264,288.88	
Total annual costs	$8,302,383.28	$6,573,464.88	
Reported 2028 emissions (tons)	1,854.0	1,854.0	Table 3-1 in FFA Report
SDA Control Efficiency (%)	90.0	95.0	Adjusted to 95%

[156] Kordzi Report at 37-38.

Cost Item	Cleveland-Cliffs	Revised	Comments
Emission reduction (tons)	1,668.6	1,761.3	
Cost-effectiveness ($/ton)	$4,975.66	$3,732.17	

The Kordzi Report also revised the cost effectiveness calculations for the sulfur recovery plant, which appear below.

Figure 5. Revised Cost-Effectiveness for the Sulfur Recovery Plant[157]

Cost Item	Cleveland-Cliffs	Revised	Comments
TCI	$98,938,000.00	$98,938,000.00	
TCI + Contingency (25%)	$123,672,500.00	$113,778,700.00	Adjusted to 15%
Annual operating costs	$10,835,000.00	$10,835,000.00	
Total labor and materials	$2,871,000.00	$2,871,000.00	
Overhead (60% of labor & materials)	$1,722,600.00	$1,722,600.00	
Admin (2% capital costs + contingency)	$2,473,450.00	$2,275,574.00	
Property tax (1% of capital costs + contingency)	$1,236,725.00	$1,137,787.00	
Insurance (1% of capital costs + contingency)	$1,236,725.00	$1,137,787.00	
Capital recovery	$10,351,388.25	$5,996,137.49	Adjusted to 3.25% and 30 yrs
Total annual indirect operating costs	$17,020,888.25	$12,269,885.49	
Total annual costs	$27,855,888.25	$23,104,885.49	

[157] Kordzi Report at 38-39.

Cost Item	Cleveland-Cliffs	Revised	Comments
Reported 2028 emissions (tons)	8,099.0	8,099.0	Back calculated based on 6,997.1 tons removed and 86.4% efficiency
Control Efficiency (%)	86.4	98.0	Adjusted to 98%
Emission reduction (tons)	6,997.5	7,937.0	
Cost-effectiveness ($/ton)	$3,980.81	$2,911.03	

As summarized in the Kordzi Report, the above revised cost-effectiveness analyses indicate that SDA is cost-effective for Batteries 1 and 2 and the sulfur recovery plant is cost-effective.[158] Of the two types of controls, the sulfur reduction plant is superior and should be required by IDEM.[159] It should be further noted that these revised analyses are done assuming Cleveland-Cliff's cost and emission figures, which as indicated earlier in this report are undocumented.[160]

5. United States Steel Corporation - Gary Works

Gary Works is an integrated iron and steel mill located in Gary, Indiana. Operations include raw material handling, sintering, ironmaking, steelmaking, and manufacturing of steel slabs, hot rolled, cold rolled, and tin mill products, as well as on-site utility generation.[161]

First, the above comments concerning the technical feasibility of SCR on the walking beam and reheat furnaces also apply to the 84" Strip Mill reheat furnace at the Gary facility. Second, as described in the Kordzi Report, Kordzi used the information presented by the company and corrected for the issues described in the previous comments relating to the Indiana Harbor East and West facilities, which results in the following revised cost-effectiveness calculations for Waste Heat Boiler 1.

[158] Kordzi Report at 39.
[159] *Id.*
[160] *Id.*
[161] Proposed SIP at 158.

Figure 6. Revised Cost-Effectiveness for LNB on Waste Heat Boiler 1[162]

Cost Item	Gary	Revised	Comments
TCI	$1,806,740.00	$1,806,740.00	
Annual operating costs	$82,450.00	$82,450.00	
Total labor and materials	$82,450.00	$82,450.00	
Overhead (60% of labor & materials)	$49,470.00	$49,470.00	
Admin (2% capital costs)	$36,134.80	$36,134.80	
Property tax (1% of capital costs)	$18,067.40	$18,067.40	
Insurance (1% of capital costs)	$18,067.40	$18,067.40	
Capital recovery	$151,224.14	$95,215.20	Adjusted to 3.25% and 30 yrs
Total annual indirect operating costs	$272,963.74	$216,954.80	
Total annual costs	$355,413.74	$299,404.80	
Reported 2028 emissions (tons)	89.0	89.0	
SDA Control Efficiency (%)	65.0	65.0	
Emission reduction (tons)	57.9	57.9	
Cost-effectiveness ($/ton)	$6,143.71	$5,175.54	

The figures for Waste Heat Boiler 2 are similar and are not shown. These revised cost-effectiveness analyses indicate that LNBs are cost-effective for Waste Heat Boilers 1 and 2.[163]

6. SABIC Innovative Plastics, Mt. Vernon LLC

[162] Kordzi Report at 39-40. These revised costs are present in the file entitled, "Steel Mills.xlsx." Note that sales tax was not removed.
[163] Kordzi Report at 40.

SABIC is a stationary plastics manufacturing plant. The plant's chemical and plastics manufacturing operations include numerous products that are sold to end-use customers and intermediate products necessary for end-use plastics products.[164] The Kordzi Report identifies six major issues with IDEM's proposed SIP analysis.

First, while 2019 annual NO_X emissions for the facility were 309 tons, IDEM cherry-picked only the co-generation unit and the COS Vent Oxidizer four-factor analysis for, which accounts for 119 tons.[165] IDEM must explain is rational for excluding the rest of the emission sources from the four-factor analysis.[166] Second, SABIC used an EPA SCR cost algorithm that is designed to be used to estimate costs for coal, oil, and gas-fired utility and industrial boilers with specific size limitations, and it is not applicable to SABIC. As the Kordzi Report explains, the SABIC analysis must be redone.[167] Third, SABIC used an inappropriate interest rate of 5.5% and an inappropriate equipment life of 20 years.[168] These erroneous assumptions must be revised to use the Bank Prime rate or provide documentation with an enforceable SIP provision for a shorter life.[169] Fourth, IDEM must redo the SCR calculations and assume the removal efficiencies for a gas-fired turbines are, at a minimum, 90%.[170] Fifth, additional information is needed for SABIC's scrubber cost analyses, which uses an unjustified retrofit factor.[171] Finally, as the Kordzi Report explains in detail, in deriving the TCI, the underlying interim calculations and supporting information is missing from the proposed SIP package.[172] IDEM should require that SABIC provide this additional information, including justifications for the various parameter selections, in order to verify its $38,988,800 capital cost figure.[173]

7. Warrick Newco LLC, formerly Alcoa Warrick Operations LLC (Alcoa).

Alcoa is a stationary aluminum production plant. Its primary aluminum reduction operations consist of the Alcoa potlines and potlines support plant, paste production plant, and anode baking plant.[174] IDEM only required that the Warrick Newco conduct a four-factor analysis for its SO_2 sources.

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[164] Proposed SIP at 167.
[165] Kordzi Report at 40.
[166] *Id.* at 40-41
[167] *Id.* at 41.
[168] *Id.*
[169] *Id.*
[170] *Id.*
[171] *Id.*
[172] *Id.*
[173] *Id.*
[174] Proposed SIP at 178.

First, despite the facility's NOx emissions totaling 721 tons,[175] IDEM failed to explain and demonstrate why it did not require that the facility conduct the four-factor analysis.[176]

Second, IDEM's SIP and the Burns and McDonald estimate for the SO_2 cost-effectiveness for scrubbers for Potlines 2-6, merely provides the cost per ton numbers.[177] Contrary to the requirements of the Regional Haze Rule and for SIPs, there is no supporting documentation regarding essential economic and emission information.[178] IDEM should require proper documentation for all the cost-effectiveness figures.[179] As the Kordzi Report concludes, the estimates of $1,579/ton for the Potline scrubbers and $4,544/ton Anode Baking Ring Furnace are cost-effective and IDEM should require them.[180]

8. Primary Energy - Cokenergy LLC (Cokenergy).

Cokenergy operates as a contractor at the Cleveland-Cliffs Indiana Harbor Works (CC-IH) facility in East Chicago, Indiana. The facility is a stationary waste heat recovery system for coal carbonization to produce steam and electricity for use at the CC-IH facility.[181] While the Cokenergy operation, consisting of using heat recovery steam generators on coke oven batteries, is unusual, the arrangement of the SDA system, consisting of two absorbers, each feeding a baghouse with a common stack, is not.[182] Thus, as explained in the Kordzi Report, commonly employed SDA upgrade approaches can be successfully applied. As presented below and in more detail in the Kordzi Report, there are several issues with IDEM's proposed SIP analysis.

Cokenergy indicated that it commissioned two studies, which it relied on in preparing its submittal to IDEM.[183] The public does not have access to those studies and IDEM should require that the company produce them and that they be made available to the public.[184] Cokenergy suggests its SDA scrubber has a current

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[175] *See* https://www.in.gov/idem/airquality/reporting/emissions-summary-data/.
[176] Kordzi Report at 41-42.
[177] Proposed SIP at 180. (IDEM indicates that based on a Burns and McDonald estimate, the SO_2 cost-effectiveness for scrubbers for Potlines 2-6 was calculated to be $5,889/ton, and for the Anode Baking Ring Furnace was $16,787/ton. Following implementation of corrections identified in FLM comments, Burns and McDonald revised these figures to $1,579/ton and $4,544/ton, respectively.)
[178] Kordzi Report at 42.
[179] *Id.*
[180] *Id.*
[181] Proposed SIP at 183.
[182] Kordzi Report at 42.
[183] *Id.*
[184] *Id.* at 43.

efficiency of 61%, following recent upgrades.[185] Other industrial applications of SDA technology routinely result in 95% efficiency, demonstrating that Cokenergy's efficiency of 61% is poor.[186]

IDEM's SIP must contain a complete four-factor analysis and not rely on Cokenergy's truncated four-factor analysis.[187] For example, Cokenergy's dismissal of adding DSI is not supported, in contrast to its wide application. Consistent with the Regional Haze Rule requirements, IDEM's consideration of cost in the proposed SIP must be properly and completely evaluated.[188]

IDEM must include a complete disclosure and analysis of the recommendations and outcomes of the 2015 study.[189] While Cokenergy mentions the 2015 Burns and Roe study and several options to improve the efficiency and reliability of the SDA system, which are warranted given the poor control efficiency, the information underlying these options is unavailable.[190] With the exception of operating both SDA systems simultaneously, the company does not disclose whether any of the options have been implemented.[191] IDEM should investigate and incorporate the results of its investigation and analytics into its four-factor analysis.[192]

Cokenergy's four-factor options excluded the most obvious control measures and the options it did consider, were inadequate. Cokenergy indicates that it considered several options to improve emissions controls: an additional FGD system, the complete replacement of existing FGD system, the addition of end-of-pipe controls to the existing FGD system, and a federally enforceable SO_2 limit.[193] As the Kordzi Report explains, these options are inadequate because they do not contain the most obvious choice—upgrade of the existing SDA system.[194] Upgrades to SDA systems are common and routinely performed.[195] Additional upgrades IDEM must consider include:

- Replacement of one or both of the absorbers,
- Replacement of the absorber atomizers,

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[185] *Id.*
[186] *Id.* at 43-44.
[187] *Id.*
[188] Kordzi Report at 43; 40 C.F.R. § 51.308(f)(2)(i).
[189] Kordzi Report at 43.
[190] *Id.*
[191] *Id.*
[192] *Id.* at 44.
[193] *Id.* at 43.
[194] *Id.*
[195] *Id.* at 44.

- The use of more reagent,
- Use of a different reagent,
- Upgrading the baghouses, and
- Change from a single pass (if employed) to a recycled reagent system.[196]

Some of these potential upgrades are likely discussed in the two Burns and Roe reports, however, IDEM has not provided the public access to this information. IDEM should ensure that the engineering study conducted to support its proposed SIP consider all potential scrubber upgrades.[197] The investigation of scrubber upgrades has been a long standing requirement of the regional haze program, as noted in the EGU upgrade discussion of this report.[198] EPA cannot approve IDEM's assertion that "[a] cost of compliance analysis was not conducted for Cokenergy's four-factor analysis report as additional controls are unnecessary and infeasible."[199] IDEM should require that Cokenergy submit all reports on its SDA system and properly investigate upgrades to its existing SDA system as part of its four-factor analysis.[200]

III. IDEM'S CONSULTATION PROCESS WAS FUNDAMENTALLY INADEQUATE.

EPA's regulations require that each applicable implementation plan for a State in which any mandatory Class I Federal area is located, contains such emission limits, schedules of compliance and other measures as may be necessary to make reasonable progress toward meeting the national goal.[201] The Clean Air Act further requires states to determine the measures necessary to make reasonable progress towards preventing future, and remedying existing, anthropogenic visibility impairment in all Class I areas.[202] Thus, "Congress was clear that both downwind states (*i.e.* , "a State in which any [mandatory Class I Federal] area . . . is located) and upwind states (*i.e.* , "a State the emissions from which may reasonably be anticipated to cause or contribute to any impairment of visibility in any such area") must revise their SIPs to include measures that will make reasonable progress at all affected Class I areas."[203]

"This consultation obligation is a key element of the regional haze program. Congress, the states, the courts and the EPA have long recognized that regional haze is a regional problem that requires regional solutions. *Vermont v. Thomas*, 850

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[196] *Id.*
[197] *Id.*
[198] *Id.*
[199] *Id.*
[200] *Id.*
[201] 42 U.S.C. § 7491(b)(2).
[202] *Id.* § 7491(a)(1).
[203] 82 Fed. Reg. at 3,094.

F.2d 99, 101 (2d Cir. 1988)."[204] Congress intended this provision of the Clean Air Act to "equalize the positions of the States with respect to interstate pollution," (S. Rep. No. 95-127, at 41 (1977)) and EPA's interpretation of this requirement accomplishes this goal by ensuring that downwind states can seek recourse from EPA if an upwind state is not doing enough to address visibility transport.[205]

In developing a long-term strategy for regional haze, EPA's regulation 40 C.F.R. § 51.308(f)(2) requires that a state take three distinct steps: consultation; demonstration; and consideration. Specifically, the regulation requires:

> (ii) The State *must consult* with those States that have emissions that are reasonably anticipated to contribute to visibility impairment in the mandatory Class I Federal area to develop coordinated emission management strategies containing the emission reductions necessary to make reasonable progress.
> (A) The State *must demonstrate* that it has included in its implementation plan all measures agreed to during state-to-state consultations or a regional planning process, or measures that will provide equivalent visibility improvement.
> (B) The State *must consider* the emission reduction measures identified by other States for their sources as being necessary to make reasonable progress in the mandatory Class I Federal area.[206]

"Where the State has emissions that are reasonably anticipated to contribute to visibility impairment in any mandatory Class I Federal area located in another State or States, the State must consult with the other State(s) in order to develop coordinated emission management strategies."[207] Moreover, plan revisions:

> must provide procedures for continuing consultation between the State … on the implementation of the visibility protection program required by this subpart, including development and review of implementation plan revisions and progress reports, and on the implementation of other programs having the potential to contribute to impairment of visibility in mandatory Class I Federal areas.[208]

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[204] *Id.* at 3,085.
[205] *Id.*
[206] 40 C.F.R. § 51.308(f)(2) (emphasis added); *see also*, 64 Fed. Reg. 35,765, 35,735 (July 1, 1999) (In conducting the four-factor analysis, EPA explained that "…the State must consult with other States which are anticipated to contribute to visibility impairment in the Class I area under consideration … any such State must consult with other States before submitting its long-term strategy to EPA.").
[207] 40 C.F.R. § 51.308(f)(3)(i).
[208] 40 C.F.R. § 51.308(f)(4).

In its 2017 amendments to the Regional Haze Rule, EPA explained that "states *must* exchange their four-factor analyses and the associated technical information that was developed in the course of devising their long-term strategies. This information includes modeling, monitoring and emissions data and cost and feasibility studies."[209] In the event of a recalcitrant state, "[t]o the extent that one state does not provide another other state with these analyses and information, or to the extent that the analyses or information are materially deficient, the latter state should document this fact so that the EPA can assess whether the former state has failed to meaningfully comply with the consultation requirements."[210]

Finally, "[i]f a State contains sources which are reasonably anticipated to contribute to visibility impairment in a mandatory Class I Federal area in another State" that has established reasonable progress goals that are slower than the Uniform Rate of Progress, "the State must demonstrate that there are no additional emission reduction measures for anthropogenic sources or groups of sources in the State."[211] To that end, the "State must provide a robust demonstration, including documenting the criteria used to determine which sources or groups or sources were evaluated and how the four factors required by paragraph (f)(2)(i) were taken into consideration in selecting the measures for inclusion in its long-term strategy."[212] In any event, "[a]ll substantive interstate consultations must be documented."[213]

A. IDEM's Interstate Consultation Process Was Flawed.

IDEM's proposed SIP indicates that it consulted with only two states—Arkansas and Missouri—even though Indiana sources significantly impact visibility in at least 20 different Class I areas in 14 states.[214] IDEM's interstate consultation is incomplete and does not satisfy multiple portions of 40 CFR 51.308(f)(2), in multiple respects. As an initial matter, IDEM failed to meaningfully engage with the states with Class I areas that are most impacted by Indiana's sources. The Regional Haze Rule requires Indiana to consult with each state containing a Class I area for which Indiana's sources are "reasonably anticipated to contribute to visibility impairment" and "to develop coordinated emission management strategies containing the emission reductions necessary to make reasonable progress. 40 C.F.R. § 51.308(f)(2)(ii). Indiana must then consider any emission reduction measures identified by other States for its sources as being necessary to make reasonable progress in the mandatory Class I Federal area.[215]

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[209] 82 Fed. Reg. at 3,088 (emphasis added).
[210] *Id.*
[211] 40 C.F.R. § 51.308(f)(3)(ii)(B).
[212] *Id.*
[213] 40 C.F.R. § 51.308(f)(2)(ii)(C).
[214] *See* Proposed SIP at 197, 220.
[215] 40 C.F.R. § 51.308(f)(2) (emphasis added); *see also*, 64 Fed. Reg. 35,765, 35,735 (July 1, 1999) (In conducting the four-factor analysis, EPA explained that "…the

Here, IDEM's proposed SIP indicates that Indiana sources significantly impact numerous Class I areas across the central region of the United States. In fact, according to the Federal Land Managers, Indiana EGUs, by themselves, contribute as much as 19% of the haze pollution at Mammoth Cave National Park in Kentucky.[216] Indiana EGUs likewise have significant visibility impacts to Sipsey Wilderness in Alabama (3.6% of haze pollution from Indiana EGUs); Great Smoky Mountains National Park in Tennessee (3.3%); Dolly Sods/Otter Creek Wildernesses in West Virginia (3%); Cohutta Wilderness in Georgia (2.9%); Shenandoah National Park and James River Face Wilderness in Virginia (2.8% and 2.2%, respectively); Linville Gorge Wilderness in North Carolina (2.1%); and at least four other Class I areas with more than 1% contribution. And the record is clear that modeled impacts from *all* sources—EGU and non-EGU—are even greater. Indeed, IDEM's own analysis indicates that Indiana sources are responsible for 11.2% of the light extinction at Mammoth Cave; and the state is responsible for between 1-6% of light extinction at 17 other Class I areas.

Although Indiana and a handful of other states participated in an interstate visibility modeling effort—i.e., the Lake Michigan Air Directors Consortium reasonable progress modeling analysis[217]—there is no indication that Indiana meaningfully consulted with any other state (except Arkansas and Missouri) to conduct or document any technical or cost analysis of emission reductions available to ensure reasonable progress in out-of-state Class I areas, as required under the Regional Haze Rule. 40 C.F.R. § 51.308(f)(3)(ii)(B). Indeed, despite requests from states in the southeastern region of the United States,[218] there is nothing in the record demonstrating that Indiana and any other state exchanged four-factor analyses or any technical information, modeling, monitoring, emissions data, or cost and feasibility studies to determine whether additional emission reductions from Indiana EGUs are necessary to ensure reasonable progress. Given Indiana's own

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State must consult with other States which are anticipated to contribute to visibility impairment in the Class I area under consideration … any such State must consult with other States before submitting its long-term strategy to EPA.").

[216] *See* Proposed SIP, App'x U at 10-11. Indiana apparently disputes the Federal Land Manager's assessment of the impacts of Indiana sources at Mammoth Cave, but IDEM's own analysis indicates that Indiana EGUs alone contribute 6.9% of the haze pollution impacting Mammoth Cave. Proposed SIP at 220, Table 24-1.

[217] Indiana participated in the Lake Michigan Air Directors Consortium, which is the Midwest region's regional planning organization (RPO), to determine if any Class I areas have visibility impairment that may be caused by sources within the state. Proposed SIP at 4. Notably, the LADCO process did not evaluate potential source-specific emission reductions or conduct any reasonable progress or four-factor analyses.

[218] Proposed SIP, App'x A.

assessment that its sources contribute between 1% and 11.2% of haze pollution impacts at 17 out-of-state Class I areas, IDEM's failure to conduct any meaningful consultation or exchange four-factor analyses with any other state is flatly contrary to the plain language of the Regional Haze Rule.[219]

IDEM's repeated, *pro forma* justification for failing to consider or consult with other states regarding cost-effective emission reductions to protect visibility in out-of-state Class I areas, is that modeling results from the affected out-of-state Class I areas indicates that they are "well ahead" of the Uniform Rate of Progress.[220] But as discussed, EPA has repeatedly made clear that the mere fact that a Class I area is on track to meet the Uniform Rate of Progress is "not a safe harbor," and does not excuse the state from its obligation to consider the statutory reasonable progress factors in evaluating reasonable control options.[221] Even if Indiana could avoid *implementing* additional controls because affected Class I areas are on the glidepath, which it cannot, that does not excuse Indiana from conducting meaningful consultations with affected states, exchanging technical and cost analyses, and evaluating whether additional control measures would be cost effective and ensure further reasonable progress toward natural visibility conditions in the affected Class I areas.

With respect to the two consultations IDEM did conduct, there is no evidence that Indiana, Arkansas, or Missouri discussed which sources should be evaluated or how the states decided whether additional controls should be required from sources in *either* state to protect visibility in the other. This is a foundational requirement of state-to-state consultations. The Regional Haze Rule requires states to consult with each state that are "reasonably anticipated to contribute to visibility impairment" in any mandatory Class I Federal area "*to develop coordinated emission management*

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[219] *See generally* 40 C.F.R. §§ 51.308(f)(2)(ii)(C); (3)(ii)(B).

[220] *See, e.g.*, Proposed SIP at 206 (Mammoth Cave "well ahead" of URP); *id*. at 206 (Great Smoky Mountains "are on track to meet" URP); *id*. at 207 (Sipsey "well ahead" of URP); id. at 223 (asserting that all other affected Class I areas are "well ahead" of the glidepath).

[221] 81 Fed. Reg. 66,331, 66,631 (Sept. 27, 2016); *see also* EPA, Responses to Comments at 120, Promulgation of Air Quality Implementation Plans; State of Texas; Regional Haze and Interstate Visibility Transport Federal Implementation Plan: Best Available Retrofit Technology and Interstate Transport Provisions, EPA Docket No. EPA-R06-OAR-2016-6011 (June 2020) ("EPA has repeatedly and consistently taken the position that meeting a specific reasonable progress goal is not, itself, a "safe harbor," and does not relieve the state of the obligation to consider additional measures for reasonable progress. If it is reasonable to make more progress than the URP, a state must do so, as EPA explained in the 1999 regional haze rule) (citing 64 Fed. Reg. at 35732).

strategies containing the emission reductions necessary to make reasonable progress. 40 C.F.R. § 51.308(f)(2)(ii) (emphasis added).

IDEM's cursory statement that it consulted with Arkansas and Missouri about interstate emissions affecting Indiana's Class I areas is not only inadequate on its face, but it does not address the other side of the equation—how do Indiana's sources affect Arkansas's and Missouri's Class I areas and whether additional emission reductions are necessary to protect visibility. Moreover, as with every other state affected by Indiana emissions, there is nothing in the record demonstrating that Indiana and Arkansas or Missouri exchanged their four-factor analyses and the associated technical information, including modeling, monitoring and emissions data and cost and feasibility studies, to determine whether additional emission reductions are necessary to ensure reasonable progress.[222]

At a minimum, IDEM must reinitiate consultation with Missouri to evaluate available emission reductions from Indiana sources to ensure reasonable progress in Mingo National Wilderness Area. Where, as here, "a State contains sources which are reasonably anticipated to contribute to visibility impairment in a mandatory Class I Federal area in another State," which has reasonable progress goals that are slower than the Uniform Rate of Progress, "the State must demonstrate that there are no additional emission reduction measures for anthropogenic sources or groups of sources in the State."[223] Here, IDEM's proposed SIP indicates that Mingo is not on track to meet the unadjusted Uniform Rate of Progress for Mingo. Consequently, Indiana "must provide a robust demonstration, including documenting the criteria used to determine which sources or groups or sources were evaluated and how the four factors required by paragraph (f)(2)(i) were taken into consideration in selecting the measures for inclusion in its long-term strategy."[224]

B. IDEM Must Adapt Its SIP to Meaningfully Address and Incorporate Comments from the Federal Land Managers.

The Clean Air Act and the Regional Haze Rule require states to consult with the Federal Land Managers that oversee the Class I Areas impacted by a state's sources.[225] Specifically, the state "must provide the Federal Land Manager with an opportunity for consultation, in person at a point early enough in the State's policy analyses of its long-term strategy emission reduction obligation so that information and recommendations provided by the Federal Land Manager can *meaningfully inform* the State's decisions on the long-term strategy."[226] The "consultation must be early enough for state officials to meaningfully consider the views expressed by the

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[222] *See* 82 Fed. Reg. at 3,088.
[223] 40 C.F.R. § 51.308(f)(3)(ii)(B).
[224] *Id.*
[225] 42 U.S.C. § 7491(d); 40 C.F.R. § 51.308(i)(2).
[226] 40 C.F.R. § 51.308(i)(2) (emphasis added).

FLMs."[227] The rule further requires states to provide for "continuing consultation" between the state and the Federal Land Manager, and to meaningfully address the FLM's comments in the proposed SIP.[228] Thus, the FLM consultation process is not a mere box checking exercise; instead, it is a mandatory, iterative process, requiring the state to meaningfully consider and incorporate into the SIP the concerns of the agencies responsible for managing the Class I resources impacted by pollution from the state.

IDEM failed to meaningfully consider or adapt its proposed SIP to respond to Federal Land Managers' recommendations, and the plan therefore fails to satisfy the text or the intent of the Regional Haze Rule's consultation requirements. Specifically, IDEM failed to provide a rational or lawful explanation for dismissing each of the Federal Land Managers' conclusions that it was "not reasonable to exempt" all Indiana EGUs from a four-factor analysis, because "there are cost-effective controls for some of the Indiana EGUs, including (but not limited to) Alcoa Unit 4, Clifty Creek, and Petersburg."[229] To the extent that the state is relying on retirements to avoid control analyses, the FLMs pointed out, those retirements must be made federally enforceable.[230]

In response, IDEM points to EPA's 2019 Guidance as its primary rationale for exempting the EGU source category from any control analysis. IDEM further asserts:

> the power generation industry is in transition at this point in time with emission units designated for retirement, the shift from coal to other fuels and increasing reliance on renewable energy. As such, IDEM believes it would be more appropriate to continue to address these units by tracking emissions and evaluating visibility progress through both monitoring and modeling at the Class I areas and re-evaluate the EGUs as further emission reductions from retirements/shutdown are anticipated for additional control measures in subsequent planning periods. It makes no sense to evaluate EGUs

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[227]EPA, Responses to Comments at 445, Protection of Visibility: Amendments to Requirements for State Plans; Proposed Rule (81 FR 26942, May 4, 2016), Docket No. EPA-HQ-OAR-2015-0531 (Dec. 2016) [hereinafter, "Regional Haze Rule Revision Response to Comment"].

[228] 40 C.F.R. § 51.308(i)(2); Regional Haze Rule Revision Response to Comment at 445.

[229] Proposed SIP, App'x U at pdf page 1 (National Parks Service Comments). The Forest Service likewise asserted that several coal EGUs, including Gibson, Petersburg, and Clifty Creek "need a four-factor analysis conducted for both SO2 and NOx controls." *Id*. at pdf page at 12.

[230] *See, e.g., id.* at pdf page 3.

> at this time when the outcome of compliance with other CAA regulations and changes in energy use are not fully in place.[231]

According to IDEM, Indiana EGUs were evaluated in detail in the first planning period, and as a result of existing Clean Air Act requirements and planned retirements, "significant reductions were expected and have been achieved."[232] Moreover, IDEM asserts that EGU control analyses are not necessary because each of the affected Class I areas is already on the uniform rate of progress toward natural visibility.

IDEM's rejection of the FLMs' recommendations is arbitrary and conflicts with the Guidance itself. First, the EGU sector was not evaluated in detail for the first implementation period of the Regional Haze Rule. Instead, Indiana's EGUs were subject to the Clean Air Interstate Rule and its successor, the Cross-State Air Pollution Rule. Under those rules, individual EGUs were not evaluated for their SO_2 or NOx, emissions.

Second, because IDEM is explicitly relying on "expected" EGU retirements to ensure reasonable progress and satisfy the Regional Haze Rule's long-term strategy requirements,[233] the state must make those expected retirements enforceable through any SIP revision. [234] Even the flawed 2019 Guidance, which IDEM relies on to avoid any EGU control analysis, makes clear that, to the extent the state relies on planned retirements to avoid any control analysis, those retirements must be made enforceable through its final SIP.[235] IDEM's proposed SIP arbitrarily fails to respond meaningfully to the FLMs' recommendation to either conduct control

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[231] Proposed SIP App'x U at 13.
[232] Proposed SIP at 229.
[233] *Id*.
[234] 42 U.S.C. § 7410(a)(2); 40 C.F.R. §§ 51.308(i); (d)(3)("The long-term strategy must include enforceable emissions limitations, compliance schedules . . ."); (f)(2) (the long-term strategy must include "enforceable emissions limitations"); *see also* August 2019 Guidance at 22 ("in selecting sources for control measure analysis," the state may choose "not selecting sources that have an enforceable commitment to be retired or replaced by 2028"); *id*. at 34 (To the extent a retirement or reduction in operation "is being relied upon for a reasonable progress determination, the measure would need to be included in the SIP and/or be federally enforceable.") (citing 40 CFR 51.308(f)(2)).
[235] August 2019 Guidance at 43 ("[i]f a state determines that an in-place emission control at a source is a measure that is necessary to make reasonable progress and there is not already an enforceable emission limit corresponding to that control in the SIP, the state is required to adopt emission limits based on those controls as part of its long-term strategy in the SIP via the regional haze second planning period plan submission.").

analyses for the EGUs or include those planned retirements as binding provisions in the SIP.

Third, as the FLMs' point out, IDEM's decision to exclude EGUs but evaluate non-EGU sources for controls creates an arbitrary inconsistency in decision-making for these sources. Of the facilities required by IDEM to conduct four-factor analyses, Alcoa Warrick Operations had the highest Q/d at 80.9, but three EGUs have higher Q/d values and were not required to conduct four-factor analyses (AEP Rockport, 259.5; Gibson, 134.8; AES Petersburg, 83.7).[236] Moreover, several of the other non-EGUs evaluated for controls have lower impacts than EGU sources. IDEM fails to explain that inconsistency

Fourth, regardless of prior Clean Air Act requirements for EGUs, those sources are still the biggest Indiana emitters of haze-causing pollutants affecting multiple Class I areas. According to the National Park Service (NPS), Indiana EGUs account for a full 7% of total visibility impact at Mammoth Cave National Park, one of the most visually impaired NPS Class I areas.[237] Five of the top ten facilities impacting Mammoth Cave are Indiana EGUs. IDEM's proposed SIP fails, however, to respond to those comments or provide a rational, lawful explanation for excluding EGUs from consideration in this round of haze planning.

Fifth, although there are no four-factor analyses for EGUs in IDEM's record, the FLMs "were able to identify potential cost-effective controls based on available information for several of the facilities."[238] The FLMs therefore recommended that Indiana require four-factor analyses for all EGUs that do not have *federally enforceable* retirement dates. IDEM refused to require any EGU control analyses and failed to respond to FLMs' recommendations.

Finally, as explained, IDEM's assertion that control analyses were not necessary "considering the significant progress already made towards achieving the national visibility goal" is not a valid basis for exempting an entire source category for which reasonable, cost-effective controls are available. As noted, the Regional Haze Rule preamble, the August 2019 Guidance, and the recent July 2021 Clarification Memo each make clear that being below the uniform rate of progress is not a "safe harbor" that can be used to dismiss otherwise reasonable controls. Furthermore, the visibility benefit of prior emissions reductions from individual facilities is not one of the four statutory factors that may be considered in exempting a source from reasonable progress requirements. Thus, IDEM's cursory responses to the FLMs' recommendations are not only inadequate on their face, but

[236] Proposed SIP at 44.
[237] Proposed SIP, App'x K at pdf page 18.
[238] *Id.*

are arbitrarily inconsistent with the record, the Clean Air Act, and the Regional Haze Rule.

The Regional Haze Rule's consultation process is a mandatory and iterative process designed to "meaningfully inform the State's decisions on the long-term strategy." 40 C.F.R. § 51.308(i)(2). IDEM's consultation, however, fails to rationally explain its rejection of the FLMs' recommendations. And fails to include any additional analysis or information in the record responding to any FLM comments or concerns to date, as required by 40 C.F.R. § 51.308(i)(2). To comply with the letter and purpose of the regulation, IDEM must meaningfully evaluate and incorporate the FLM's comments in a proposed SIP and provide the public an opportunity to comment.

IV. IDEM'S PROPOSED SIP FAILS TO INCLUDE DOCUMENTATION NECESSARY TO INDEPENDENTLY REVIEW THE AVAILABILITY OF COST-EFFECTIVE CONTROLS.

As detailed in the Kordzi report, in developing comments on IDEM's proposed SIP, the Conservation Organizations filed public records requests for (1) unit-specific documentation of annual or monthly SO_2, NOx, and particulate matter emissions from all non-EGU stationary sources in Indiana for the most recent four years, and (2) any information summarizing the types of pollution controls currently installed on the units.[239] IDEM replied that it could not supply any of the above requested information because it is not kept on a unit-specific basis. Although IDEM purportedly does not keep any of that unit-specific emission information, the agency nevertheless requested four-factor analyses for several non-EGU facilities based on a Q/d analysis of emissions divided by distance to Class I areas, suggesting that the agency must have had some information about current emissions from those sources. In any event, with the exception of certain cost figures generated by EPA, IDEM subsequently accepted, without question or any independent analysis, all cost-effectiveness analyses (including capital cost, operating cost, and projected emission reductions) submitted by those non-EGU facilities.

That approach is arbitrary, capricious, and contrary to law, for several reasons. First, IDEM cannot rationally approve the non-EGU four-factor analyses that are in the record because the agency admits that it does not have, and therefore could not verify, the cost-effectiveness analyses that necessarily rely on that emissions data. Indeed, cost effectiveness is generally a function of the cost of emission reduction technology and the pollution reductions achieved with the adoption of those controls. Without verifying a source's emissions, it is impossible to verify the accuracy of the resulting cost-effectiveness analysis.

[239] Kordzi Report at 1.

Second, and aside from IDEM's arbitrary failure to independently review those cost analyses, including a source's emissions data *in the record* is a foundational requirement of the Regional Haze Rule. Indeed, IDEM has a legal obligation to submit a SIP that complies with the Clean Air Act and the Regional Haze Rule, which require the state to support any control determination with robust technical analysis, modeling, and importantly, the underlying data necessary to conduct that analysis.[240] In issuing the 2017 Regional Haze Rule revision, EPA made clear that the state is required to "document the technical basis, including modeling, monitoring, cost, engineering, *and emissions information*, on which the State is relying to determine the emission reduction measures that are necessary to make reasonable progress in each mandatory Class I area it affects."[241] Even the seriously flawed 2019 Guidance makes clear that, to meet the requirements of the Regional Haze Rule, "every source-specific cost estimate used to support an analysis of control measures must be documented in the SIP."[242] The Regional Haze Rule's requirement that states document the technical basis for their control determinations makes sense. Indeed, if the state fails to document the technical basis for a source's four-factor analysis, neither the state, EPA, nor the public can rationally review, evaluate, or verify that control analysis. In short, because IDEM does not have source-specific emission data for non-EGU sources in its possession, and therefore failed to include it in the record, the SIP fails to meet the informational requirements of the Regional Haze Rule.

Third, EPA cannot approve the proposed SIP because since the state failed to include that information in the record, as required under the Regional Haze Rule, it is impossible for the public or EPA to independently review or verify the emission data underlying the few control analyses that are in the SIP. EPA has an independent obligation to ensure that the State's analysis complies with the Clean Air Act. *See Alaska Dep't of Envtl. Conservation v. EPA*, 540 U.S. 461, 485 (2004) (upholding EPA's interpretation of the Clean Air Act as authorizing EPA to "review permits to ensure that a State's BACT determination is reasonably moored to the Act's provisions"); *North Dakota v. EPA*, 730 F.3d 750, 761 (8th Cir. 2013) (extending the holding of *Alaska Dep't of Envtl. Conservation* to EPA's role under the haze provisions of the Clean Air Act); *Oklahoma v. EPA*, 723 F.3d 1201, 1208 (10th Cir. 2013) ("Given that the statute mandates that the EPA must ensure SIPs comply with the statute, we fail to see how the EPA would be without the authority to review BART determinations for compliance with the guidelines."). Here, EPA cannot possibly discharge its obligation to ensure that IDEM's ultimate "no controls necessary" determinations for each of Indiana's non-EGU sources are "reasonably moored to the Act's provisions," *Alaska Dep't of Envtl. Conservation*, 540 U.S. at

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[240] 40 C.F.R. § 51.308(f)(2).
[241] 82 Fed. Reg. at 3,126.
[242] Guidance on Regional Haze State Implementation Plans for the Second Implementation Period at 32 (Aug. 2019), EPA-457/B-19-003.

485, because the basic emission data necessary to any four-factor analysis for those sources is not in the record. EPA cannot approve a plan when the federal agency is unable to verify the accuracy of the data on which the plan is based.

Finally, EPA cannot approve IDEM's proposed SIP because the Clean Air Act requires that EPA place in the public rulemaking docket the data on which the proposed rule relies. Specifically, the Act requires that a proposed rule include a summary of the "factual data on which the proposed rule is based," 42 U.S.C. § 7607(d)(3)(A), and such "data . . . on which the proposed rule relies shall be included in the docket on the date of publication of the proposed rule." *Id.* § 7607(d)(3). Here, EPA will necessarily be unable to satisfy those procedural requirements because IDEM failed to include that information in the SIP record itself. By failing to include emission data critical to the underlying rulemaking in the record, IDEM has created a situation in which EPA cannot lawfully approve the rule.[243] Because IDEM failed to include that necessary information in record, EPA must reject the SIP and, after supplementing the record with the missing data, will ultimately need to issue a lawful federal implementation plan.

V. IDEM SHOULD ANALYZE THE ENVIRONMENTAL JUSTICE IMPACTS OF THE PROPOSED SIP.

A recent EPA report found Indiana ranked No. 1 in toxic releases per square mile out of the 50 states, five U.S. territories and the District of Columbia.[244] As a consequence, many environmental justice communities in Indiana are considered "sacrifice zones," which are defined as geographic areas that have been permanently impaired by heavy environmental alterations or economic disinvestment, often through locally unwanted land use. Discriminatory zoning laws have left people of color historically excluded from decision-making processes regarding local land use. As a result, they have been unable to oppose the construction of new industrial facilities in their communities. Additionally, racially restrictive covenants, enforced well into the 1950s, prevented people of color from moving out of polluted areas.[245]

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[243] *See* 42 U.S.C. § 7607(d)(3); *cf. Kennecott Corp. v. EPA*, 684 F.2d 1007, 1018 (D.C. Cir. 1982) ("If that argument be factually based, the financial analyses clearly form a basis for the regulations and should properly have been included in the docket. In all events, absence of those documents, or of comparable materials showing the nature and scope of its prior practice, makes impossible any meaningful comment on the merits of EPA's assertions.").

[244] 2019 TRI Factsheet: State-Indiana, October 2021. Accessed from: https://enviro.epa.gov/triexplorer/tri_factsheet.factsheet_forstate?pYear=2019&pstate=IN&pParent=NAT.

[245] Assessment of Environmental Justice Needs in Northern Lake County Communities. Hoosier Environmental Council, 2019. Accessed from: https://www.hecweb.org/wp-content/uploads/2019/03/HEC-Assessment-of-EJ-Needs-in-Northern-Lake-County-Communities-FINAL-REPORT2.pdf.

The Northwest Indiana (NWI) Region is one of these sacrifice zones and is home to some of the highest concentrations of emissions in the state due to the proximity of polluting industries along the lakefront. The Region houses three of the nation's largest integrated steel mills, one of the world's largest oil refineries, several coal-fired power plants (both active and inactive), and countless industrial facilities including smelters, toxic recyclers, and chemical facilities. According to the EPA, U.S. Steel Gary Works is the state's top polluter, producing 22.5 million pounds of pollutants.[246] Gary has the highest proportion of land devoted to industrial activity of any city in the state. Recently, consecutive pollution spills at the U.S. Steel Portage mill and coal ash leaking through the deteriorating sea wall at the Michigan City Generating Station only add to these worsening environmental justice concerns.

The Region's residents are also among the poorest in the state. While Indiana's poverty rate is approximately 12%, poverty rates are dramatically higher in NWI: Gary (36%), East Chicago (32%) Michigan City (25%), and Hammond (22%).[247] Additionally, many of these communities are majority people of color. All are home to or located near polluting facilities like United States Steel Corporation - Gary Works and Indiana Harbor East and West.

Moreover, a history of white flight in NWI has exacerbated the economic challenges facing these cities. For example, residents of the West Calumet Housing Complex in East Chicago were unknowingly poisoned due to decades of contamination from the defunct USS Lead smelter and neighboring toxic facilities. Beginning in 2016 when cleanup efforts were underway, more than 1,000 individuals and families were forced to become environmental refugees and move out of their homes and relocate. The level of lead uncovered proved 225 times the amount of lead that the EPA considered cleanup-necessary.[248]

These legacy issues in Northwest Indiana underscore our comments and the importance of incorporating environmental justice into IDEM's rulemaking process. There are numerous bases for IDEM to take environmental justice impacts into consideration in developing its proposed SIP. First, in evaluating reasonable progress under the Clean Air Act, the state must consider all "non-air quality environmental impacts of compliance." Although the Regional Haze Rule does not define "non-air quality environmental impacts," the BART Guidelines, which should

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[246] 2019 TRI Factsheet, October 2021.
[247] QuickFacts Indiana. U.S. Census Bureau. 2019. Accessed from: https://www.census.gov/quickfacts/IN.
[248] Daniels, Akeeshea. HUD Knowingly Poisoned Our Children. This Can Never Happen Again. 6 April 2021. Accessed from: https://earthjustice.org/blog/2021-april/superfund-public-housing-lead-poisoning-children.

inform a state's reasonable progress analysis, explain that the term should be interpreted broadly. Moreover, under the Clean Air Act, states are permitted to include in a SIP measures that are authorized by state law but go beyond the minimum requirements of federal law.[249] Environmental justice impacts are the types of "non-air quality environmental" impacts that IDEM should consider and doing so is consistent with the Clean Air Act.

Second, consideration of environmental justice impacts is also consistent with EPA's recent guidance in implementing the Regional Haze Rule. Indeed, the EPA's Clarification Memo explicitly "encourag [ing] states to consider whether there may be equity and environmental justice impacts when developing their regional haze strategies for the second planning period," including by taking such concerns into account in their source selection and four-factor analyses.[250] EPA's Clarification Memo makes clear that states may consider beneficial environmental justice impacts under the "non-air quality environmental impacts" reasonable progress factor. [251] EPA has also endorsed the consideration of guidance intended for use in environmental impact assessments under the National Environmental Policy Act, which includes guidance for evaluating environmental Justice, as part of its Regional Haze planning process.[252]

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[249] *See Union Elec. Co v. EPA*, 427 U.S. 246, 265 (1976) ("States may submit implementation plans more stringent than federal law requires and . . . the Administrator must approve such plans if they meet the minimum requirements of s 110(a)(2)."); *Ariz. Pub. Serv. Co. v. EPA*, 562 F.3d 1116, 1126 (10th Cir. 2009) (quoting *Union Elec. Co.*, 427 U.S. at 265) ("In sum, the key criterion in determining the adequacy of any plan is attainment and maintenance of the national air standards . . . 'States may submit implementation plans more stringent than federal law requires and [ ] the [EPA] must approve such plans if they meet the minimum [Clean Air Act] requirements of § 110(a)(2).'"); *BCCA Appeal Group v. EPA*, 355 F.3d 817, 826 n. 6 (5th Cir. 2003) ("Because the states can adopt more stringent air pollution control measures than federal law requires, the EPA is empowered to disapprove state plans only when they fall below the level of stringency required by federal law.").

[250] 2021 Clarification Memo at 16.

[251] Guidance on Regional Haze State Implementation Plans for the Second Implementation Period, EPA-457/B-19-003 (Aug. 2019).

[252] *Id.* at 33. A collection of EPA policies and guidance related to the National Environmental Policy Act (NEPA) is available at https://www.epa.gov/nepa/national-environmental-policy-act-policies-and-guidance. One of these policies concerns Environmental Justice. *See*, https://www.epa.gov/nepa/environmental-justice-guidance-national-environmental-policy-act-reviews.

Finally, consideration of the beneficial environmental impacts of additional Regional Haze emission reductions would be consistent with, and would further, the nation's environmental justice policy goals. Under Executive Order 12,898, Federal agencies must ensure they are achieving environmental justice goals as a part of their mission. To further that, President Biden's Executive Order 13,990 directs agencies to review and correct federal regulations and agency actions over the last four years that conflict with the national objectives to advance and prioritize environmental justice, and to conserve and protect our national treasures and monuments consistent with federal law. Executive Order 14,008 builds on, and reaffirms, the Biden Administration's commitment to environmental justice, and directs EPA to strengthen the enforcement of the Clean Air Act. Given the plain intent of President Biden's Executive Order that EPA consider environmental justice concerns in implementing the Clean Air Act, the state should consider the environmental justice impacts of its proposed SIP both for sources located in disproportionately impacted communities, and further downwind.

Although IDEM is not bound to adhere to those recent Executive Orders, it certainly has authority to take those factors into consideration. And even if IDEM refuses to evaluate those impacts, EPA will be required to consider environmental justice impacts in reviewing Indiana's SIP submittal. Thus, as a matter of both good public policy and efficiency, IDEM should analyze the environmental justice impacts of its proposed SIP. For those sources located near a low-income or minority community that suffers disproportionate environmental harms, IDEM's four-factor analysis for that source should take into consideration how each considered measure would either increase or reduce the environmental justice impacts to the community. Such considerations will not only lead to sound policy decisions but are also pragmatic as pointed out above, where sectors and sources implicated under the Regional Haze Program are of concern to disproportionately impacted communities in Indiana. Thus, considering the intersection of these issues and advancing regulations accordingly will help deliver necessary environmental improvements across Clean Air Act programs and issue areas, reduce uncertainty for the regulated community, increase the state's regulatory efficiency, result in more rational decision making.

VI. CONCLUSION

We urge IDEM to reevaluate its proposed SIP especially in light of EPA's July 8, 2021 Clarification Memo, which confirms that the proposed SIP is fundamentally flawed. Due to the deficiencies outlined above and in the attached Kordzi Report, the state must revise and reissue a valid regional haze SIP for public notice and comment. Please do not hesitate to contact us with any questions or to discuss the matters raised in these comments.

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