

**BEFORE THE ADMINISTRATOR**

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

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In the Matter of the Operating Permit Renewal for:

PURDUE UNIVERSITY, 401 S. Grant Street,  
Freehafer Hall, to operate emission units  
including a utility plant in West Lafayette,  
Indiana

Permit No. T157-27313-00012

Petition No.: V-2010- \_\_\_\_\_

Issued by the Indiana Department of  
Environmental Management

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**PETITION REQUESTING THAT THE ADMINISTRATOR OBJECT TO THE  
ISSUANCE OF A TITLE V OPERATING PERMIT FOR PURDUE UNIVERSITY**

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SIERRA CLUB

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Date: October 25, 2010

Pursuant to Clean Air Act § 505(b)(2) and 40 CFR § 70.8(d), Sierra Club and Hoosier Environmental Council (“Petitioners”) hereby petition the Administrator of the United States Environmental Protection Agency (“U.S. EPA”) to object to the Title V Operating Permit Renewal for the source located at 401 S. Grant Street, Freehafer Hall, West Lafayette, Indiana (“Permit”), issued by the Indiana Department of Environmental Management (“IDEM” or “Agency”) to Purdue University (“Purdue” or “Permit Applicant”). A true and accurate copy of the Permit is attached hereto as Exhibit 1.

Petitioners provided comments to the Agency on the draft proposed permit leading up to the Permit. A true and accurate copy of comments relevant to this Title V petition are attached as Exhibits 2 and 3. The Agency’s initial statement of basis, a/k/a Technical Support Document (“TSD”), is attached as Exhibit 4, and its TSD Addendum containing IDEM’s response to comments is attached as Exhibit 5.

This petition is filed within sixty days following the end of U.S. EPA’s 45-day review period, as required by Clean Air Act § 505(b)(2). The Administrator must grant or deny this petition within sixty days after it is filed.

If the Administrator determines that this Permit does not comply with the requirements of the Clean Air Act (“CAA”) or 40 C.F.R. Part 70, she must object to its issuance. *See* 40 C.F.R. § 70.8(c)(1) (“The Administrator will object to the issuance of any permit determined by the Administrator not to be in compliance with applicable requirements or requirements of this part.”). In this case, since the Permit has already been issued, EPA or IDEM must modify, terminate, or revoke and reissue the Permit to address the Administrator’s objections. 40 C.F.R. §§ 70.7(g)(4) and (5)(i), (ii), 70.8(d).

The Permit fails to comply with the applicable CAA requirements and/or the requirements of 40 C.F.R. Part 70 in the following ways. First, the Permit's monitoring requirements are insufficient to determine compliance as required by 40 C.F.R. § 70.6(a)(3)(B), (C) and 70.6(c), and 326 IAC 2-7-5(1), (3). Second, the Permit's PSD netting analysis is faulty because it does not take into account unpermitted and illegal modifications of Boiler 1, the source of the netting analyses' contemporaneous decreases, or any other boiler. Relatedly, the Permit application failed to identify these unpermitted modifications and an appropriate compliance schedule, as did the final Permit. Therefore, the Permit is not in compliance with the Act and its applicable requirements, and the Administrator must object.

## **I. BACKGROUND**

### *A. The Title V Permitting Program.*

Section 502(d)(1) of the CAA, 42 U.S.C. § 7661a(d)(1), requires each state to develop and submit to EPA an operating permit program intended to meet the requirements of Title V of the Act. EPA granted final full approval of the Indiana Title V operating permit program effective November 30, 2001. 66 Fed. Reg. 62969 (Dec. 4, 2001). Indiana's Title V program is incorporated into the Indiana Administrative Code at 326 IAC 2-7.

All major stationary sources of air pollution and certain other sources are required to apply for Title V operating permits that include emission limits and such other conditions as are necessary to ensure compliance with applicable requirements of the Act, including the requirements of the applicable State Implementation Plan ("SIP").

42 U.S.C. § 7661a(a) and 7661c(a). The Title V operating permit program does not generally impose new substantive air quality control requirements (referred to as “applicable requirements”), but does require permits to contain monitoring, recordkeeping, and other requirements to assure compliance by sources with existing applicable emission control requirements. 57 Fed. Reg. 32250, 32251 (July 21, 1992); 326 IAC 2-7-5(3) (requiring permits to contain “[m]onitoring and related record keeping and reporting requirements, which assure that all reasonable information is provided to evaluate *continuous compliance* with the applicable requirements”) (emphasis added). A central purpose of the Title V program is to “enable the source, states, EPA, and the public to better understand those requirements to which the source is subject, and whether the source is meeting those requirements.” 57 Fed. Reg. at 32251. Thus, “the Title V operating permit program is a vehicle for ensuring that existing air quality control requirements are appropriately applied to facility emission units and that compliance with these requirements is assured.” *In re BP Products North America, Inc., Whiting Business Unit*, Permit No. 089-25488-00453 at 2 (Order, 10/16/09) (hereinafter “*BP Whiting*”).<sup>1</sup>

A Title V permit must include requirements of the CAA’s Prevention of Significant Deterioration (“PSD”) program, including the obligation to comply with Best Available Control Technology (“BACT”) limits and undertake air impact analyses. 40 C.F.R. § 70.2 (defining “applicable requirements” that must be contained in a Part 70

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<sup>1</sup> Available at [http://www.epa.gov/region7/air/title5/petitiondb/petitions/bpwhiting\\_response2008.pdf](http://www.epa.gov/region7/air/title5/petitiondb/petitions/bpwhiting_response2008.pdf).

permit to include Title I, Part C and its regulations); *In re Monroe Electric Generating Plant*, Petition No. 6-99-2 at 2 (EPA Adm'r 1999). "Applicable requirements" also include requirements under CAA § 112. 326 IAC 2-7-1(6)(D).

*B. Agency Review of the Permit.*

The Permit at issue in this petition is intended to renew Purdue's Part 70 Operating Permit for its West Lafayette campus in Tippecanoe County, issued on June 30, 2004 (IDEM Permit No. T 157-7340-00012). That permit authorized operation of a variety of sources on the Purdue campus, including:

- Boiler 1, a 281 MMBtu/hour spreader stoker coal fired boiler installed in 1960
- Boiler 2, a 274 MMBtu/hour spreader stoker coal fired boiler installed in 1967
- Boiler 3, a 286 MMBtu/hour natural gas and distillate fuel oil fired boiler installed in 1974
- Boiler 5, a 279 MMBtu/hour circulating fluidized bed boiler installed in 1991

IDEM Permit No. T 157-7340-00012. The 2004 permit also identified Purdue as a major source for purposes of PSD and Section 112 of the Clean Air Act. *Id.* at 8.

In January 2009, the permitted sought a Significant Source PSD Modification (IDEM Permit No. 157-27361-00012) permit to allow it to construct new emissions sources, including one 380 MMBtu/hr coal-fired CFB (Boiler 6) and one 290 MMBtu/hr natural gas-fired boiler (Boiler 7). IDEM consolidated its review of the modification permit with the operating permit renewal at issue here, issuing a single draft permit for both the modification and renewal on approximately March 15, 2010.

In the draft permit, IDEM agreed with Purdue that the addition of Boilers 6 and 7, along with associated processes such as coal, ash, and limestone handling systems, constituted a “minor” modification for PSD purposes (i.e., not subject to PSD requirements) because any increase in emissions would be offset – or “netted” out – by the planned shutdown of Boiler 1. (Exhibit 4 at 10-11.) Without the Boiler 1 shutdown, however, it is undisputed that the modification would be “major” (and subject to PSD requirements) because emissions of particulate matter (PM), PM10, PM2.5, sulfur dioxide (SO<sub>x</sub>), nitrogen oxide (NO<sub>x</sub>), carbon monoxide (CO), and Beryllium (Be) would exceed significant thresholds. (Exhibit 4, Appx. A at 1.) Additionally, emissions of sulfuric acid mist (H<sub>2</sub>SO<sub>4</sub>) would exceed significant thresholds prior to permit limits. (*Id.*)

On April 14, 2010, Petitioners timely submitted comments to IDEM on the combined draft modification and renewal permit and agency TSD. (Exhibit 2.) Among other bases for challenging the draft permit, Petitioners commented that 1) IDEM had failed to explain how the draft permit’s monitoring requirements would ensure continuous compliance with limits for PM, PM10, and PM2.5, CO, H<sub>2</sub>SO<sub>4</sub>, and hydrogen chloride (HCl) for various processes, and 2) the draft permit’s netting analysis was faulty because, *inter alia*, it did not take into account non-compliant emissions resulting from unpermitted modifications of Boiler 1 that potentially triggered PSD requirements, including the requirement to install Best Available Control Technology (“BACT”). Petitioners submitted additional permit comments on May 14, 2010, after IDEM extended the comment deadline. (Exhibit 3.) These comments reserved the right

to raise additional issues pending Sierra Club's review of documents responsive to its public records requests to Purdue and IDEM submitted one month previously (Exhibits 6, 7).

In its response to comments, contained in its Technical Support Document Addendum ("TSD Addendum," Exhibit 5), IDEM provided little clarification as to why (or if) the draft permit's compliance monitoring provisions were adequate and made no changes based on Petitioners' comments. (*Id.* at 27-31.) However, in response to Purdue's decision to install a continuous emissions monitoring system (CEMs) for CO on proposed new Boiler 6, IDEM did change the monitoring requirements for that unit and pollutant in the final permit. (*Id.* at 30.) IDEM also stated that it "checks for current compliance issues and/or enforcement actions during the processing of all permit applications" and determined there were no pending enforcement actions related to Purdue, and further that it was "not aware" of any modifications that triggered NSPS or BACT requirements on Boiler 1. (*Id.* at 22.)

Purdue responded to Sierra Club's public records request by letter dated July 21, 2010, well after the comment deadline on the draft permit. (Exhibit 8.) Its response included documents showing that Purdue had undertaken a major initiative in the late 1990s and early 2000s entitled "Boiler Life Extension-Utility Systems Expansion," which included major modifications on Boiler 1 that triggered PSD requirements. This initiative is discussed further in Section IV.A., *infra*.

## II. STANDARD OF REVIEW

In reviewing a Title V petition, the Administrator must object where petitioners “demonstrate” that the permit “is not in compliance with the requirements of [the Clean Air Act], including the requirements of the applicable implementation plan.” 42 U.S.C. § 7661d(b)(2). The EPA will “generally look to see whether the Petitioner has shown that the state did not comply with its SIP-approved regulations governing PSD permitting or whether the state’s exercise of discretion under such regulations was unreasonable or arbitrary.” *In re Louisville Gas and Elec. Co. (Trimble Co. Gen. Station)*, Petition No. IV-2008-3, Order on Petition at 5 (Adm’r, August 12, 2009)<sup>2</sup> (hereinafter “*Trimble*”) (citing *In re East Kentucky Power Cooperative, Inc. (Hugh L. Spurlock Generating Station)* Petition No. IB-2006-4 (Order on Petition) (August 30, 2007)); *In re Pacific Coast Building Products, Inc. (Order on Petition)* (December 10, 1999); *In re Roosevelt Regional Landfill Regional Disposal Company (Order on Petition)* (May 4, 1999)). This inquiry includes whether the permitting authority “(1) follow[ed] the required procedures in the SIP; (2) [made] PSD determinations on reasonable grounds properly supported on the record; and (3) describe[d] the determinations in enforceable terms.” *Id.* at 4 (citing 68 Fed. Reg. 9,892 (March 3, 2003) and 63 Fed. Reg. 13,795 (March 23, 1998)).

To guide her review, the Administrator has looked to the standard of review applied by the Environmental Appeals Board (“EAB”) in making parallel

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<sup>2</sup> Available at [http://www.epa.gov/region7/air/title5/petitiondb/petitions/lg\\_e\\_2nddecision2006.pdf](http://www.epa.gov/region7/air/title5/petitiondb/petitions/lg_e_2nddecision2006.pdf).

determinations under the federal PSD permit program.<sup>3</sup> The EAB recently has reiterated the importance of BACT determinations, stating that they are “one of the most critical elements in the PSD permitting process and thus ‘should be well documented in the record, and any decision to eliminate a control option should be adequately explained and justified.’” *In re Desert Rock Energy Company, LLC*, 14 E.A.D. \_\_\_, PSD Appeal Nos. 08-03, 08-04, 08-05, & 08-06, Slip Op. at 50 (EAB, Sept. 24, 2009) (hereinafter “*Desert Rock*”). Therefore, the EAB has regularly remanded permits where the permitting authority’s BACT analyses were “incomplete or the rationale was unclear.” *Id.*

### **III. THE ADMINISTRATOR MUST OBJECT BECAUSE IDEM HAS FAILED TO EXPLAIN HOW THE PERMIT’S MONITORING PROVISIONS ASSURE COMPLIANCE WITH THE APPLICABLE EMISSION LIMITS.**

#### *A. Proper Monitoring Provisions are Essential to Ensuring Compliance with Permit Limits.*

A Title V permit “must contain sufficient monitoring to ensure compliance with the terms and conditions of the permit.” *In re Oak Creek Power Plant*, Permit No. 241007690-P10, at 15 (June 12, 2009) (citing 40 C.F.R. § 70.6(c)(1); *id.* § 70.6(a)(3)(i)(B)) (“*Oak Creek*”).<sup>4</sup> As Indiana’s SIP similarly provides, Title V permits must contain “[m]onitoring and related record keeping and reporting requirements, which assure

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<sup>3</sup> *Id.* at fn. 6. Petitioners note that they disagree with the importation of the EAB’s clearly erroneous standard into the Title V process. A “preponderance of the evidence” standard is more appropriate for reviewing state agency Title V determinations. Unlike the standards of review adopted in 40 C.F.R. part 124 for EAB review, the Administrator’s decision to object to a Title V permit is only based on a finding that the permit “is not in compliance with the requirements of” the Act. 42 U.S.C. § 7661d(b)(2). This is the typical preponderance standard for administrative findings.

<sup>4</sup> Available at [http://www.epa.gov/region7/air/title5/petitiondb/petitions/oak\\_creek\\_decision2007.pdf](http://www.epa.gov/region7/air/title5/petitiondb/petitions/oak_creek_decision2007.pdf).

that all reasonable information is provided to evaluate *continuous compliance* with the applicable requirements.” 326 IAC 2-7-5(3) (emphasis added); *see also* 40 C.F.R. §§ 70.6(a)(3)(i)(B). Further,

Where an applicable requirement does not require periodic testing or instrumental or noninstrumental monitoring (which may consist of record keeping designed to serve as monitoring), [a Part 70 permit must contain] such periodic monitoring specifications sufficient to yield reliable data from the relevant time period that are representative of the source’s compliance with the Part 70 permit as reported under clause (C). Such monitoring requirements shall assure use of terms, test methods, units, averaging periods, and other statistical conventions consistent with the applicable requirement. Recordkeeping provisions may be sufficient to meet the requirements of this item.

326 IAC 2-7-5(3)(A)(ii). This latter requirement has been referred to as the “periodic monitoring rule.” *In the Matter of Midwest Generation, LLC, Waukegan Generation Station, Order Responding to Petitioner’s Request That the Administrator Object to Issuance of a State Operating Permit at 19* (Sept. 22, 2005) (hereinafter “*Waukegan*”) (citing 69 Fed. Reg. at 3202, 3204 (Jan. 22, 2004))<sup>5</sup>; *see also Sierra Club v. EPA*, 536 F.3d 673, 675 (D.C.Cir. 2008) (“[w]here the applicable requirement does not require periodic testing,” subsection 70.6(a)(3)(8) obliges the permitting authority to add to the permit ‘periodic monitoring sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit’”); *Appalachian Power Co. v. EPA*, 208 F.3d 1015 (D.C. Cir. 2000).

Monitoring control equipment parameters may be sufficient to determine compliance with underlying emission limits over the relevant time period. This

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<sup>5</sup> Available at [http://www.epa.gov/region7/air/title5/petitiondb/petitions/midwest\\_generation\\_waukegan\\_decision2004.pdf](http://www.epa.gov/region7/air/title5/petitiondb/petitions/midwest_generation_waukegan_decision2004.pdf).

requires a connection between the monitoring established and required in the permit and the underlying emission limit and averaging time. Where direct monitoring is not required on a continuous basis, the permitting authority must establish another monitoring scheme in the permit to ensure continuous compliance. This is often done through “parametric monitoring,” where the permittee is required to monitor various parameters of its operation that ensure compliance with the limits. This in turn requires the permitting authority to establish a correlation between the parametric monitoring and compliance with the permit limit, typically by establishing monitoring frequency and performance ranges for the control equipment. *In the Matter of Oxy Vinyls, LP, Louisville, Kentucky, Objection to Proposed Part 70 Operating Permit No. 212-99-TV (Feb. 1, 2001)* (“The permit must specify the parametric range or procedure used to establish that range, as well as the frequency for re-evaluating the range.”). Simply stated, without a connection between the parametric monitoring frequency and parameter ranges and the underlying limit, the parametric monitoring does not fulfill Part 70’s continuous monitoring requirements.

Further, if the parameter range correlated to compliance is not set in the permit, the permit is not enforceable. As the Administrator explained when objecting to a permit for Gannon Station in Florida:

While the permit does include parametric monitoring of emission unit and control equipment operations in the O & M plans for these units... the parametric monitoring scheme that has been specified is not adequate. The parameters to be monitored and the frequency of monitoring have been specified in the permit, but the parameters have not been set as enforceable limits. *In order to make the parametric monitoring conditions enforceable, a correlation needs to be developed between the control equipment*

*parameter(s) to be monitored and the pollutant emission levels.* The source needs to provide an adequate demonstration (historical data, performance test, etc.) to support the approach used. In addition, an acceptable performance range for each parameter that is to be monitored should be established.

*In the Matter of Tampa Electric Co., F.J. Gannon Station, Objection to Proposed Part 70 Operating Permit No. 0570040-002-AV (Sept. 8, 2000) (emphasis added); see also In the Matter of the Huntley Generating Station, Order Objecting to Operating Permit No. II-2002-01 at 21-22 (Adm'r July 31, 2003) (same); Waukegan, supra, at 20 (finding the agency failed to "include a correlation between these measurements and compliance with the PM emission limitations").*

Similarly, where a permit authority relies on surrogate monitoring of one pollutant to ensure compliance with limits for another pollutant, an on-the-record correlation is required. For example, courts have held that a surrogate may be used only after it has been shown to be reasonable to do so. *See, e.g., Sierra Club v. EPA*, 353 F.3d 976, 982-84 (D.C. Cir. 2004) (stating general principle that EPA may use a surrogate if it is "reasonable" to do so and applying parallel analysis from *National Lime Assoc. v. EPA*, 233 F.3d 625, 637 (D.C. Cir. 2000) regarding use of a surrogate in setting emissions limitations for hazardous air pollutants under Section 112 of the Act); *Mossville Envot'l Action Now v. EPA*, 370 F.3d 1, 18 (D.C. Cir. 2004) (holding that EPA must explain the correlation between the surrogate and the represented pollutant that provides the basis for the surrogacy); *Bluewater Network v. EPA*, 370 F.3d 1, 18 (D.C. Cir. 2004) ("The Agency reasonably determined that regulating [hydrocarbons] would control PM pollution . . . because HCl provides a good proxy for regulating fine PM emissions").

Consistent with this approach, the Administrator has previously specifically required a direct correlation between opacity and particulate matter when a permitting authority attempts to use opacity as a surrogate for Part 70 monitoring of particulates.

Neither the permit nor the permit record demonstrates how the COM, PM testing and record keeping will be used to demonstrate ongoing compliance with the PM emission limitations. However, [the] permit term implies that the COMs, which measure opacity, would also address compliance with the PM emission limitation.

While opacity from a boiler stack is a good indicator of boiler operation and combustion efficiency, an exact correlation between opacity and PM limits can be difficult to establish. Accordingly, we are unable to determine, based on the information contained in the permit record, whether opacity monitoring is an appropriate surrogate for monitoring [compliance with] PM emission limits. In our judgment, any such correlation regarding the Waukegan facility must be made using COMs data from the time that the PM stack test was run. Stack tests performed for compliance determinations often result in emission that are lower than the limit in the applicable requirement....

In this case, since IEPA used opacity and [sic] as one of the surrogate methods to assure compliance with PM limits, the title V permit must include a specific opacity limit or method for determining an opacity limit that would correlate the results of the PM testing results and the opacity limit...

IEPA must include a specific opacity limit or a method for determining an opacity limit that would correlate the results of the PM testing and the opacity limit in a manner that assures compliance with the PM limit, and must incorporate into the permit specific operational limits (upper level or lower level) and/or operational ranges or a method for determining the ranges.

*Waukegan, supra*, at 20-21. Notably, on remand, the state agency in the *Waukegan* case established a specific and enforceable opacity limit.

In summary, if a permitting authority relies on parametric or surrogate monitoring to satisfy Part 70's monitoring requirement, it is the permitting agency's duty to:

1. Establish a specific correlation between the monitoring frequency and range and compliance with the underlying limit;
2. Adequately explain in the Statement of Basis (subject to public review and comment) how the chosen parametric monitoring regime provides adequate monitoring.; and
3. Ensure permit enforceability by establishing in the permit the parameter range correlated to compliance with the underlying emission limit.

*Oak Creek, supra*, at 16; *Tampa Elec., supra*. IDEM has failed to do so here.

B. *The Permit's Particulate Matter Monitoring Provisions Do Not Assure Compliance with Applicable Limits.*

The Permit imposes the following PM limits, all of which are subject to the periodic monitoring rule:

**Boiler 1 and Boiler 2:** .64 lb/MMBtu PM (no separate PM10 or PM2.5 limit)

**Boiler 3:** .10 lb/MMBtu PM (no separate PM10 or PM2.5 limit; natural gas fired)

**Boiler 5:** .051 lb/MMBtu PM (no separate PM10 or PM2.5 limit)

**Boiler 6:** 36.30 TPY PM, 169.40 TPY PM10, 169.4 TPY PM2.5

**Boiler 7:** .0019 lb/MMBtu PM, .0075 lb/MMBtu PM10, .0075 lb/MMBtu PM2.5 (natural gas fired)

**Coal storage and handling:** 8.0 TPY PM, 8.0 TPY PM10, 1.5 TPY PM2.5

**Ash handling:** 6.71 lb/hour PM, 3.42 lb/hour PM10 for ASH Segment 1, 6.0 TPY PM, 3.0 TPY PM10, and 3.0 TPY PM2.5 for ASH Segment 2.

**Limestone injection/handling:** 6.0 TPY PM, 6.0 TPY PM10, 2.0 TPY PM2.5.

(Exhibit 1 §§ D.1.2, D.2.2(c-e), D.4.1.(d-f), D.5.1(a-c), D.6.1., D.6.2, D.7.1.(a-c); *see also* Exhibit 4 at 22 (identifying PM limits for Boilers 3 and 5 pursuant to NSPS Dd).)

Despite the various limits applicable to various sources, IDEM attempts to impose one-size-fits-all monitoring requirements in the Permit, then fails to explain how such requirements assures compliance with the limits.

For **Boilers 1 and 2**, the Permit relies on an ESP and baghouse to control PM emissions. (Exhibit 1, § D.1.9; Exhibit 4 at 22-24.) The Permit includes three methods to ensure compliance with the 0.64 lb/MMBtu limit: 1) compliance with a 40% opacity limit (or, alternatively, 60% for events like startup/shutdown and ash removal) using a continuous opacity monitor (COMs), with “response steps” required above 25% opacity levels on Boiler 1 and 20% on Boiler 2, 2) stack testing once every two years, and 3) if the COMs is down for more than 24 hours:

- Parametric monitoring of the voltage levels Boiler 1 ESP once per day, with response steps required if the voltage exceeds the following ranges: (1) Primary voltage: 275 - 430 V, (2) Secondary voltage: 29 - 45 kV, (3) T-R set secondary current: 150 - 405 mA.
- Pressure drop readings on the Boiler 2 baghouse once per day, with “response steps” required if the pressure drop exceeds a 1-7” range.

(Exhibit 4 at 22-23; Exhibit 1 § D.1.6, .8, .11, .13-.15.)

These monitoring measures are insufficient to ensure compliance with the instantaneous .64 lb/MMBtu PM limit on Boilers 1 and 2 for at least three reasons. First, as Petitioners pointed out in their comments, IDEM has failed to link (i.e., correlate) the 40% opacity limit (or 60%, depending on the circumstances) to compliance with the .64 lb/MMBtu limit. (Exhibit 2 at 18.) As noted in EPA’s *Waukegan* decision,

such a link would require a comparison of PM stack test results with contemporaneous opacity monitoring results. No such documentation exists. In fact, IDEM has provided no basis for its apparent reliance on 40% and 60% opacity as a surrogate. Instead, IDEM's response to comments merely asserts a general "relationship" between opacity and PM emissions. (Exhibit 5 at 28.) IDEM additionally states, without support, that "response steps" (which are not established as continuous monitoring pursuant to 40 C.F.R. §§ 70.6(a)(3) or 70.6(c)) are imposed at 20% and 25% "because IDEM has determined that opacity below these levels are indicative of baghouse operation in a manner necessary to comply with the particulate emission standard." (*Id.* at 28.) Nowhere in record, however, is there a basis for this "indication." Nor is the 20% opacity level established as an enforceable limit. This falls well short of IDEM's obligations to establish a basis for surrogate monitoring.

Second, stack testing once every two years is facially inadequate to ensure compliance with a 0.64 lb/MMBtu PM limit, which applies instantaneously. See EPA's Review of Proposed Title V Permit No. 0170004004-AV, Florida Power Corp., Crystal River Plant at 7 (Nov. 1, 1999) (providing that annual stack test monitoring is insufficient and that Title V permits must include more monitoring to show continuous compliance) (hereinafter "*Crystal River*").<sup>6</sup> Furthermore, IDEM claims that the two-year period is appropriate given the "variables of the size and type of the emission units in question, use and maintenance of associated control equipment, and the performance history of the stack tests conducted by the source," but this claim is belied by the fact

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<sup>6</sup> Available at <http://www.epa.gov/region7/programs/artd/air/nsr/nsrmemos/fpc.pdf>.

that IDEM has imposed biennial stack testing for *every* boiler. (Exhibit 4 at 22-23.) If IDEM points to no basis in the record for a conclusion that such infrequent stack testing is appropriate for each boiler. Merely asserting a self-serving conclusion is insufficient to satisfy IDEM's obligations under Part 70.

Third, while Purdue is required to continuously operate the ESP and baghouse, the parametric monitoring of these devices is only required if the opacity monitor fails, and then only after 24 hours of failed opacity monitoring. Nonetheless, IDEM has not and cannot explain how checking the voltage and baghouse parameters only once per day ensures compliance with the PM limit for Boilers 1 and 2, much less how the parameters IDEM has chosen ensure continuous compliance in their own right.

In short, the Permit contains monitoring requirements similar to those that the Administrator has previously rejected, such as in the *Waukegan* permit. The Administrator must object.

**Boiler 5** relies on a baghouse to ensure compliance with the 0.051 lb/MMBtu PM limit (required by NSPS), but the Permit's monitoring provisions for this source (40%-60% opacity, stack testing every two years, and daily baghouse parametric monitoring if the COMs is down) suffer from the same problems as those applicable to Boilers 1 and 2. (Exhibit 4 at 22-23; Exhibit 1 § D.2.5, .7, .11, .14, .15.) Specifically, there is no basis for the use of a 40/60% opacity limit as a surrogate, no correlation between those opacity levels and the underlying PM limit, and no explanation in the Statement of Basis. For these reasons, the Administrator must object to the PM monitoring on Boiler 5.

Similarly, **Boiler 6** also relies on opacity monitors to comply with the 36.30 TPY limit for PM, 169.4 TPY limit for PM10, and 169.4 TPY limit for PM2.5—limits that are necessary to ensure Boiler 6's status as a PSD minor modification. (Exhibit 4 at 24 & Appx. A at 1-2; Exhibit 1 at § D.2.2, 15, .19.) In this case, IDEM's failure to explain its determination that the same opacity limits (40-60%) correlate with Boiler 6's PM limits is even more puzzling, because the limit is expressed in tons per year, and there is no methodology in the Permit for converting continuous opacity monitor readings into TPY compliance determinations. In other words, the monitoring is not only unconnected to the underlying limits—it does not appear that such a correlation is even possible.

It is true that the Permit provides an additional method for determining compliance with the PM limits on Boiler 6: the formula  $E = U \times HV \times EF$ , where

$E$  = Pollutant Emissions, tons/month

$U$  = Coal Usage, tons coal/month

$HV$  = Coal Heating Value, MMBtu/ton coal; Btu/lb  $\times$  2000 lb/ton/1,000,000 Btu/MMBtu

$EF$  = Pollutant emission rate, ton/MMBtu; lb/MMBtu / 2000 lb/ton

$EF_{PM}$  = 0.03 lb/MMBtu or other value as determined during the last valid compliance demonstration

$EF_{PM10}$  = 0.14 lb/MMBtu or other value as determined during the last valid compliance demonstration

$EF_{PM2.5}$  = 0.14 lb/MMBtu or other value as determined during the last valid compliance demonstration

(Exhibit 1, § D.2.8(e).) This formula supplies an emission factor for PM, PM10 and PM2.5 for each ton of coal, but the basis for the emission factor is not clear. More importantly, there is no requirement that the boiler achieve continuous compliance with limits equal to the assumed emission rates. The monitoring merely limits the amount of coal, not the amount of particulate emissions. At a minimum, the permit must include emission limits equal to the assumed emission factors to actually ensure that emissions stay below the tons-per-year limits. Additionally, this formula will only detect exceedences of the PSD significance thresholds after Boiler 6 has been operating, an after-the-fact approach that defeats the purposes of the PSD program's pre-construction review. *BP Whiting, supra*, at 8-10 (requiring IDEM to explain how certain process emissions were accounted for in the netting analysis rather than relying on post-permit emissions monitoring).

The Permit does require stack testing, which can (not "must") be used to determine the emission factor for the formula noted above. However, this stack testing is only conducted 180 days after startup, and then every two years thereafter. Especially considering Boiler 6 is a new boiler, stack testing should be conducted more frequently, both to ensure use of a more accurate emission factor in the formula, and to determine compliance. *Crystal River, supra*, at 7; *U.S. v. Cinergy Corp.*, 618 F. Supp. 2d 942, 970 (S.D.Ind. 2009) (noting stack testing measure was only a "spot-check on the average of three hours worth of emissions"); *BP Whiting, supra*, at 11 (granting Title V petition because IDEM failed to explain emission factors).

IDEM has also failed to explain how monitoring requirements for the **coal handling and storage** processes (COAL segments 1 and 2), **the pneumatic ash handling system** for fly ash from Boilers 1, 2, 5, and 6 (ASH Segments 1 and 2), and Boiler 5/6's **limestone injection/handling system's** ("LSBH1, BVL15, and BVLI6") PM, PM10, and PM2.5 limits are sufficient. All of these processes are subject to PSD synthetic minor limits on PM, PM10, and PM2.5 expressed in tons per year, except for ASH Segment 1, which is subject to hourly PSD minor limits for PM and PM10. (Exhibit 1 §§ D.5.1, D.6.1, D.7.1.)<sup>7</sup> For each, IDEM provides that compliance is determined by "visible emissions notations" taken once per week, parametric monitoring of the baghouse pressure drop (weekly for COAL Segment 2 and the limestone handling system, daily for ASH Segments 1 and 2), and monthly coal record keeping paired with a formula similar to the one for Boiler 6. (*Id.* § D.5.5, D.5.6, D.5.7, D.5.10, D.6.5, D.6.6, D.6.7, D.6.8, D.6.10, D.7.5, D.7.6, D.7.7, D.7.9.; Exhibit 4 at 24.)

Similar to the missing basis for the surrogacy monitoring for particulates from the boilers, IDEM fails to explain how the material handling measures will ensure compliance with and correlate to the yearly particulate matter limits. IDEM offers only the conclusory and unsupported assertion that "IDEM relies on opacity as a measure of PM emissions and the various handling operations are subject to opacity limitations as a means of demonstrating compliant PM emissions." (Exhibit 5 at 30.) This is not exactly true: while Purdue is required to take visible emission readings, the Permit does not

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<sup>7</sup> These sources are also subject to hourly PM limits under certain operating conditions, but these limits were not addressed in Petitioners' public comments.

appear to require any actual opacity limits on these processes. Rather, an employee trained in taking Method 9 readings must determine whether the readings are “normal” or “abnormal.” (Exhibit 1 § D.5.6.) Even if the employee observes “abnormal” emissions, this is not a permit violation but only a trigger for “response steps.” (*Id.*) There is no correlation of opacity or visible emission readings to emission rates sufficient to ensure synthetic minor status. Nor is there sufficient data in the record from which IDEM (or anyone else) could make such a correlation.

IDEM also fails to explain how the parametric baghouse pressure drop ranges specified in the Permit for coal, ash, and lime handling correlate to compliance with the PSD minor limits for PM, PM10, and PM2.5 at each source, especially when those readings are only required daily or weekly. (*See* Exhibit 4 at 24; Exhibit 5 at 30.) IDEM states that this parametric monitoring is “designed to document the performance of this PM control equipment,” but this presumes that performance of the control equipment equates to compliance with the limits. (Exhibit 5 at 30.) This presumption must have a basis in the record and IDEM fails to identify it.

Finally, IDEM relies on a formula based on tons of coal, fly ash, or limestone processed to calculate yearly emissions, stating “[t]hese procedures are designed to monitor the source’s continuous compliance, using a 12-month rolling average.” (Exhibit 5 at 31.) Even if this is true – which is uncertain, since IDEM has failed to explain how the emission factors it has chosen to use in the formula are enforceable – this *annual* formula does nothing to ensure compliance with the *hourly* PSD minor limits on ASH segment 1: 5.71 lb/hr PM and 3.42 lb/hr PM10. (Exhibit 1 § D.6.1, .6.) The

formula used for these sources also suffers from the same “after the fact” problem as the formula used for checking compliance with Boiler 6’s PSD minor limits.

For all of these reasons, the Administrator must object to the Permit due to the deficient and unexplained particulate matter compliance monitoring required for the sources identified above.

*C. The Permit’s Monitoring Provisions Fail to Assure Compliance with H<sub>2</sub>SO<sub>4</sub> and HCl Limits on Boiler 6.*

For Boiler 6, the Permit imposes similar types of synthetic minor limits for H<sub>2</sub>SO<sub>4</sub> and HCl:

- “less than 7.0 tons per 12 (12) consecutive month period” of H<sub>2</sub>SO<sub>4</sub>, and
- “less than 10.0 tons per twelve (12) consecutive month period” of HCl.

(Exhibit 1 §§ D.2.2(h), D.2.3.) Without these limits, the addition of Boiler 6 would be a major modification for PSD purposes, as uncontrolled H<sub>2</sub>SO<sub>4</sub> emissions are 9.16 TPY, in excess of the 7.0 TPY significance threshold. (Exhibit 1 § D.2.2; Exhibit 4, Appx A at 1.)

Similarly, since uncontrolled HCl emissions from Boiler 6 are 33.29 TPY, well in excess of the 10 TPY limit on any single hazardous air pollutant (“HAP”) and 25 TPY for all HAPs, the limit on HCl is also imposed to avoid review under § 112(g). (Exhibit 1 § D.2.3; Exhibit 4, Appx. A at 1.) While H<sub>2</sub>SO<sub>4</sub> emissions are purportedly controlled by lime injection, the HCl emissions are not subject to control by any control device.

(Exhibit 4 at 23.)

The Permit provides that compliance with the H<sub>2</sub>SO<sub>4</sub> and HCl limits is determined by stack testing within 180 days of startup and every two years thereafter.

(Exhibit 1 § D.2.7.) Armed with the emission factor discovered during this stack test, the Permit then anticipates relying on the same formula cited above for Boiler 6:  $E = U \times HV \times EF$ . (Exhibit 1 §§ D.2.8(e-f), D.2.9, D.2.19(f-g).) However, the Permit also gives Purdue the option to use an emission factor of 0.0055 lb/MMBtu PM for H<sub>2</sub>SO<sub>4</sub>, regardless of what the actual emissions are or what the stack test reveals. This emission factor must also be used to determine compliance until the first stack test is conducted. (Exhibit 1 § D.2.8(e).) Apparently, the 0.0055 lb/MMBtu H<sub>2</sub>SO<sub>4</sub> emission factor was derived from a manufacturer's guarantee, but it is not an enforceable permit limit. (Exhibit 4 Appx. A at 3.) Similarly, the Permit gives Purdue the option of using an HCl emission factor of 0.00826 lb/MMBtu, which is of unclear origin and is also not an enforceable emission limit. (*Id.*; Exhibit 1 § D.2.9.)

Petitioners stated in their comments that IDEM had not explained how the use of this formula, combined with biennial stack testing, ensured compliance with the synthetic minor limits for H<sub>2</sub>SO<sub>4</sub> and HCl, both of which are close to the significance threshold triggering PSD review. (Exhibit 2 at 19.) IDEM replied that the emission rates were "derived from sources that IDEM finds credible – AP-42 factors, comparable data from similar sources, and manufacturer's guarantees." (Exhibit 5 at 30.) In other words, IDEM simply picked an assumed emission rate for the plant and allows Purdue to use that factor as if it were the actual emission rate from the plant. The critical question is whether the emission factor correctly represents the emission rate from the plant under all operating conditions. If not – and IDEM provides no assurances here – the assumed emission factors do not result in an enforceable synthetic minor status.

The H<sub>2</sub>SO<sub>4</sub> and HCl formula is also after-the-fact, which defeats the purpose of both the HAP and PSD programs: through preconstruction review of new major sources, these programs are intended to influence facility design and construction. 42 U.S.C. § 7412(g)(2)(B) (requiring preconstruction determination of MACT); *U.S. v. Louisiana-Pacific Corp.*, 682 F. Supp. 1122, 1133 (D.Colo. 1987); *see also BP Whiting, supra*, at 8-10 (requiring IDEM to explain how certain process emissions were accounted for in the netting analysis rather than relying on post-permit emissions monitoring). Assuming non-compliance could even be detected from Boiler 6 using the formula and emission factors IDEM supplies, it would obviously be too late to install BACT and MACT controls on Boiler 6 in the first instance.

At the least, IDEM has not explained how stack testing required only two years, combined with the supplied formula and emission factor, can ensure compliance with the synthetic minor limits for H<sub>2</sub>SO<sub>4</sub> and HCl which rely on continuous emission reduction. The Administrator must accordingly object. *BP Whiting, supra*, at 11 (granting Title V petition because IDEM failed to explain emission factors).<sup>8</sup>

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<sup>8</sup> The problem partially lies with the emission limits themselves. The “less than” 7.0 and 10.0 TPY limits for H<sub>2</sub>SO<sub>4</sub> and HCl are classic “blanket limits” on emissions, which can virtually never limit a source’s potential to emit under either the HAP or PSD programs as explained in *U.S. v. Louisiana-Pacific Corp.*, 682 F. Supp. 1122, 1133 (D.Colo. 1987), and subsequent EPA guidance, *e.g.*, Memo from John S. Seitz, Director, Office of Air Quality Planning and Standards, *Options for Limiting the Potential to Emit of a Stationary Source under Section 112 and Title V of the Clean Air Act* at 2-3 (Jan. 25, 1995), available at <http://www.epa.gov/region07/air/nsr/nsrmemos/ptememo.pdf>. Along with being insufficient to limit a source’s potential to emit, such blanket limits are “virtually impossible to verify or enforce.” *Louisiana-Pacific*, 682 F. Supp. at 1133.

**IV. THE ADMINISTRATOR MUST OBJECT TO THE PERMIT BECAUSE IT FAILS TO CONSIDER THE EFFECT OF UNPERMITTED MODIFICATIONS OF BOILER 1 ON THE NETTING ANALYSIS AND IDENTIFY ALL APPLICABLE REQUIREMENTS.**

The Administrator should object to the Permit because it relies on a faulty netting analysis that allows the addition of Boilers 6 and 7 and associated equipment to be a minor modification for PSD purposes, and because Purdue did not identify information material to the netting analysis and applicability of PSD requirements in its application.<sup>9</sup> See *In re Operating Permit, Port Hudson Operations, Georgia Pacific*, Order Granting in Part and Denying in Part at 1-2, Petition No. 6-03-01 (Adm’r May 9, 2003) (Title V petitions and orders are appropriate for determining compliance with New Source Review and Prevention of Significant Deterioration as “applicable requirements”) (“*Georgia Pacific*”). As a result, the Permit is deficient.

*A. Purdue’s Boiler Life Extension-Utility System Expansion Initiative.*

As mentioned above, Purdue’s July 21, 2010, response to Sierra Club’s public records request revealed that Purdue had undertaken a major initiative in the late 1990s and early 2000s that it called “Boiler Life Extension-Utility System Expansion,” or “BLE-USE.”

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<sup>9</sup> Information related to Section IV of this Petition became known to Petitioners after the May 14, 2010, comment deadline – specifically, in July 2010, when Purdue responded to Sierra Club’s April 14, 2010, request for public records. (See Exhibits 6-8.) As such, it was impracticable for Petitioners to raise these objections within the comment period, and the grounds for these objections arose after the comment period. 40 C.F.R. § 70.8(d). Nonetheless, Petitioners did suggest in their comments that modifications may have occurred on Boiler 1 that would upset the netting analysis, and reserved the right to submit comments and objections based on any records that would be disclosed as a result of Purdue’s and IDEM’s responses to Sierra Club’s records requests. (Exhibit 2 at 7, Exhibit 3.) Thus, these objections are appropriately submitted at this time.

The need for boiler life extension portion of the initiative was contained in a 1995 report, which evaluated whether it was “more economical for the University to continue to operate Boilers No. 1 and 2 – versus retiring either or both of these units and installing new boilers in their place.” (Exhibit 9 at 2.) The report concluded, after detailed inspections and field work, that “these boilers are both good candidates for extending their useful lives an additional twenty (20) years.” (*Id.* at 3.) The report identified ten projects on Boiler 1 alone that were needed for the life extension, including stoker refurbishment, FD fan turbine drive replacement, overfire air system upgrade and refurbishment, startup gas burner system installation, combustion controls replacement, electrical equipment and wiring replacement, and attemporator replacement, at an estimated cost of \$3.6 million. (*Id.* at 6.)

The BLE-USE initiative was presented to the Purdue Board of Trustees in June 1996 as a 1997-1999 Capital Improvement Budget Request and described as “a major rebuild of two stoker fired coal Boilers No. 1 and 2 to extend their useful life an additional twenty years” and to “regain the boiler capacity lost due to their deteriorated condition.” (Exhibit 10 at 42, 44.) The request identified the applicable projects as including replacement of the stokers, improvements to the traveling grates, drives and seals, replacement of fans, fan drives, valves, controls, modifications to the precipitators, replacement of the electrical systems, other auxiliary equipment and the addition of startup burners and continuous monitoring systems (CEMS). (Exhibit 10 at 42). The Trustees approved the request in May 1997, also authorizing Purdue to pursue financing previously authorized by the state legislature. (Exhibit 11.)

As of September 1, 2000, Purdue had expended \$16.6 million in funds on the entire BLE-USE project, including the following projects affecting Boiler 1:

- Replacing/installing controls and wiring
- Purchasing/installing four gas co-fired burners (rated at 35 MMBtu/hr each) for Boilers 1 and 2
- Replacing/installing collector tubes, stoker components, and grates
- Replacing/installing the forced draft fan turbine drive
- Replacing the boiler feed water pumps

(Exhibit 12 at 63, 64, 69; *see also* Exhibit 1 at 9 for four co-fire burner ratings.) In 2001, during Phase II of the BLE-USE initiative, Purdue expended additional funds for Boiler 1 electrical work and controls for Boilers 1 and 2. (Exhibit 13 at 5.) As of January 9, 2001, the last date for which Petitioners have been supplied records on the BLE-USE initiative, Purdue also had allocated but not yet spent \$1.5 million for ESP modifications on Boiler 1. (Exhibit 13.) Petitioners have requested further documentation from Purdue regarding the extent of the BLE-USE initiative.

The Boiler 1 life extension projects are the type that have been found to constitute major modifications at other plants for PSD purposes. *See, e.g., Sierra Club v. Morgan*, Case No. 07-C-251-S, 2007 U.S. Dist. LEXIS 82760 (W.D.Wis. Nov. 7, 2007) (finding stoker feeder replacements to be major modifications subject to PSD review). However, it appears that Purdue did not seek PSD permits from IDEM for the vast majority of the BLE-USE projects, instead appearing to seek approval only when brand-new processes were added, such as an ash handling system for Boilers 1 and 2, and not for major

modifications of existing equipment. Based on Petitioners' review of documents produced by Purdue and IDEM to date, Purdue did not seek PSD permits for the Boiler 1 life extension projects identified above, despite being notified by its contractor that PSD (as well as NSPS) would apply (Exhibit 9 at A-1, A-2). There is also no indication that in modifying Boiler 1, Purdue made a BACT determination for any of the life extension projects identified above or the installation of the four new co-fire burners.

The projects undertaken on Boiler 1 as part of the BLE-USE initiative triggered PSD requirements, because they are non-routine physical changes, and because the emission increases from these projects exceeded the significance thresholds in 40 C.F.R. § 52.21(b)(23)(i). Emissions increases must be calculated pursuant to the actual-to-potential test because Purdue is not an EUSGU and is therefore not eligible for the alternative actual-to-projected-actual test. 63 Fed. Reg. at 39,859; 57 Fed. Reg. at 32,316-17; Letter from Francis X. Lyons, USEPA Regional Administrator, to Henry Nickel, Counsel for the Detroit Edison Company at 18 (May 23, 2000) ("For units *that are not 'electric utility steam generating units... the post-change emissions 'shall equal the potential to emit of the unit,' ...*" (emphasis added)). (It is not clear to Petitioners, without further documentation from Purdue which has not yet been received, what the precise day is that construction commenced on each Boiler 1 life extension project, although documents currently in Petitioners' possession indicate that construction occurred primarily between 1998 and 2001.)

Petitioners possess Boiler 1's actual emissions for 1995 as reported by Purdue in its 1996 Title V permit application, as well as Boiler 1's potential to emit (Exhibit 15 at 2).

Based on this information and utilizing the actual-to-potential test, the life extension modifications to Boiler 1 exceeded significance thresholds and therefore were major for purposes of PSD:

**Purdue Wade Utility Plant Boiler 1 Emissions Compared to Potential to Emit in TPY**

Pollutant	Actual emissions, 1995	PTE	Actual to Potential Increase	Significance Threshold	PSD Triggered?
PM	25.1682	760.486	735.3178	25	Yes
PM10	5.033	494.251	489.218	15	Yes
SO2	843.2	5898	5,054.8	40	Yes
NOx	293.629	708.67	415.041	40	Yes
CO	104.87	258.64	153.77	100	Yes
VOC	1.468	2.59	1.122	40	No

While Petitioners currently only possess one year of pre-projects emissions data (1995), rather than the two years typically used to calculate pre-project actual emissions, 40 C.F.R. § 52.21(b)(21), nothing in Purdue’s application indicates that 1995 was an outlier year in terms of emissions.

Furthermore, even if the actual-to-projected actual test applied, which would be more beneficial to Purdue, significance thresholds would still be exceeded.

**Purdue Wade Utility Plant Boiler 1 Emissions Compared to Actual Emissions in TPY**

Pollutant	Actual emissions, 1995	Actual emissions, 2004-2006 <sup>10</sup>	Actual to Actual increase	Significance Threshold	PSD Triggered?
PM	25.1682	421.17	446.3382	25	Yes
PM10	5.033	301.55	296.517	15	Yes
SO2	843.2	1,390.19	546.99	40	Yes
NOx	293.629	353.44	59.811	40	Yes

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<sup>10</sup> Actual emissions for this period are taken from IDEM’s netting analysis. (Exhibit 4, Appx. A at 2.)

CO	104.87	298.68 <sup>11</sup>	193.81	100	Yes
VOC	1.468	unknown	unknown	40	unknown

It would be Purdue’s burden to show the increases in emissions after the modification were from a difference source or caused by different factors.

Therefore, PSD requirements are “applicable requirements” for at least existing Boiler 1, and IDEM failed to include them in the final permit. The Administrator must object for this reason.

*B. The Administrator Must Also Object to the Permit Because the Unpermitted Modifications of Boiler 1 Undermine IDEM’s Netting Analysis for Proposed New Boilers 6 and 7.*

As noted previously, after the new Boilers 6 and 7 are constructed, Purdue plans to shut down Boiler 1 and then take credit for 100% of Boiler 1’s emissions in a “netting” analysis for the addition of the new boilers. The relationship between the new units and the shutdown of Boiler 1 is important because of the way in which the PSD program treats emissions from the old units.

Under the applicable regulations, for Purdue to be allowed to construct Boilers 6 and 7, it must make several affirmative showings. *E.g.*, 326 IAC 2-2-2(c) (“No.... major modification to which the requirements of sections 3 through 5, 7, 8(a), 10, 14, and 15 apply shall begin actual construction without a permit that states that the... major modification will **meet the requirements of sections 3 through 5, 7, 8(a), 10, 14, and 15...**”) (emphasis added); 2-2-3 (Any owner or operator of a... major modification shall

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<sup>11</sup> Purdue and IDEM later adjusted the actual emissions of CO downward, to 171.39 TPY, based on the use of a different emission factor. Exhibit 5, Appx. A at 3.

comply with the following requirements:... A major modification shall apply **best available control technology** for each regulated NSR pollutant for which the modification would result in a significant net emissions increase..." (emphasis added); 2-2-5(a) ("The owner or operator of the proposed... major modification shall demonstrate that allowable emissions increases in conjunction with all other applicable emissions increases or reductions... **will not cause or contribute to air pollution in violation of any... ambient air standard... or applicable maximum allowable increase over the baseline** concentration..." (emphasis added); 2-2-6(a) ("Any demonstration under section [2-2-5] shall demonstrate that **increased emissions caused by the proposed... major modification will not exceed eighty percent (80%)** of the available maximum allowable increases (MAI) over the baseline concentrations for sulfur dioxide, particulate matter, and nitrogen dioxide..." (emphasis added); 2-2-7 (requiring the owner or operator to provide an **analysis of impacts on visibility, soils, and vegetation** and an analysis of air quality impacts from secondary growth) (emphasis added). Purdue has the burden of proof on each of these elements. *Peabody Coal Co. v. Ind. Dept. of Natural Res.*, 606 N.E.2d 1306, 1309 (Ind.Ct.App. 1992) (finding that the permit applicant bears the burden of proof under parallel regulations for the Surface Mining and Control and Reclamation Act before the agency can grant a permit).

If certain conditions are met, Purdue can take credit for air pollution emission reductions that would result from shutting down Boiler 1 to off-set the emissions that will be created from the new units. But, only if the conditions are met. Specifically in this case, the issue of whether Purdue can properly take credit for 100% of the emissions

reductions attributable to the retirement of Boiler 1 is relevant in determining whether the permit contains sufficient limits for all pollutants from Boilers 6 and 7, and whether the plant will cause violations of air quality standards. In other words – if IDEM incorrectly determined the amount of Boiler 1’s emission that can be used to “net out” emission increases from Boilers 6 and 7 for PSD purposes, the permit lacks the requisite “applicable requirements” for the new units.

Most importantly, BACT emission limits are required for any pollutant for which there is a sufficient increase – a “significant net emissions increase” – caused by adding the new coal-fired units. 42 U.S.C. § 7475(a)(4); 326 IAC 2-2-3(3). In this case, as noted above, the addition of Boilers 6 and 7 create a significant emissions increase; however, IDEM determined that retiring Boiler 1 would off-set increases of PM, PM10, PM2.5, SO<sub>x</sub>, NO<sub>x</sub>, CO, and Be so that the modification would be minor for PSD purposes and no BACT limits would be required for these pollutants. (Exhibit 4, Appx. A at 1-2.) To make this finding, however, IDEM necessarily had to determine that the off-sets from retiring the old units were “otherwise creditable,” which means that the emissions were not in excess of “the old level of allowable emissions.” 326 IAC 2-2-1(jj)(1)(B), (6)(A) (emphasis added). “Allowable emissions” means the most stringent emission rate established in any applicable standard in 40 C.F.R. Parts 60 and 61, the state implementation plan, or in a permit. 326 IAC 2-2-1(d). If, for example, any of the existing units triggered emission limits in NSPS standards (Part 60) or in the PSD program adopted into the Indiana SIP (i.e., BACT), its past emissions exceeded the allowable emissions and are not “creditable” for netting purposes. In short, it is not

sufficient for IDEM to merely credit Purdue for the emissions from the old Boiler 1: in its review for the new permit, IDEM had to first determine whether the emissions were “creditable” and in compliance with all applicable limits under Parts 60 and 61, the state implementation plan, and any limits in applicable permits.

IDEM stated in its response to comments that it was “not aware” of any modifications that triggered NSPS or BACT requirements on Boiler 1. (Exhibit 5 at 22.) IDEM is incorrect that no past modifications occurred that triggered NSPS limits or BACT. Specifically, and as noted above, Boiler 1 was subject to BACT limits after the major modifications to the facility in the late 1990s and early 2000s that were part of the life extension project on Boiler 1. Thus, Purdue should not have been able to use levels of emissions that exceeded these limits in the netting analysis for Boilers 6 and 7.

Additionally, Purdue installed new gas-fired burners on Boilers 1 and 2 in or around 1998. (Exhibits 16, 17.)<sup>12</sup> Purdue acknowledged that these were new sources of emissions, but also claimed that the burners would not lead to emissions increases because Purdue would reduce operation of coal equal to the new gas capacity. (Exhibit 15, Tables 1-2.) IDEM granted the exemption with the understanding that the overall capacity of Boiler 1 and 2 would remain 248 MMBtu/hour (168 MMBtu/hr coal fired and 80 MMBtu/hour natural gas fired). (Exhibit 17.) However, this has never been

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<sup>12</sup> The date on Exhibit 16 is July 22, 1997, but it is stamped received by IDEM on July 23, 1998, and the attached application form itself is dated July 22, 1998, indicating that the “1997” on the cover letter was a typographical error.

made a federally enforceable permit condition<sup>13</sup> – despite the obvious intent by IDEM that the facility comply with this limitation and the fact that without such limit, adding new gas burners increased the capacity of the unit in violation of PSD and New Source Performance Standard requirements. *In re Wis. Public Serv. Corp. JP Pulliam Power Plant*, Order Granting Petition for Objection to Permit at 7, Pet. No. V-2009-01 (Adm’r June 28, 2010) (addressing a similar project adding natural gas burners to a coal plant where the permitting agency intended that the overall boiler capacity not increase and holding that the permitting agency must either include the synthetic minor permit limits on total heat input to be made enforceable or explain how the plant can otherwise maintain compliance with the synthetic minor status). The Administrator must also object because Boilers 1 and 2 are not limited in total heat input and by adding the additional heat input capacity – and therefore emissions from combustion of additional fuel on both an hourly and annual basis – the boilers triggered requirements under the PSD and NSPS programs. These NSPS and BACT limits on Boiler 1 were not accounted for in IDEM’s “netting analysis” in the present renewal Permit.

For these reasons, IDEM’s determination that PM, PM10, PM2.5, SO<sub>x</sub>, NO<sub>x</sub>, CO, and Be do not require BACT limits, due to off-sets from retiring Boiler 1, was in error, the permit lacks PSD “applicable requirements” for Boilers 6 and 7, and an objection is required.

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<sup>13</sup> The exemption determination by IDEM dated August 27, 1998 (Exhibit 17) purports to contain some limits but does not appear to be a permit, nor a federally enforceable permit.

C. *The Administrator Must Object to the Permit Because Purdue Incorrectly Certified Compliance with All Applicable Requirements, Did Not Propose a Compliance Schedule, and Did Not Include All Necessary Information to Determine PSD Applicability.*

Every Title V permit application must disclose all applicable requirements and any violations at the facility. 42 U.S.C. § 7661b(b); 40 C.F.R. §§ 70.5(c)(4)(i), (5), (8); 326 IAC § 2-7-4(c)(4)(A), (10)(A)(iii). For applicable requirements, including new source review requirements and other preconstruction permitting requirements, for which the source is not in compliance at the time of permit issuance, the source's application must provide a narrative description of how the source intends to come into compliance with the requirements. 42 U.S.C. § 7661b(b); 40 C.F.R. § 70.5(c)(8)-(9); 326 IAC § 2-7-4(c)(10)(A)(iii). The application must further propose a compliance schedule for any applicable requirements for which the source is not in compliance. 40 C.F.R. § 70.5(c)(8)(iii); 326 IAC § 2-7-4(c)(10)(B)(iii). If any statements in the application were incorrect, or if the application omits relevant facts, the applicant has an ongoing duty to supplement and correct the application. 40 C.F.R. § 70.5(b); 326 IAC 2-7-4(b).

The permit application submitted by Purdue for the current permit is dated December 29, 2008. (Exhibit 14.) The application includes a certification, signed by Vice President for Physical Facilities Robert McMains, that states:

The source described in this air pollution control permit application is fully in compliance with all applicable requirements, except for the emission unit(s) listed below. Compliance will be achieved according to the schedule identified below.

*Id.* (page 11 of the .pdf.) The only violation identified was Purdue's failure to timely apply for its Title V permit renewal. (*Id.*) The certification does not disclose violations

of the New Source Review requirements in the Clean Air Act, as set forth above. It does not propose a compliance schedule for these violations. The certification has not been supplemented or corrected. The compliance certification in Purdue's application is false, the application is incomplete and, as a result, the permit is deficient because it fails to ensure compliance.

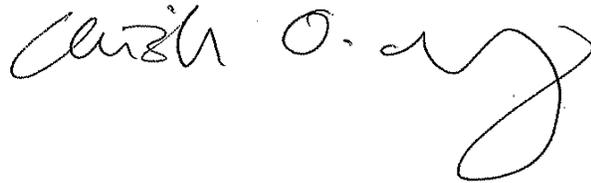
Additionally, Purdue's Title V application did not disclose the life extension changes on Boiler 1, which would have been necessary to determine PSD applicability to Boilers 6 and 7, even though PSD is an "applicable requirement." 40 C.F.R. § 70.5(c)(4)(i); Exhibit 14 (see page 12 of the .pdf). Moreover, the information about the life extension projects on Boiler 1 should have been included in the application as "additional information related to the emissions of air pollutants as is sufficient to verify which requirements are applicable to the source." 326 IAC 2-7-4(c)(3). Because Purdue's permit application was deficient, IDEM did not make a complete determination of whether PSD requirements apply to Boilers 6 and 7, whether Purdue is in compliance with PSD, or whether a compliance plan is required in the Title V permit. This results in a deficient permit, which does not include more stringent pollution controls required under the PSD program, and the Administrator must object.

## V. CONCLUSION

For the above reasons, the Permit fails to comply with the Clean Air Act and all applicable requirements, and the Administrator must object. Petitioners have demonstrated that the permit does not include the required compliance monitoring for various sources of PM, PM10, and PM2.5 from multiple sources and for H2SO4 and HCl

emissions from Boiler 6. Additionally, Petitioners have demonstrated that IDEM's netting analysis, which allowed the addition of Boilers 6 and 7 and associated equipment to be a PSD minor modification, was faulty because it did not consider modifications that occurred to Boiler 1 as part of a major life extension project approximately 10 years ago. Purdue failed to include information of this project and related violations of BACT emission limits in its application for the Title V renewal permit, and the Permit accordingly fails to ensure compliance with all applicable limits.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Chris O. Long". The signature is written in a cursive style with a large, looping final flourish.

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On behalf of:  
SIERRA CLUB  
HOOSIER ENVIRONMENTAL COUNCIL

DATED: October 25, 2010.

Service List

**Petition Requesting that the Administrator Object to the Issuance  
of the Title V Operating Renewal Permit for Purdue University**

October 25, 2010

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