

**BEFORE THE ADMINISTRATOR
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

IN THE MATTER OF:)
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)
IDEM Prevention of Significant)
Deterioration (PSD)/New Source)
Construction and Part 70 Operating Permit)
No. T147-39554-00065) Permit No. T147-39554-00065
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For Riverview Energy Corporation)
)
Prepared by the Indiana Department of)
Environmental Management)
)

**PETITION TO OBJECT TO THE PREVENTION OF SIGNIFICANT
DETERIORATION (PSD)/NEW SOURCE CONSTRUCTION AND PART 70
OPERATING PERMIT FOR RIVERVIEW ENERGY CORPORATION**

Riverview Energy Corporation (“Riverview”) is proposing to construct a direct coal hydrogenation refinery (“Refinery”) in Dale, Indiana that would use a technology never before tested in the U.S. and spew tons of toxic chemicals on neighbors and a nearby elementary school in a county that is already in the worst one percent of counties in the nation for toxic pollution.¹

Southwestern Indiana Citizens for Quality of Life, Inc. and Valley Watch, Inc. (“Petitioners”) petition the Administrator of the U.S. Environmental Protection Agency (“EPA”) to object to the Title V Prevention of Significant Deterioration/New Source Construction and Part 70 Operating Permit (“Permit”), Ex. A, issued to Riverview on June 11, 2019 by the Indiana Department of Environmental Management (“IDEM”).

EPA must object to the Permit because EPA is obligated to ensure that Indiana implements its New Source Review construction and operating permit programs in accordance with the Clean Air Act and Indiana’s federally-approved State Implementation Plan (“Indiana Plan”). The Riverview Permit violates the Clean Air Act and Indiana Plan due to the following deficiencies identified in EPA’s and Petitioners’ comments:

- Unknown or uncertain design specifications that undermine the validity of the entire permit;
- Inaccurate and unreliable emissions calculations that underestimate the Refinery’s emissions;

¹ See EPA, Toxic Release Inventory, TRI Explorer, Geography US County Report, *available at* https://iaspub.epa.gov/triexplorer/release_geography?p_view=UCGO&trilib=TRIQ1&sort=RE_TOLBY&sort_fmt=2&state=All+states&county=All+counties&chemical=_ALL_&industry=ALL&year=2017&tab_rpt=1&fld=RELLBY&fld=TSFDSP (last visited Aug. 5, 2019) (listing Spencer County, Indiana as the 30th worst U.S. county in terms of toxic releases).

- Flaws in the Permit’s technology analysis and selection of emissions control technologies;
- Insufficient emissions monitoring and reporting requirements; and
- Deficiencies in the air quality and emissions modeling underlying the Permit.

Additionally, EPA must object to the Permit because IDEM lacks the authority to issue a combined Title V Prevention of Significant Deterioration (“PSD”) permit that is based on incomplete information about the source’s design specifications, technology, and operating processes, as discussed below and in Petitioners’ December 10, 2018 comments on the draft Permit, which are attached as Exhibit B and reproduced in the Addendum to the Technical Support Document for the Permit (included in Exhibit A). The following sections discuss the Permit’s substantive defects and EPA’s grounds for objecting to the Permit.

Background

Riverview proposes to construct a direct coal hydrogenation refinery in Dale, Spencer County, Indiana that would convert coal to liquid fuels. According to the Permit, this Refinery would emit massive amounts of toxic chemicals and greenhouse gases every year. If constructed, the Refinery would be a “major source” of air pollution and would need to comply with the Clean Air Act and Indiana Plan, including the PSD program.² A key purpose of that program is to “protect public health” and “assure that any decision to permit increased air pollution . . . is made only after careful evaluation of all the consequences of such a decision.”³

I. Petitioners

Southwestern Indiana Citizens for Quality of Life, Inc. (“Southwestern Indiana Citizens”) is an organization of members living in and around Dale, Indiana. The organization’s mission is to promote engagement with local governments on permitting decisions and to ensure that local industry respects residents’ health and safety and preserves the beauty and charm of the region.

Valley Watch, Inc. (“Valley Watch”) is an Indiana not-for-profit corporation, created in 1981 to protect the public health and environment of the lower Ohio Valley. Since that time, Valley Watch has fought to keep high-polluting industry from locating in the region and worked with government and the private sector to improve existing industry.

Petitioners have members who live, work, recreate, and breathe in Spencer County and would be aggrieved and adversely affected by emissions from the Refinery that the Permit authorizes. For example, Mary Victoria Hess, who has lived in Dale, Indiana for 42 years, would suffer from the Refinery’s air pollution because it would have a negative effect on her ability to live in Dale cancer-free. Hess Aff. ¶¶ 1, 4 (July 2, 2019), Ex. C. Ms. Hess has had

² 42 U.S.C. § 7602(j) (defining “major stationary source”); 40 C.F.R. § 70.2 (defining “major source”); 326 Ind. Admin. Code 2-7-1(22) (same); *see also* Permit at 34 (defining the Facility as a “major source” subject to Indiana’s Part 70 Permit program); Technical Support Document for PSD/New Source Construction TVOP No.: 147-39554-00065 (“TSD”), at 25 (noting that the Facility is required to obtain an air permit because of its potential to emit certain pollutants). Major sources located in counties that are in attainment with National Ambient Air Quality Standards for so-called criteria pollutants, or are unclassifiable as to these standards, are subject to the Prevention of Significant Deterioration Program under the Clean Air Act. 42 U.S.C. § 7475; 40 C.F.R. § 52.21(a)(2); 326 Ind. Admin. Code 2-2-2(b); *see also* 40 C.F.R. § 81.315 (Spencer County attainment status).

³ 42 U.S.C. § 7470.

Transitional Cell Carcinoma bladder cancer and five bladder surgeries since 2001, and emissions from the Refinery could put her health at risk. *Id.* ¶ 4. Ms. Hess, who is the president of Southwestern Indiana Citizens and a member of Valley Watch, lives one mile from the proposed Refinery site. *Id.* ¶¶ 1-2.

Erin Elizabeth Marchand, who lives one-and-a-half miles from the proposed Refinery site, is a member of Southwestern Indiana Citizens, a mother of three children, and a physician practicing family medicine in Santa Claus, Indiana, five miles from the proposed Refinery site. Marchand Aff. ¶¶ 2, 4-6 (July 3, 2019), Ex. D. Dr. Marchand and her family spend a lot of time outdoors near their home in Dale, where they fish in ponds in their backyard, go for walks and runs in their neighborhood, and play in nearby parks, among other activities. *Id.* ¶¶ 8-9. Dr. Marchand and her family will not be able to enjoy these outdoor activities to the same extent if the Refinery is built because the Refinery will emit pollutants like benzene, which is a known carcinogen that has been shown to produce negative health effects, especially in children. *Id.* ¶ 10.

Jeffrey A. Philipps, a member of Southwestern Indiana Citizens, lives one mile from the proposed Refinery site and has two children who attend the David Turnham elementary school, also one mile from the proposed Refinery site. Philipps Aff. ¶ 1 (July 5, 2019), Ex. E. Mr. Philipps has a garden on his property where he grows fresh vegetables, but pollution from the Refinery would impede his ability to continue growing and consuming vegetables from his land. *See id.* ¶ 2. Pollution from the Refinery also would make it more difficult for him to provide a clean and safe living environment for his two children. *Id.* ¶ 7.

Jerome P. Steckler, a member of Southwestern Indiana Citizens, lives on and operates a USDA-certified organic farm within one mile of the proposed Refinery site. Steckler Aff. ¶¶ 1-3 (July 2, 2019), Ex. F. Mr. Steckler raises cattle, sheep, chickens, and pigs on his farm and processes USDA-certified organic artisan cheeses from milk supplied by his dairy herd. *Id.* ¶ 4. Mr. Steckler's ruminant livestock are 100% grass-fed and dependent upon the health of his farmland's soil, which he has dedicated 24 years to cultivating. *Id.* ¶¶ 5-6. Pollution from the Refinery would disturb the delicate composition of his soil, impact the health of his livestock, and negatively affect his ability to earn a living through his organic farm. *Id.* ¶¶ 7-12.

John Blair, President of Valley Watch, and other members of Southwestern Indiana Citizens—Rock Emmert, Jane A. Schipp, and Nancy and William Schroer—also will be aggrieved and adversely affected by emissions from the Refinery that the Permit authorizes. *See Blair Aff.* (July 5, 2019), Ex. G; *Emmert Aff.* (July 5, 2019), Ex. H; *Schipp Aff.* (July 3, 2019), Ex. I; *N. Schroer Aff.* (July 2, 2019), Ex. J; *W. Schroer Aff.* (July 2, 2019), Ex. K.

II. Statutory and Regulatory Background

A. Title V Requirements

To protect public health and the environment, the Clean Air Act prohibits stationary sources of air pollution from operating without or in violation of a valid permit, which must be designed to include and assure implementation and compliance with health-based emission standards and all other applicable requirements.⁴ To that end, Title V permits must include such

⁴ 42 U.S.C. §§ 7661a, 7661c.

conditions as necessary to assure compliance with all applicable requirements.⁵ “[A]pplicable requirements” include all standards, emissions limits, and requirements of the Clean Air Act.⁶

“The permit is crucial to the implementation of the Act: it contains, in a single, comprehensive set of documents, all [Clean Air Act] requirements relevant to the particular polluting source.”⁷ Thus, Title V requirements aim to “enable the source, States, EPA, and the public to understand better the requirements to which the source is subject, and whether the source is meeting those requirements.”⁸

Title V permits also must include compliance certification, testing, monitoring, reporting, and recordkeeping requirements that ensure the new source will comply with the conditions of its permit.⁹ “The permitting authority shall provide a statement that sets forth the legal and factual basis for the draft permit conditions”¹⁰ This “statement of basis” must include, among other things, a reasoned explanation for why the selected monitoring, recordkeeping, and reporting requirements are sufficient to assure the facility’s compliance with each applicable requirement.¹¹

In addition to these substantive requirements, Title V regulations also include several procedural requirements designed to guarantee that members of the public have a meaningful opportunity to review and comment on a permit before it is issued. A Title V permit may not be issued unless all of the public participation requirements set forth in 40 C.F.R. § 70.7(h) are satisfied.¹² Pursuant to these requirements, the permitting authority must offer a draft of the permit for public comment¹³ and then must prepare a proposed permit in consideration of public comments to send to EPA for a 45-day review period.¹⁴

If a state proposes a Title V permit that fails to include and assure compliance with all applicable Clean Air Act requirements described above, EPA must object to the issuance of that permit before the end of the 45-day review deadline.¹⁵ If EPA does not object, “any person may petition the Administrator within 60 days after the expiration of the [Administrator’s] 45-day review period . . . to take such action.”¹⁶

⁵ 40 C.F.R. § 70.6(a)(1); 42 U.S.C. § 7661c(a), (c).

⁶ 40 C.F.R. § 70.2.

⁷ *Virginia v. Browner*, 80 F.3d 869, 873 (4th Cir. 1996) (purpose of Title V permit is to provide “a source-specific bible for Clean Air Act compliance”); *Sierra Club v. EPA*, 536 F.3d 673, 674-75 (D.C. Cir. 2008) (“But Title V did more than require the compilation in a single document of existing applicable emission limits It also mandated that ‘[e]ach permit . . . shall set forth . . . monitoring . . . requirements to assure compliance with the permit terms and conditions.’”).

⁸ EPA, Operating Permit Program, Final Rule, 57 Fed. Reg. 32,250, 32,251 (July 21, 1992).

⁹ 42 U.S.C. § 7661c(c); 40 C.F.R. § 70.6(c)(1).

¹⁰ 40 C.F.R. § 70.7(a)(5).

¹¹ *See, e.g., In re Los Medanos Energy Center*, EPA Order in Response to Petition. 10-13 (May 24, 2004), available at https://www.epa.gov/sites/production/files/2015-08/documents/los_medanos_decision2001.pdf.

¹² 40 C.F.R. § 70.7(a)(1)(ii).

¹³ 40 C.F.R. §§ 70.2, 70.7(h)(4); *see also* 42 U.S.C. § 7661a(b)(6).

¹⁴ 42 U.S.C. § 7661d(a), (b)(1); 40 C.F.R. § 70.8(a), (c); *see also* 40 C.F.R. § 70.2 (defining “[p]roposed permit” as “the version of a permit that the permitting authority proposes to issue and forwards to the Administrator for review in compliance with § 70.8”).

¹⁵ 42 U.S.C. § 7661d(b); 40 C.F.R. § 70.8.

¹⁶ 42 U.S.C. § 7661d(b)(2); *see also* 40 C.F.R. § 70.8.

Petitions to object must be based upon objections to the permit that were raised with “reasonable specificity during the public comment period provided by the permitting agency.”¹⁷ EPA’s regulations provide that the “permitting authority shall keep a record of the commenters and also of the issues raised during the public participation process so that the Administrator may fulfill his obligation under section 505(b)(2) of the Act to determine whether a citizen petition may be granted.”¹⁸ EPA “shall issue an objection . . . if the petitioner demonstrates to the Administrator that the permit is not in compliance with the requirements” of the Act.¹⁹ EPA must grant or deny a petition to object within 60 days of its filing.²⁰

Here, IDEM issued a draft of the Permit for public review and comment on October 24, 2018. Petitioners timely submitted comments on the draft permit on December 10, 2018, which are attached as Exhibit B. IDEM issued a proposed permit for EPA review on April 24, 2019, which initiated EPA’s 45-day review period.²¹ This review period ended on June 7, 2019.²² Petitioners have 60 days from the end of this period—or, until August 6, 2019—to file a petition with EPA to object to the permit, making this petition timely.²³

B. Prevention of Significant Deterioration (PSD) Construction Requirements

When a Title V permit is issued to a new source of air pollution located within an area subject to the PSD program, that permit also must comply with the construction requirements for new sources outlined in 42 U.S.C. § 7475. Such requirements prohibit the issuance of a permit absent a demonstration that the new source “will not cause, or contribute to, air pollution in excess of any[:]

- (A) maximum allowable increase or maximum allowable concentration for any pollutant in any area [subject to the PSD program] more than one time per year,
- (B) national ambient air quality standard in any air quality control region, or
- (C) any other applicable emission standard or standard of performance under this chapter.”²⁴

Such requirements also mandate that the new source of air pollution apply the “the best available control technology for each pollutant” that is subject to regulation.²⁵

¹⁷ 42 U.S.C. § 7661d(b)(2).

¹⁸ 40 C.F.R. § 70.7(h)(5).

¹⁹ 42 U.S.C. § 7661d(b)(2); *see also* *N.Y. Pub. Interest Research Grp. v. Whitman*, 321 F.3d 316, 333 n.12 (2d Cir. 2003) (explaining that under Title V, “EPA’s duty to object to non-compliant permits is nondiscretionary”).

²⁰ 42 U.S.C. § 7661d(b)(2); 40 C.F.R. § 70.8(d).

²¹ *See* 42 U.S.C. § 7661d(a), (b)(1); 40 C.F.R. § 70.8(a), (c); *see also* 40 C.F.R. § 70.2 (defining “proposed permit” as “the version of a permit that the permitting authority proposes to issue and forwards to the Administrator for review in compliance with § 70.8”).

²² E-mail from Michael Langman, Environmental Scientist, Air Permits Section, US EPA Region 5, to Charles McPhedran, Earthjustice (June 5, 2019, 18:16 CT), Ex. L.

²³ 42 U.S.C. § 7661d(b); 40 C.F.R. § 70.8,

²⁴ 42 U.S.C. § 7475(a)(3).

²⁵ *Id.* § 7475(a)(4).

To ensure that a new source will not violate the requirements of the PSD program, permitting authorities must model the air quality impacts of the proposed new source according to federal regulations before they can issue a permit to that source. These regulations require permitting authorities to model all emissions at the levels allowed in the permit and to model the air quality impacts of a new source using meteorological and background concentration data that is “representative” of the proposed source site.²⁶

C. EPA Must Consider Petitioners’ Demonstration that this Combined Title V/PSD Permit Does Not Comply with PSD Requirements.

Because Indiana chose to adopt a combined Title V/PSD program under which a single permit authorizes both construction and operation, like the Permit at issue in this petition, Title V’s permit issuance procedures apply to all federally enforceable conditions included in these combined permits, including EPA review and the opportunity for members of the public to petition EPA to object to deficient proposed permits.²⁷ Accordingly, EPA is statutorily obligated to consider Petitioners’ demonstration that the proposed Riverview permit fails to properly implement and assure compliance with applicable PSD requirements.²⁸ If EPA concludes that Petitioners’ have met their burden of demonstrating that the PSD-related permit conditions are inadequate, EPA must grant the petition and object to the permit.

Under circumstances where a state has chosen to integrate its PSD and Title V permitting requirements, it is infeasible to restrict the public’s Title V petition opportunity solely to those permit conditions that are found to be sufficiently Title V-related. In such combined permits, construction and operating conditions are intertwined, making it impractical for EPA or courts to determine whether permit conditions stem from Title V or the PSD program. For example, Indiana’s PSD and operating permit programs both impose monitoring and recordkeeping requirements on a new source of air pollution.²⁹

²⁶ 40 C.F.R. Pt. 51, App. W at 8.4.1(b) (EPA Guideline on Air Quality Models) (“The meteorological data used as input to a dispersion model should be selected on the basis of spatial and climatological (temporal) representativeness as well as the ability of the individual parameters selected to characterize the transport and dispersion conditions in the area of concern. The representativeness of the measured data is dependent on numerous factors including, but not limited to: (1) The proximity of the meteorological monitoring site to the area under consideration; (2) the complexity of the terrain; (3) the exposure of the meteorological monitoring site; and (4) the period of time during which data are collected.”).

²⁷ See, e.g., IDEM OAQ Air Permitting Background and Terminology (last visited Aug. 5, 2019), available at <https://www.in.gov/idem/airquality/2649.htm> (“The Clean Air Act (CAA) calls for both construction and operating permits. IDEM has decided to combine both permits for sources.”).

²⁸ See, e.g., EPA, Conditional Approval of Implementation Plan; Indiana, Final Rule, 68 Fed. Reg. 9892, 9894-95 (Mar. 3, 2003) (stating in its conditional approval of Indiana’s PSD program that “EPA will review the process followed by the permitting authority in determining best available control technology, assessing air quality impacts, meeting Class I area requirements, and other PSD requirements, to ensure that the required [State Implementation Plan] procedures . . . were met”).

²⁹ See, e.g., 326 Ind. Admin. Code 2-2-8(b)(3) (imposing monitoring and recordkeeping requirements according to Indiana’s PSD program); *id.* 2-2-4(c) (requiring air quality monitoring pursuant to Indiana’s PSD program); *id.* 2-7-5(3) (imposing monitoring, recordkeeping and reporting requirements pursuant to Indiana’s operating permit program); *id.* 2-7-6(1) (same).

Indeed, the Permit at issue in this petition cites both Indiana's operating permit program and PSD program for general recordkeeping and reporting requirements.³⁰ By combining construction permit requirements and operating permit requirements into a single permit, Indiana chose to apply Title V objection procedures to the entire permit. It therefore is unreasonable for EPA to review only "Title V"-derived conditions contained within the combined permit at issue in this petition.

Moreover, the plain language of the Clean Air Act unambiguously requires EPA to object to a permit that violates the requirements of Indiana's PSD construction permitting program. Title V of the Act states that "[i]f any permit contains provisions that are determined by the Administrator as not in compliance with the *applicable requirements of this chapter, including the requirements of an applicable implementation plan*, the Administrator shall . . . object to its issuance."³¹ The PSD preconstruction requirements contained in Title I Part C of the Act and at 326 Ind. Admin. Code 2-2 *et seq.* of the Indiana Plan clearly are "requirements."³² Those "requirements" become "applicable" when a new source of air pollution meets the statutory and regulatory applicability criteria for the PSD construction program.³³

Indeed, Section 7661a(a) expressly refers to "the applicable requirements of this chapter that a permit be obtained before construction or modification."³⁴ Given this express identification of the Act's construction permitting requirements as "applicable requirements of this chapter," Congress' directive that EPA must object to a permit if it is "not in compliance with the applicable requirements of this chapter,"³⁵ unambiguously requires EPA to object to a permit that does not comply with PSD construction requirements.

EPA itself acknowledged this statutory obligation when it approved Indiana's PSD program, stating that its "approval of Indiana's PSD program does not divest EPA of the duty to continue appropriate oversight to insure that PSD determinations made by Indiana are consistent with the requirements of the CAA, Federal regulations and the [State Implementation Plan]."³⁶ In its rule granting conditional approval to Indiana's PSD program, EPA further explained that:

[I]n determining whether a Title V permit incorporating PSD provisions calls for EPA objection under section 505(b) [Title V] . . . EPA will review the process followed by the permitting authority in determining best available control technology, assessing air quality impacts, meeting Class I area requirements, and other PSD requirements, to ensure that the required [State Implementation Plan] procedures . . . were met. EPA will also review whether any determination by the permitting authority was made on reasonable grounds properly supported on the record, described in enforceable terms, and consistent with all applicable

³⁰ See Permit at 54-57 (C.19 & C.20).

³¹ 42 U.S.C. § 7661d(b)(1) (emphasis added).

³² See, e.g., Merriam-Webster Online Dictionary, *available at* <https://www.merriam-webster.com/dictionary/requirement> (last visited Aug. 5, 2019) (defining "requirement" as "something required").

³³ See, e.g., *id.* (defining "applicable" as "capable of or suitable for being applied").

³⁴ 42 U.S.C. § 7661a(a).

³⁵ *Id.* § 7661d(b)(1).

³⁶ See EPA, Approval and Promulgation of Implementation Plans; Indiana, Direct Final Rule, 69 Fed. Reg. 29,071, 29,072 (May 20, 2004).

requirements. Finally, EPA will review whether the terms of the PSD permit were properly incorporated into the operating permit.³⁷

Therefore, if a petitioner shows that Indiana issued a permit that does not comply with the state's federally-approved regulations governing PSD permitting or "exercise[d] discretion under such regulations [that] was unreasonable or arbitrary," then EPA must object to the permit's issuance.³⁸

As set forth below, Indiana has issued a combined Title V operating and PSD construction permit to the Riverview Refinery that violates both Title V and Indiana's PSD program. Thus, EPA must object to the Permit.

Grounds for Objection

I. The Permit Is Unlawful for the Reasons Provided in EPA Comments on the Draft Permit.

EPA Region 5 submitted comments on a draft of IDEM's permit for the proposed Refinery on December 10, 2018.³⁹ Those comments identified flaws in the Permit's conditions, technology analysis, and underlying air quality modeling. Because the Permit does not correct several of those flaws, EPA must object to the Permit on grounds that it does not comply with the Clean Air Act.⁴⁰

A. Title V Deficiencies

EPA identified several deficiencies with the Permit's Title V monitoring requirements that IDEM did not correct in the final Permit. First, EPA noted in its comments that the Permit lacked periodic visible emissions monitoring requirements that would allow IDEM to obtain reliable data representative of the Refinery's compliance with permitted emissions limits for particulate matter ("PM").⁴¹ As EPA explained, periodic visible emissions monitoring is necessary to assure compliance with the Permit's 0% visible emissions limit for the entrance and exit doors of the proposed Refinery's coal unloading enclosure.⁴² Absent such monitoring, the Permit violates the monitoring requirements of Title V.⁴³

The Permit does not contain the periodic visible emissions monitoring requirements that EPA requested and that are necessary to comply with Title V.⁴⁴ In its Response to Comments,

³⁷ 68 Fed. Reg. at 9894-95

³⁸ See *In the Matter of Cash Creek Generation, LLC*, Order on Petition No. IV-2010-4, 4 (June 22, 2012) ("Cash Creek Order") (in which EPA objected to provisions of a combined Title V operating permit and PSD permit issued to a new coal gasification facility for violations of both operating and construction permit requirements).

³⁹ EPA's comments are reproduced in IDEM's Response to Comments, which are included as part of the Permit document attached as Exhibit A.

⁴⁰ 42 U.S.C. § 7661d(b).

⁴¹ Addendum to the Technical Support Document for Permit No. 143-39554-00065 ("ATSD"), at 45 (EPA Permit Comment 1) (included within Ex. A).

⁴² *Id.*

⁴³ 42 U.S.C. § 7661c(c); see also 40 C.F.R. 70.6(a)(3); 326 Ind. Admin. Code 2-7-5(3).

⁴⁴ See Permit at 62-63 (D.1.1).

IDEM attempted to justify the omission of such requirements on grounds that “monitoring requirements for the baghouses and enclosures” would be sufficient.⁴⁵ IDEM’s justification fails because opacity testing for the baghouse is unrelated to the negative pressure conditions required to achieve 0% visible emissions for the entrance and exit doors. Negative pressure conditions, especially at the entrance and exit doors, can be maintained only by ventilation conditions, fan locations, fan speed, air flows, and similar variables. Opacity testing at the baghouse does not impact ventilation conditions and cannot indicate whether sufficient ventilation conditions exist to maintain 0% visible emissions at the entrance and exit doors.

IDEM also provides an insufficient response to EPA’s request that IDEM review whether the Refinery’s slop tank and biological treatment bioreactor are “in organic HAP service” and subject to 40 C.F.R. 63 Subpart H.⁴⁶ In its response, IDEM concluded that the slop tank and wastewater treatment bioreactor “do not operate in organic [HAP] service” because “the organic HAP concentration in the wastewater streams present in the units is less than 5% by weight under the operating conditions that may reasonably be expected for the units.”⁴⁷ However, neither IDEM’s response nor the Permit indicate what “operating conditions . . . may reasonably be expected for the units.” Because of the Refinery’s incomplete design specifications, which are detailed below, the Refinery’s operating conditions are not yet defined. Moreover, the Permit lacks monitoring requirements to assure that actual operating conditions reflect the conditions that IDEM “expect[s].”

The Permit also fails to require the Refinery to use a bag leak detection system to monitor the Refinery’s multiple fabric filter control devices for compliance with particulate matter emissions limits. As EPA explained, bag leak detection systems are a more stringent control technology than monitoring pressure drops from baghouses.⁴⁸ However, the Permit maintains the less-stringent pressure drop monitoring for particulate matter emissions from fabric filters and IDEM has failed to support its claim that such monitoring is “adequate to establish continuous compliance with the applicable limits.”⁴⁹

Finally, the Permit retains insufficient leak detection monitoring for fugitive volatile organic compounds from the Refinery’s emissions units.⁵⁰ In order to assure compliance with emissions limits for volatile organic compounds, IDEM should require the Refinery to monitor fugitive emissions using Optical Gas Imaging.

Because of the above deficiencies with the Permit’s monitoring requirements, EPA must object to the Permit as noncompliant with the requirements of Title V.

⁴⁵ ATSD at 45 (IDEM Response to EPA Permit Comment 1).

⁴⁶ *Id.* at 57-58 (IDEM Response to EPA Permit Comment 16).

⁴⁷ *Id.* at 58 (IDEM Response to EPA Permit Comment 16).

⁴⁸ *Id.*

⁴⁹ *Id.* at 59 (IDEM Response to EPA Permit Comment 17).

⁵⁰ *See* Permit at 138, 172 (D.12.1 PSD BACT (a), E.6.1, E.6.2); *see also* ATSD at 59 (EPA Permit Comment 18).

B. Emissions Control Deficiencies

The Permit also retains emissions controls for the Refinery's fuel gas combustion units that EPA already found inadequate⁵¹ and that are insufficient under the requirements of the Clean Air Act. Both the proposed and final Permit identified "good combustion practices" as the control technology for emissions from the Refinery's fuel gas combustion units, but did not define the term. IDEM attempted to remedy this deficiency in response to EPA comments by equating "good combustion practices" with the "installation and operation of an oxygen trim system."⁵² However, oxygen trim systems by themselves are not guarantors of good combustion practices—other variables, such as temperature and air and fuel mixing, are also critical. While maintaining proper oxygen levels is one aspect of good combustion practices, it is insufficient for IDEM to reduce such practices to a single variable.

IDEM's response further reveals a flaw with its Best Available Control Technology ("BACT") analysis for fuel gas combustion units and sulfur recovery units' tail gas incinerators. IDEM attempted to justify its insufficient definition of "good combustion practices" based on its review of "permits from a number of states."⁵³ But IDEM cannot conduct a proper BACT analysis by looking solely at what other states have applied in the past. Doing so is like driving a car and looking only in the rearview mirror.

In addition, IDEM's selection of "low-NO_x burners" as BACT for the Refinery's sulfur recovery units is insufficient because it does not specify what kind of low-NO_x burners will be used and it sets an inappropriately high emissions output for the burners, which are capable of achieving much lower emissions outputs than 0.10 lb/MMBtu.⁵⁴

With respect to the Permit's BACT analysis for fuel-gas fired heaters and boilers, EPA requested that IDEM evaluate Selective Catalytic Reduction as BACT or justify its decision to select ultra-low NO_x burners as BACT instead.⁵⁵ IDEM ultimately rejected Selective Catalytic Reduction as BACT on grounds that the flue gas temperature was below 750 degrees Fahrenheit and therefore too low for a majority of the fuel-gas fired emissions units.⁵⁶

IDEM's response to EPA's comment exposes a significant flaw in IDEM's understanding of how process heaters and Selective Catalytic Reduction work. Although certain Selective Catalytic Reduction systems require that the catalyst be in a proper operating temperature range, that temperature range depends on the catalyst formulation. For example, in coal-fired power plants, Selective Catalytic Reduction systems operate with minimum temperatures that are much lower than 750 degrees Fahrenheit. IDEM's determination that Selective Catalytic Reduction systems require a minimum of 750 degrees Fahrenheit is therefore incorrect.

⁵¹ See *id.* at 47 (EPA Permit Comment 5).

⁵² *Id.* at 63-64 (IDEM Response to EPA BACT Comment 5).

⁵³ *Id.* at 48 (IDEM Response to EPA Permit Comment 5).

⁵⁴ *Id.* at 63-65 (IDEM Response to EPA BACT Comment 5).

⁵⁵ *Id.* at 61 (EPA BACT Comment 2).

⁵⁶ *Id.* at 61-62 (IDEM Response to EPA BACT Comment 2).

IDEM's response to EPA's comment⁵⁷ also fails to state where the flue gas temperatures would be observed and ignores the fact that there is *always* a location in the flue gas path where the temperature of the gas stream would be within the proper range for Selective Catalytic Reduction. Locating the Selective Catalytic Reduction system within the proper location of a flue gas stream would mean that Selective Catalytic Reduction would achieve a NO_x reduction efficiency of 90-95%—much higher than IDEM's assumed efficiency rate of 70-90%.

Finally, IDEM's response to EPA's comment fails to explain how the Refinery would be required to operate its fuel gas-fired heater and boiler to achieve the "highest practical energy efficiency."⁵⁸

Due to these deficiencies with the Permit's emissions control technologies and IDEM's response to EPA's comments, EPA must object to the Permit.

C. Modeling Deficiencies

Finally, EPA must object to the Permit because it is based on inadequate and incorrect modeling of the Refinery's emissions. Without an accurate air quality modeling demonstration, EPA lacks a sufficient basis to conclude that the Refinery would not violate National Ambient Air Quality Standards or unlawfully consume PSD increment.

EPA commented that it was not clear how IDEM "modeled emission rates for emission units operating at a diminished capacity" during high-emission flaring events and thus requested that IDEM "show how the modeled emission rates were determined for the flaring scenarios."⁵⁹ Petitioners and their experts raised similar comments, which are described below. Because IDEM has not provided an adequate basis for its modeling of flaring events and instead has modeled flaring events using baseless assumptions about the expected frequency, duration, and flow rate of flaring events, EPA must object to the Permit as based on insufficient modeling.

II. The Permit Is Unlawful Because It Relies on Baseless Assumptions About a Technology Never-Before Used in the U.S.

If constructed, the Refinery would use VEBA Combi Cracking technology, which is not used by any other facility in the U.S., and would pollute the surrounding community with hazardous air pollutants, particulate matter, greenhouse gases, and other pollutants.⁶⁰

Congress designed the PSD program to "assure that any decision to permit increased air pollution . . . is made *only after careful evaluation of all the consequences of such a decision.*"⁶¹ In furtherance of that goal, EPA permitting guidance requires state permitting authorities to make independent determinations about necessary emissions controls and prohibits sole reliance on

⁵⁷ *Id.*

⁵⁸ *Id.* at 62 (IDEM Response to EPA BACT Comment 4).

⁵⁹ *Id.* at 68 (EPA Modeling Comment 1).

⁶⁰ *See* ATSD, App. A at 2, 6-7.

⁶¹ 42 U.S.C. § 7470(5) (emphasis added).

applicant information.⁶² State permitting authorities must complete this careful and independent evaluation whenever they issue a Title V permit to a new source subject to the PSD Program. EPA exercises oversight to ensure that state permitting authorities conduct this careful and independent evaluation of a permit's consequences before issuing a permit.⁶³

Because Riverview is proposing to use an untested technology with the potential to emit tons of toxic pollution in an area subject to the PSD program, Title V requires IDEM to evaluate carefully and independently the Refinery's air pollution consequences before issuing a permit. To carry out that evaluation, IDEM first must understand the Refinery's potential air quality impacts and technology choices and not abdicate its role in air quality modeling or engineering evaluations to the Refinery.

EPA must object to the Permit because IDEM failed to satisfy its obligations under Title V or the PSD program and issued the Permit based on incomplete information about the Refinery's design specifications and emissions potential. As stated in Petitioners' comments and in the expert report from Dr. Ranajit Sahu ("Sahu Report"), which Petitioners filed with their comments on December 10, 2018 and is attached here as Exhibit M, the Refinery's plant design is insufficient to support the Permit and its underlying air quality modeling. The permit application and communications between Riverview and IDEM provide the following examples of the Refinery's uncertain design parameters:

- Coal size reduction processes for which "detailed engineering or equipment procurement for the Riverview plant has not been initiated," and the definition of additives to be used "will be established during later engineering studies";⁶⁴
- For acid gas and natural gas burners "there will be one burner, however there could be multiple burners";⁶⁵
- "Formal engineering and procurement activities to solicit multiple equipment bids and supporting the next refined level of project scope and cost estimation will be initiated in the next phase of engineering";⁶⁶
- "The cooling water treatment program is not defined";⁶⁷
- Modeling was based on a list of structures and their physical parameters "at the

⁶² EPA, New Source Review Workshop Manual, at B.53-54 (Draft Oct. 1990) ("NSR Workshop Manual"), available at <https://www.epa.gov/sites/production/files/2015-07/documents/1990wman.pdf> (last visited Aug. 5, 2019).

⁶³ See, e.g., 68 Fed. Reg. at 9894-95 ("[I]n determining whether a Title V permit incorporating PSD provisions calls for EPA objection under section 505(b) [Title V]. . . EPA will review the process followed by the permitting authority in determining best available control technology, assessing air quality impacts, meeting Class I area requirements, and other PSD requirements, to ensure that the required [State Implementation Plan] procedures . . . were met. EPA will also review whether any determination by the permitting authority was made on reasonable grounds properly supported on the record, described in enforceable terms, and consistent with all applicable requirements. Finally, EPA will review whether the terms of the PSD permit were properly incorporated into the operating permit."); see also *Ala. Dep't of Env'tl. Conservation v. EPA*, 540 U.S. 461 (2004) (affirming EPA's reversal of a state permitting decision).

⁶⁴ Sahu Report at 2-3 (quoting other sources).

⁶⁵ *Id.* at 3 (quoting another source).

⁶⁶ *Id.* (quoting another source).

⁶⁷ *Id.* (quoting another source).

- time of permit application drafting”;⁶⁸
- Emissions estimates regarding the hydrogen plant were based on the “vendor’s initial conceptual approach. Discussion regarding hydrogen plant design are not finalized”;⁶⁹
 - Emissions estimates “will be refined with vendor information as it becomes available”;⁷⁰
 - Firing rates for natural gas were uncertain;⁷¹
 - The plant did “not have a good estimate of expected flare events such as startups, shutdowns, etc.”⁷²

Notably, IDEM did not address these incomplete and uncertain design specifications in its response to Petitioners’ comments. Instead, IDEM provided a conclusory statement that the “process design is sufficiently detailed to establish that the potential to emit exceeds the thresholds of the Part 70 and PSD programs.”⁷³ This response ignores the fact that, for purposes of Title V permitting, the relevant analysis does not begin and end with the determination that a source’s emissions exceed the major source threshold. Permitting authorities must understand the degree to which a source will exceed the threshold before issuing a permit. Failure to understand the source’s precise emissions potential precludes permitting authorities from understanding the full air pollution consequences of a new pollution source in violation of Title V. Precise emissions estimates are especially critical in this case because the Refinery’s predicted emissions are in some cases barely below applicable regulatory thresholds that, if reached, would trigger additional pollution control requirements.⁷⁴

Because IDEM issued the Permit without sufficient information to evaluate carefully and independently the Refinery’s air pollution consequences, EPA must object to the Permit as invalid under Title V.

III. The Permit Is Unlawful Because It Relies on Deficient and Erroneous Calculations.

Permitting authorities must model the air quality impacts of a proposed new source of air pollution according to federal regulations before they can issue a permit to that source.⁷⁵ These regulations require permitting authorities to model all emissions at the levels allowed in the permit to ensure that a new source of pollution would not violate National Ambient Air Quality Standards or produce other health or environmental consequences.⁷⁶

⁶⁸ *Id.* at 4 (quoting another source).

⁶⁹ *Id.* (quoting another source).

⁷⁰ *Id.* (quoting another source).

⁷¹ *Id.* at 4-5.

⁷² *Id.* at 5 (quoting another source).

⁷³ ATSD at 77 (IDEM Response to Earthjustice Comment 1).

⁷⁴ See KBR, Air Dispersion Modeling Report for PSD Permit Application (June 2018) at tbls. 2-1, 2-2 at 5-6 of 21 (“Air Quality Analysis”) (annual particulate matter 2.5 emissions at 80.6% of the national ambient air quality standard (NAAQS); total 1-hour NO₂ emissions at 76.8% of NAAQS; total 1-hour SO₂ emissions at 84.3% of NAAQS), Ex. N.

⁷⁵ See generally 40 C.F.R. Pt. 51, App. W (EPA Guideline on Air Quality Models).

⁷⁶ *Id.*

EPA must object to the Permit because it is based on deficient and incorrect emissions calculations that preclude accurate modeling results. First, as explained above, the Permit’s emissions estimates are guesswork at best because fundamental aspects of the Refinery’s design specifications and processes remain unknown. In effect, the emissions data underlying the Permit’s air quality modeling is either entirely baseless or subject to significant changes, making the emissions calculations deficient and misleading. The precision implied in the Permit’s air quality modeling—which in some instances uses emissions estimates down to decimal points—is deceptive given the substantial uncertainty surrounding the Refinery’s design and processes.

The modeling’s use of highly-detailed assumptions about flare gas emissions provides a stark example of the flawed and insufficient information on which the Permit is based. Despite concessions from the Refinery’s engineers that determining the duration of flaring events from the Refinery is “problematic,”⁷⁷ the Permit relies on modeling that uses detailed but unsupported assumptions about the frequency and duration of flaring events and flow rate and properties of flare gas during flaring events. As stated in Petitioners’ comments, it is impossible to reconcile the lack of design detail with these highly detailed assumptions about flaring events that underlie the Permit’s modeling of flaring events.⁷⁸

Here again, IDEM has attempted to minimize the significance of its deficient emissions data by stating that: “the magnitude of uncontrolled emissions has value in this permitting process only so far as those uncontrolled emissions determine whether the source may exceed thresholds for the Part 70 and PSD programs.”⁷⁹ IDEM’s response again ignores the fact that there is a significant and importance difference between emissions levels that slightly exceed the major source thresholds and those that substantially exceed such thresholds. Title V does not authorize EPA to support permits, like the one at issue in this case, that are based on guesswork as to the permitted source’s air pollution impacts.

The Permit suffers from further deficiencies related to IDEM’s incorrect use of EPA guidance for calculating emissions, known as AP-42.⁸⁰ Many of the emission calculations contained in Appendix A of the Permit’s Technical Support Document rely on AP-42 as the source of emission factors used to develop the Refinery’s potential-to-emit calculations.⁸¹ This reliance on AP-42 is in error because AP-42 provides long-term average emissions for plants in a source category as opposed to estimates of the maximum emissions that could result from a particular facility. Thus, wherever the application or IDEM’s analysis rely on AP-42 for potential-to-emit calculations, this error underestimates emission levels, with important consequences for potential emission controls.⁸²

⁷⁷ E-mail from Stephen Lang, Chief Technical Adviser, KBR, to Jenny Acker, Permits Branch Chief, IDEM Office of Air Quality (Aug. 27, 2018, 15:07 ET) (“Lang-Acker Email on Aug. 27, 2018”), Ex. O.

⁷⁸ ATSD at 78 (Earthjustice Comment 2).

⁷⁹ *Id.* at 79 (IDEM Response to Earthjustice Comment 2).

⁸⁰ EPA, AP-42: Compilation of Air Emissions Factors, *available at* <https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors> (last visited Aug. 5, 2019).

⁸¹ *See, e.g.*, ATSD, App. A, 9-10, 13-14, 16, 19-21, 24, 26, 28-29, 31, 33-36, 38-41, 45, 47, 49 (calculating the Refinery’s emissions potential using AP-42 for the coal dryer heater, feed heater and fractionation heater, treat gas and vacuum column feed heater, natural gas combustion in the flare pilots, and boiler).

⁸² ATSD at 78 (Earthjustice Comment 2) (citing Sahu Report).

The Permit also fails to account for the unreliability of the AP-42 factors on which the Refinery's emissions calculations are based. AP-42 factors have reliability ratings that indicate the robustness of each emission factor. Factors with lower ratings are based on data from fewer facilities, which may not be a random and thus more reliable sample of the industry. As stated in Petitioner's comments, the Permit relies on emission factors that EPA itself has rated as having little or no reliability.⁸³ IDEM acknowledged these flaws with the Permit's dependence on unreliable AP-42 emissions factors in its Response to Comments,⁸⁴ but did not change or supplement its methodology for calculating the Refinery's emissions potential and simply proclaimed the Permit's emissions calculations to be "sufficiently conservative."⁸⁵

Similar to the AP-42 errors, the application and IDEM incorrectly use average emission factors to calculate the emissions potential for volatile organic compounds from fugitive leaks, which are a significant portion of overall plant emissions of this type of pollutant.⁸⁶ In relying on an EPA estimate of control efficiency, IDEM fails to consider the significant caveats in an EPA guidance document, resulting in a considerable understating of emissions from component leaks.⁸⁷ Further, IDEM has improperly underestimated emissions from tanks by making improper assumptions about vapor pressure and by using obsolete AP-42 factors.⁸⁸ Although Petitioners raised in their public comments these inadequacies with the Permit's volatile organic compounds emissions estimates from fugitive leaks,⁸⁹ IDEM provided insufficient responses and made no changes to the Permit to resolve these deficiencies.⁹⁰

Finally, the Permit suffers from additional flaws stemming from certain errors in IDEM's emissions calculations,⁹¹ including describing controlled emissions of sulfur dioxide that are unaccountably greater than uncontrolled emissions, and using outdated and inaccurate global warming potentials. IDEM's response to both of these comments is technically deficient and inadequate.⁹²

The erroneous and deficient emissions calculations described in the preceding paragraphs currently serve as the basis for the Permit and for IDEM's conclusions that the Refinery will not violate National Ambient Air Quality Standards or unlawfully consume PSD increment. The consequences of reaching inaccurate conclusions with respect to the Refinery are significant: even small changes to IDEM's potential-to-emit calculations could mean that the Refinery would in fact cause Spencer County to fall out of attainment in contravention of the PSD program and

⁸³ *Id.* at 78 (Earthjustice Comment 2).

⁸⁴ *Id.* at 24 (IDEM Response to General Statement 7) ("IDEM, OAQ understands that AP-42 emission factors represent average emissions for a source activity and that average emissions differ significantly from source to source. IDEM, OAQ also understands that some of the AP-42 emission factors used in the PTE calculations have a low emission factor quality rating (e.g., a rating of D or E) and may be less accurate, reliable, or robust than more highly-rated factors and may provide only an approximation of the average emissions.").

⁸⁵ *Id.*

⁸⁶ ATSD, App. A at 46 (emissions calculations for volatile organic compounds); *see also* Sahu Report at 9-10.

⁸⁷ Sahu Report at 9-10.

⁸⁸ *Id.* at 10.

⁸⁹ ATSD at 78 (Earthjustice Comment 2).

⁹⁰ *Id.* at 79 (IDEM Response to Earthjustice Comment 2).

⁹¹ *Compare* ATSD, App. A at 1 (Emissions Calculations PTE Summary) (showing uncontrolled SO₂ emissions potential of 208.20 tons/year) *with id.* at 2 (showing controlled SO₂ emissions potential of 225.13 tons/year).

⁹² ATSD at 79 (IDEM Response to Earthjustice Comment 2).

Title V. Additionally, inaccuracies in the Refinery’s emissions projections for certain hazardous air pollutants could mean that Spencer County residents and Refinery workers would be at an elevated risk of developing cancer compared to current IDEM estimates.⁹³ Errors in cancer risk assessment pose special concerns due to the Refinery’s potential to emit pollutants with significant carcinogenic potential, like benzene and polycyclic aromatic hydrocarbons.⁹⁴

EPA must object to the Permit because the emissions calculations and modeling on which the Permit is based does not comply with Title V requirements.

IV. The Permit Unlawfully Relies on Deficient and Inaccurate Air Quality Modeling.

A. The Permit’s Modeling Lacks Credibility

EPA must object to the Permit for substantial deficiencies in the Permit’s air quality modeling beyond those deficiencies described above. First, the modeling underlying the final Permit is a wholesale reworking that has never been subject to independent or public review. In its Response to Comments, IDEM explained that it used new dispersion modeling to support the Permit in light of the many technical errors in the modeling inputs that Petitioners and EPA identified in public comments.⁹⁵ These extensive errors with IDEM’s initial air quality modeling not only prevented the public from reviewing the air quality modeling on which the final Permit is based; they also undermine the credibility of the entire Permit.

B. The Permit’s Modeling Uses Data from Sources that Are Not Representative of the Proposed Refinery’s Site.

As explained in Petitioners’ comments⁹⁶ and in the expert report from Howard Gebhart (“Gebhart Report”), which Petitioners filed with their comments on December 10, 2018 and is attached here as Exhibit P, the Permit’s air quality modeling does not comply with EPA regulations, which require permitting authorities to model the air quality impacts of a proposed source of pollution using meteorological data that is “representative” of the proposed permit site. EPA regulations provide a list of criteria to be considered when determining whether meteorological data is sufficiently representative for modeling purposes. The criteria include “spatial and climatological [] representativeness as well as the ability of the individual parameters to characterize the transport and dispersion conditions in the area of concern.”⁹⁷ One important criterion is the wind-flow patterns at the site of the meteorological data. Permitting authorities must comply with these EPA guidelines on data representativeness before issuing a Title V permit to new sources of pollution in areas subject to the PSD program.

In violation of these requirements, the Permit’s modeling uses meteorological data from the Evansville Airport that is not representative of the proposed Refinery site. As explained in

⁹³ See ATSD, App. C (Air Quality Analysis) at 13-14 (Section G – Hazardous Air Pollutant Analysis) (noting the cancer-causing potential of certain pollutants emitted from the Refinery and estimating the Refinery’s additive cancer risk).

⁹⁴ See, e.g., EPA, Carcinogenic Effects of Benzene: An Update, ii (Apr. 1998), available at <https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=2806> (confirming that “benzene is a ‘known’ human carcinogen by all routes of exposure”) (last visited Aug. 5, 2019); 29 C.F.R. § 1910.1028(c)(1) (limiting workplace exposure to benzene to an 8-hour time-weighted average of one part of benzene per million parts of air).

⁹⁵ See, e.g., ATSD at 69, 71, 73-74 (IDEM Response to EPA Modeling Comments 2, 3, 7, and 8).

⁹⁶ See ATSD at 80 (Earthjustice Comment 3) (citing Sahu Report).

⁹⁷ 40 C.F.R. Pt. 51, App. W at 8.4.1(b) (EPA Guideline on Air Quality Models).

Petitioners' comments, there are micrometeorological features at the proposed Refinery site that are not captured by the Evansville Airport data, including a creek drainage extending to the south of the site that induces local wind flow. The orientation of the Huntingburg Regional Airport's runway provides further evidence that wind-flow patterns at the Evansville Airport do not represent those at the proposed Refinery site. Runways at the Huntingburg Airport, which is approximately five miles from the Refinery site, have an east-west orientation, unlike the Evansville Airport's north-south orientation. Because runways typically are oriented along the prevailing winds, the orientation of the Huntingburg Airport's runways suggest that the wind-flow patterns at the proposed Refinery site differ from those at the Evansville Airport. The proposed Refinery site also has rolling terrain that does not exist at or near the Evansville Airport site. These local topographic features influence the on-site meteorology.

In addition, the Evansville Airport data was collected at or near ground level, whereas the major emissions stacks at the proposed Refinery site would extend upwards of 200 feet in the air. As Petitioners' air modeling expert Howard Gebhart explained in his comments, wind speed and direction are key parameters for accurately describing atmospheric transport and dispersion, and these parameters vary by elevation.⁹⁸ Therefore, data collected near ground level is not representative of the wind conditions to which emissions from the proposed Refinery would be subject.

IDEM's justification for using data from the Evansville Airport is unsupported. As with its other responses to public comments, IDEM simply proclaims that the Evansville data is adequately representative without providing any technical analysis in support of that conclusion.⁹⁹ IDEM's statement that the Evansville Airport provides five years of data and 43,000-plus hourly observations has no bearing on the data's representativeness for modeling purposes. Moreover, IDEM's suggestion that multiple years of data is preferable to one year of on-site data directly contradicts EPA guidelines on air quality modeling, which state that "spatial or geographical representativeness is *best achieved* by collection of all the needed model input data in close proximity to the actual site of the source(s)."¹⁰⁰ Finally, IDEM's use of upper air data from Lincoln, Illinois does not remedy the Permit's failure to use inputs that are representative of the wind-flow speed and direction that exists at upper elevations at the proposed Refinery site because Lincoln is 250 miles away from the proposed Refinery site.

The Permit's modeling also fails to use data on background concentrations of pollutants that is representative of background concentrations at the proposed Refinery site. The Permit uses background concentration data from monitors in South Bend, Indiana, roughly 270 miles away from the proposed Refinery site.¹⁰¹ As with the data from Lincoln, Illinois, data from monitors located hundreds of miles away in South Bend, an urban area, is not sufficiently representative of background concentration data at the proposed Refinery site, a rural area. These air-quality monitoring sites also fail to account for the fact that the Refinery would be constructed near a major highway with vehicle traffic emitting significant amounts of

⁹⁸ Gebhart Report at 3.

⁹⁹ ATSD at 25-26 (IDEM Response to General Statement 8).

¹⁰⁰ 40 C.F.R. Pt. 51, App. W at 8.4.4.1 (EPA Guideline on Air Quality Models) (emphasis added).

¹⁰¹ ATSD at 27 (IDEM Response to General Statement 9).

pollutants.¹⁰² All of these factors undermine the accuracy of the modeling results on which the Permit is based.¹⁰³

C. The Permit's Modeling Uses Inaccurate Emissions Data for Several Pollutants and Emissions Units.

Finally, the Permit's models are flawed because the Permit is based on insufficient modeling of flaring events and start-up, shutdown, and malfunction events.¹⁰⁴ Nothing in IDEM's Response to Comments supports its claim that it has modeled the worst-case emissions for such events.¹⁰⁵

In addition, the Permit's modeling underestimates particulate matter emissions from haul road traffic. IDEM's modeling inappropriately uses the annual mean emissions values of PM-10 and PM-2.5 despite the fact that the worst-case 24-hour traffic emissions would exceed the annual mean. Annual mean emissions estimates assume only 5% of deliveries for inputs and plant outputs would occur by truck, but if interruption in rail service occurred, then 100% of the Refinery's input and outputs would be delivered by truck until rail service were restored. The modeling of fugitive dust emissions from road traffic for the 24-hour PM-10 and PM-2.5 standards therefore should have been based on 100% of plant inputs and outputs being delivered by truck rather than only 5%. IDEM's Response to Comments provides no support for its decision to model particular matter emissions using the annual mean rather than worst-case 24-hour emissions estimates.¹⁰⁶

The Permit's modeling also does not account for smaller emissions sources or sources that have been constructed since the PSD baseline date (1998), all of which consume PSD increment and none of which would be accounted for in background concentrations data. For example, the Permit's models do not account for PSD increment consumption from the following nearby sources:

- Superior Ag, which is a livestock feed operation;
- An asphalt batch plant; and
- Sun Energy's proposed surface coal mine.

The models also do not account for the increased rail traffic to and from the Refinery, which would consume PSD increment. An accurate and comprehensive PSD increment analysis must account for all of these emissions sources.

Because of these extensive inaccuracies and deficiencies in the air modeling underlying the Permit, EPA must object to the Permit as invalid.

¹⁰² Sahu Report at 16.

¹⁰³ *Id.* at 15-17; *see also* Gebhart Report at 2-3, 7-8.

¹⁰⁴ Gebhart Report at 3-5.

¹⁰⁵ ATSD at 106, 108-10 (IDEM Response to Gebhart Comments 5, 8, 9 and 10).

¹⁰⁶ *See id.* at 112 (IDEM Response to Gebhart Comment 13).

V. The Permit is Unlawful Because It Does Not Require BACT for Certain Regulated Pollutants.

A. The Permit Must Select the “Most Stringent” Technology for Controlling Regulated Pollutants at the Refinery.

Permits issued to new major sources of air pollution subject to the PSD program must require those new sources to apply BACT for all regulated pollutants that the source has the potential to emit in “significant amounts.”¹⁰⁷ Regulated pollutants are those “for which a national ambient air quality standard has been promulgated” or that are “subject to regulation” under the Clean Air Act.¹⁰⁸ The amount of emissions that is considered “significant” is determined by regulation on a pollutant-by-pollutant basis.¹⁰⁹ BACT applies to each regulated pollutant that a major source has the potential to emit in significant amounts.¹¹⁰

BACT is “an emission limitation based on the maximum degree of reduction of each [regulated] pollutant” emitted from a major stationary source, “which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is *achievable* for such [source].”¹¹¹ As this definition suggests, “Congress intended BACT to perform a technology-forcing function.”¹¹²

EPA’s “top-down approach” for determining BACT first requires permitting authorities to identify all available control technologies for regulated pollutants by reviewing a variety of sources, including technical articles, EPA and state air permits, and EPA’s Clearinghouse, among others.¹¹³ After identifying all available control technologies for regulated pollutants, permitting authorities must rank those technologies in descending order and select the most stringent option as BACT “unless the applicant demonstrates, and the permitting authority in its informed judgment agrees, that technical considerations, or energy, environmental or economic impacts justify a conclusion that the most stringent technology is not achievable.”¹¹⁴ Once a permitting authority determines that an emission unit is subject to BACT and that the most

¹⁰⁷ 42 U.S.C. § 7475(a)(4); 40 C.F.R. § 52.21(j)(2); 326 Ind. Admin. Code 2-2-3(2).

¹⁰⁸ 326 Ind. Admin. Code 2-2-1(ss); *see also* 40 C.F.R. § 52.21(b)(50).

¹⁰⁹ 40 C.F.R. § 52.21(b)(23)(i) (defining “significant”); 326 Ind. Admin. Code 2-2-1(ww)(1) (same).

¹¹⁰ 42 U.S.C. §§ 7475(a)(4), 7479(3); 326 Ind. Admin. Code 2-2-3(2).

¹¹¹ 42 U.S.C. § 7479(3); *see also* 40 C.F.R. § 52.21(b)(12); 326 Ind. Admin. Code 2-2-1(i).

¹¹² EPA, Transmittal of Background Statement on “Top-Down” Best Available Control Technology (BACT) (June 13, 1989) at 5 (“EPA Background Statement on BACT”), *available at* <https://www.epa.gov/sites/production/files/2015-07/documents/topdawn.pdf> (last visited Aug. 5, 2019); *see also* NSR Workshop Manual at B.4 III.A (“The control alternatives should include not only existing controls for the source category in question, but also . . . innovative control technologies.”); *id.* (noting that regulators should consider all air pollution control technologies with “a practical potential for application to the emissions unit and the regulated pollutant under evaluation”)

¹¹³ *See* NSR Workshop Manual at B.11.

¹¹⁴ *Id.* at B.2; *see also id.* at B. 53-54 (“[T]he BACT selection essentially should default to the highest level of control for which the applicant could not adequately justify its elimination based on energy, environmental and economic impacts. If the applicant is unable to provide to the permit agency’s satisfaction an adequate demonstration for one or more control alternatives, the permit agency should proceed to establish BACT and prepare a draft permit based on the most effective control option for which an adequate justification for rejection was not provided.”).

stringent technology is technologically and economically feasible, the PSD program and Title V do not allow permitting authorities to impose a less stringent technology.¹¹⁵

The U.S. Supreme Court addressed this very issue in *Alaska Department of Environmental Conservation v. EPA*, when it upheld EPA’s decision to halt issuance of an air permit on grounds that Alaska’s Department of Environmental Conservation unreasonably rejected selective catalytic reduction as BACT for NO_x emissions. In that case, the Department followed EPA’s top-down approach for determining BACT and concluded that selective catalytic reduction was the most stringent control technology for NO_x emissions and was both technically and economically feasible.¹¹⁶ Despite this conclusion, the Department rejected selective catalytic reduction and allowed the source to control NO_x emissions through low-NO_x burners.¹¹⁷ EPA found this decision unreasonable and the Supreme Court affirmed EPA’s conclusion. In its reasoning, the Supreme Court explained that the Department provided no record evidence that selective catalytic reduction was infeasible and therefore the Department “lacked cause for selecting Low NO_x as BACT” instead.¹¹⁸

B. The Permit’s BACT Analysis Does Not Meet State and Federal Requirements.

IDEM has issued a permit for the Refinery that is based on an inadequate and incomplete evaluation of achievable control technologies because IDEM’s BACT analysis considers only what control technologies have been achieved in the past.¹¹⁹ As the Petitioners’ engineering expert explained, the Permit’s BACT analysis “seems to begin and end with a discussion of what BACT determinations have been made in the past.”¹²⁰ This approach leads to an incomplete analysis that contravenes the goal of BACT requirements, which seek to ensure that new sources of air pollution adopt the best pollution-control technologies that are available *and achievable* for the source. Although IDEM claimed in its response to Petitioners’ comments that its BACT analysis “is in conformance with the requirements,”¹²¹ IDEM’s analysis does not comply with the technology-forcing function of BACT requirements and therefore does not support IDEM’s BACT selections.

C. The Permit Does Not Require the Most Stringent Technology for Controlling Fugitive Volatile Organic Compound Emissions or Flaring Emissions in Violation of BACT Requirements.

Because fugitive volatile organic compound emissions and flaring emissions are both subject to BACT requirements, the Permit must require the Refinery to apply the most stringent

¹¹⁵ *Ala. Dep’t of Envtl. Conservation*, 540 U.S. at 478 (citing EPA).

¹¹⁶ *Id.* at 497.

¹¹⁷ *Id.*

¹¹⁸ *Id.* at 498-99, 502 (holding that EPA “did not act arbitrarily or capriciously in finding that [the Alaska Department of Environmental Conservation’s] BACT decision in this instance lacked evidentiary support”).

¹¹⁹ *See, e.g.*, ATSD, App. B (BACT Analysis) at 61 (stating that “[i]n the absence of demonstrated success, post-combustion controls for CO such as RTOs, catalytic oxidation, and flares are considered technically infeasible”), 69 (relying solely on EPA’s RACT/BACT/LAER Clearinghouse of air permits to determine that “use of good combustion practices is the only control for PM/PM₁₀/PM_{2.5} for Claus TGTU incinerators”).

¹²⁰ Sahu Report at 13.

¹²¹ ATSD at 82 (IDEM Response to Earthjustice Comment 4).

available control technologies for such emissions absent a reasoned justification for selecting a less-stringent alternative technology.

The most stringent available control technology for fugitive volatile organic compound emissions is a combination of an enhanced Leak Detection and Repair program and Optical Gas Imaging technologies.¹²² Enhanced Leak Detection and Repair programs include lower leak thresholds, more frequent inspections, and quicker repair times for leaking components.¹²³ Optical Gas Imaging also represents the state of the art technology for detecting leaking components.¹²⁴ Together, enhanced Leak Detection and Repair Programs and Optical Gas Imaging indisputably provide the maximum degree of fugitive volatile organic compound reduction that is achievable at the Refinery. With respect to flaring emissions, the most stringent available control technology is flare gas recovery, which reutilizes flare gases in the Refinery process or as fuel in order to minimize flaring emissions.¹²⁵

The Permit does not require the Refinery to apply these control technologies to fugitive volatile organic compound and flaring emissions, despite the fact that these technologies are the most stringent technologies available.¹²⁶ Furthermore, IDEM's claim that flare gas recovery technology would be unnecessary at the Refinery is baseless.¹²⁷ In rejecting flare gas recovery technology, IDEM assumes that the Refinery's flares would have a 98% destruction efficiency for volatile organic compound emissions that would leave little to no flare gas for capture and reutilization.¹²⁸ This assumption is not supported by any enforceable permit limits or by any evidence from other refineries that flares operate with such high destruction efficiencies.¹²⁹ In addition, most flaring (and associated emissions) occur during start-up, shut down, malfunction, and maintenance events where "recovery" without discharging to a flare cannot occur due to the large flare gas volumes of such events.

Because of these deficiencies with the Permit's BACT analysis, EPA must object to the Permit as unlawful.¹³⁰

VI. The Permit's Monitoring and Reporting Requirements for Flaring Emissions Do Not Comply with Title V.

The federally-approved Indian Plan requires sources like the Refinery to "report excess emissions no less frequently than quarterly" unless a "permit specifies or a rule requires more frequent reports."¹³¹ In order to implement these reporting requirements, the federal standards

¹²² *Id.* at 83-84 (Earthjustice Comment 6); *see also* Sahu Report at 14-15.

¹²³ *Id.*

¹²⁴ *Id.*

¹²⁵ *Id.*

¹²⁶ *See* ATSD, App. B at 83-98, 141-44.

¹²⁷ *See* ATSD at 84 (IDEM Response to Earthjustice Comment 6).

¹²⁸ *See* Permit at 95 (D.7.1).

¹²⁹ *Id.*; *see also* Cash Creek Order at 17 (granting petition because the permit assumed a 99% destruction efficiency for volatile organic compound emissions from flares and did not include conditions to assure compliance with the assumed destruction efficiency).

¹³⁰ *See Ala. Dep't of Env'tl. Conservation*, 540 U.S. at 498-99, 502 (upholding EPA's conclusion that Alaska's Department of Environmental Conservation was required to adopt the "most stringent" pollution-control technology absent a reasoned justification for selecting a less efficient alternative).

¹³¹ 326 Ind. Admin. Code 3-5-7(b).

empower IDEM to determine on a case-by-case basis whether “more frequent reporting is necessary to accurately assess the compliance status of the source.”¹³²

If built, the Refinery would have three flares servicing overpressure, two of which would also service emergency relief from the Refinery’s VEBA Combi Cracking and Sulfur Recovery units.¹³³ The Permit’s treatment of flaring emissions is deficient for three reasons.

First, the Permit sets emissions levels for these flares based on unsupported assumptions about the frequency, duration, and flow rate of flaring events. The Permit’s flaring emissions limits assume that the flares would process certain streams only once or twice—or at most, six times—per year for a limited number of hours.¹³⁴ But as explained in Petitioners’ comments, it is “simply impossible to reconcile the lack of design detail [for the Refinery] with the highly detailed assumptions on flare gases used by IDEM in its emissions calculations and modeling.”¹³⁵ IDEM’s attempt to justify its flaring emissions on the basis of “approximations”¹³⁶ from KBR is unavailing because KBR itself has admitted to problems with estimating the number of flaring events.

Second, the Permit does not require the Refinery to monitor emissions from its three flares and therefore lacks the necessary monitoring requirements to assure compliance with the Permit’s flaring emissions limits as required by Title V. The Permit only requires the Refinery to monitor the sulfur content of gas streams vented *to* the flares and to monitor the presence of a pilot flame, neither of which require monitoring the flares’ emissions outputs.¹³⁷

Finally, the Permit does not require the Refinery to report emissions exceedances from its flares more frequently than quarterly¹³⁸ and therefore is insufficient under Title V and New Source Performance Standards because the Permit’s quarterly reporting schedule would preclude IDEM from correcting inaccurate assumptions about the Refinery’s flaring emissions and from instituting the necessary pollution controls until it is too late to prevent or mitigate unauthorized flaring events.

Continuous, unauthorized flaring is a practice that refineries frequently use to avoid pollution control requirements.¹³⁹ EPA has singled out petroleum refineries as sources that

¹³² See 40 C.F.R. § 60.7(c); 40 C.F.R. § 60.108a(d) (requiring petroleum refineries to comply with reporting requirements contained at 40 C.F.R. § 60.7(c)).

¹³³ Permit at 98 (D.5)..

¹³⁴ ATSD, App. A. at 27.

¹³⁵ ATSD at 78 (Earthjustice Comment 2).

¹³⁶ *Id.* at 79 (IDEM Response to Earthjustice Comment 2 (citing IDEM Response to EPA Modeling Comment 1)).

¹³⁷ See Permit at 96-97 (D.5.4, D.5.6, and D.5.7).

¹³⁸ *Id.* at 98 (D.5.10).

¹³⁹ See, e.g., EPA Enforcement Alert, Frequent, Routine Flaring May Cause Excessive, Uncontrolled Sulfur Dioxide Releases at 1-2 (Oct. 2000) (“EPA Enforcement Alert”), *available at* <https://nepis.epa.gov/Exe/ZyNET.exe/500003NY.TXT?ZyActionD=ZyDocument&Client=EPA&Index=2000+Thru+2005&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C00thru05%5CTxt%5C00000002%5C500003NY.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL> (last visited Aug. 5, 201) (stating that “flaring frequently occurs in routine,

frequently violate new source performance standards for their “routine reliance on flaring to control” emissions.¹⁴⁰ Even the Applicant and IDEM have expressed concerns about the Refinery’s ability to use its flares for only infrequent emissions relief.¹⁴¹ Sustained, unauthorized flaring events can have profound environmental and public health consequences.¹⁴²

Without sufficient monitoring and reporting requirements associated with the Refinery’s flares or a reasonable and technically valid estimate of the likely number of annual flaring events, EPA must object to the Permit as unlawful under Title V.

VII. The Permit Is Unlawful Because Its Issuance Violated Public Participation Requirements.

A permit may be issued only if the permitting authority has complied with public participation requirements.¹⁴³ Indiana’s operating permit rules require IDEM to provide the public with “information sufficient to notify the public as to the emissions implications” of an air permit prior to issuing that permit.¹⁴⁴ For the many reasons identified in these comments, including (among others) missing plant information and erroneous calculations, the “emission implications” of the Refinery are not clear. Therefore, the Permit should be withdrawn until the public is notified.

IDEM also withheld hundreds of public records related to the Refinery and Permit until it was too late for the public to evaluate and comment on the information contained in these records. Petitioners filed public records requests regarding Riverview on June 19, 2018, Ex. Q, and November 14, 2018, Ex. R. IDEM posted some records on its Virtual File Cabinet in response, but as noted in Petitioners’ November 21, 2018 letter to IDEM, Ex. S:

[N]o “notes, including from meetings and telephone calls,” have been posted in the Virtual File Cabinet, despite the fact that IDEM has been preparing the proposed permit and other documents throughout 2018, and has been in contact with representatives of Riverview Energy Corporation during that time. By this omission, and possibly others, IDEM fails to respond to our request. IDEM’s omission impairs our ability to gather information regarding the basis for IDEM’s action that is necessary to fully prepare our comments on the proposed permit.¹⁴⁵

nonemergency situations or is used to bypass pollution control equipment” and noting particular concern with non-emergency flaring at petroleum refineries).

¹⁴⁰ *Id.*

¹⁴¹ *See, e.g.*, Lang-Acker Email, Ex. O (noting that “Riverview will at some time need to address minimizing” non-emergency flaring events “using a Flare Management Plan or event reporting as a special term or condition of the Air permit.”); E-mail from Stephen Lang, Chief Technical Adviser, KBR to Doug Logan, Environmental Engineer, IDEM Office of Air Quality to (Sept. 26, 2018, 7:57 ET) (on file with IDEM’s Virtual File Cabinet Doc. No. 82624040, AI ID No. 120104) (expressing further concern about flaring scenarios).

¹⁴² *See, e.g.*, EPA Enforcement Alert at 2.

¹⁴³ *See* 40 C.F.R. § 70.7(a)(1)(ii), (h).

¹⁴⁴ 326 Ind. Admin. Code 2-7-17(c)(1)(C)(iv).

¹⁴⁵ Letter from Charles McPhedran, Earthjustice to Jenny Acker, Chief Air Permits Branch, IDEM Office of Air Quality (Nov. 21, 2018), Ex. S.

On November 15, 2018, Petitioners received a communication from IDEM suggesting that they submit detailed search terms for an e-mail search in response to their records request. Petitioners submitted such search terms by letter to IDEM on November 21, 2018, Ex. U.

Finally, on June 3, 2019, IDEM produced documents in response to Petitioners' request. IDEM's response, attached as Exhibit V, came nearly a year after Petitioners initially requested the documents, six months after the close of the public comment period for the draft Permit, and just one week before IDEM issued the final Permit to Riverview. By withholding these public records until it was too late for Petitioners or other members of the public to evaluate them, IDEM failed to provide the public with "information sufficient to notify the public as to the emissions implications" of the Permit in violation of the federally-approved Indiana Plan.¹⁴⁶

EPA previously has explained that "the unavailability during the public comment period of information needed to determine the applicability of or to impose an applicable requirement also may result in a deficiency in the permit's content" and therefore may warrant an objection to the permit.¹⁴⁷ Because IDEM did not make critical information available during the public comment period, EPA must object to the Permit.

Conclusion

For the reasons enumerated above, the Permit for Riverview Energy Corporation's proposed Refinery is unlawful under Title V and EPA must object to its issuance.

Mary Hess, President
Southwestern Indiana Citizens for Quality of Life, Inc.
P.O. Box 111
Dale, IN 47523-0111
(812) 686-5391
hessmary@att.net

John Blair, President
Valley Watch, Inc.
800 Adams Avenue
Evansville, IN 47713
(812) 464-5663
blair.valleywatch@yahoo.com

Charles McPhedran, Esq.
Lauren Piette, Esq.
Earthjustice
1617 JFK Boulevard, Suite 1130
Philadelphia, PA 19103
(215) 717-4521
cmcphedran@earthjustice.org
lpiette@earthjustice.org
Counsel for Petitioners

¹⁴⁶ 326 Ind. Admin. Code 2-7-17(c)(1)(C)(iv).

¹⁴⁷ See, e.g., Cash Creek Order at 9.