ENVIRONMENTAL LAW & POLICY CENTER

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VIA ELECTRONIC MAIL

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RE: Comments on the Preliminary Findings Regarding a New Source Construction and Federally Enforceable State Operating Permit for CarbonFree, FESOP No.: F089-50044-00738.

Introduction:

The Environmental Law & Policy Center along with Conservation Law Center, Gary Advocates for Responsible Development, and Northern Lake County Environmental Partnership respectfully submit the following comments on the above-referenced new source construction and federally enforceable state operating permit ("FESOP" or "Permit") for CarbonFree's stationary industrial inorganic chemicals facility.

Commenters are non-profit organizations that work to promote a healthier environment for all. Commenters advocate for vigorous enforcement of federal and state environmental laws to protect public health and ensure that businesses do not receive a competitive advantage by polluting the environment.

I. Comment 1: The Draft FESOP's reporting is insufficient to assure compliance with underlying NOx limits.

For a limit to be enforceable as a practical matter, a permit must clearly specify how emissions will be measured or determined for purposes of demonstrating compliance with the limit.[1] This requires every emission limit to be (a) "accompanied by terms and conditions that require a source to effectively constrain its operations so as to not exceed the relevant emissions threshold… whether by restricting emissions directly or through restricting specific operating parameters," and (b) supported by monitoring, recordkeeping, and reporting requirements "sufficient to enable

[1] *See, e.g.*, *In the Matter of Hu Honua Bioenergy Facility, Pepeekeo, HI* (Feb. 7, 2014), https://www.epa.gov/sites/default/files/2015-08/documents/hu_honua_decision2011.pdf ("Hu Honua Order"), at 10.

regulators and citizens to determine whether the limit has been exceeded."[2] Under Indiana law a FESOP must include "[m]onitoring and related record keeping and reporting requirements that assure that all reasonable information is provided to evaluate continuous compliance with the applicable requirements."[3] Those applicable requirements include "emissions limitations and standards."[4]

Section D.1.4 of the FESOP states "[t]he combined NOx emissions from the MGO Hearth Furnace, identified as EP-01, the PCC Dryer, identified as EP-02A, the natural gas-fired steam boiler, identified as EP-15, the natural gas-fired spray dryer, identified as EP-15A, and the diesel-fired Emergency Generator, identified as EP-19, shall not exceed 49.5 tons per twelve (12) consecutive months period with compliance determined at the end of each month."[5] Section D.1.7(a) and (b) calculate monthly NOx using BFG as an input term. Section D.1.15(c) states that "[r]ecords... shall be complete and sufficient to establish compliance with the NOx emission limit established in Condition D.1.4." However, Section D.1.15(c)(1) only requires the permittee to record "[t]he actual amount of natural gas combusted in each calendar month in EP-01, EP-02A, EP-15 and EP-15A"; the Draft Permit does not require the permittee to report BFG usage or calculate and report the monthly and yearly total NOx emissions. Thus, the Draft Permit fails to allow IDEM or the Public to verify the BFG input or compliance with the underlying NOx emission limit and, fails to provide "all reasonable information . . . to evaluate continuous compliance" with the underlying NOx limit. IDEM must add a reporting requirement for BFG, in addition to the existing natural gas reporting requirement, as well as the calculation and reporting of monthly and yearly NOx emissions to assure compliance with the applicable permit terms.

II. Comment 2: IDEM's Calculation Error Regarding the Cooling Tower's PM Emissions Causes the Facility to Exceed the 100tpy Major Source and PSD Threshold for PM, PM 10, and PM 2.5 emissions.

Title V major source thresholds for PM, PM2.5, and PM10 emissions are all 100 tpy.[6] After application of the emission controls and related emission limits required in the Permit, CarbonFree's PM, PM2.5, and PM10 emissions are close to the threshold at 97.27tpy, 92.98tpy, and 99.30tpy, respectively.[7] Furthermore, to avoid PSD applicability pursuant to 326 IAC 2-2, Section C.1(b) limits PM "to less than one hundred (100) tons per twelve (12) consecutive month period."

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[2] *In the Matter of Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC*, (Apr. 8, 2002), https://www.epa.gov/sites/default/files/2015-08/documents/masada-2_decision2001.pdf ("Pencor-Masada Order"), at 7.
[3] 326 IAC 2-8-4(3).
[4] 326 IAC 2-8-4(1).
[5] IDEM, *Preliminary Findings Regarding a New Source Construction and Federally Enforceable State Operating Permit* (FESOP) *for Carbon Free in Lake County*, FESOP NO. F089-50044-00738, at TSD, Sec. D.1.4 (Sept. 17, 2026) ("Draft FESOP").
[6] *Id*. TSD, Pg. 8.
[7] *Id*.

The cooling tower emissions calculation assumes a 1,200mg/L (ppm equivalent) total dissolved solids value.[8] The TSD notes this value is based upon "AP 42, Total Liquid Drift per Table 13.4-1, and TDS per Table 13.4-1 footnote c effective TDS content."[9] However, Table 13.4-1 footnote c states that "the values shown... imply an effective TDS content of approximately ***12,000 parts per million (ppm)*** in the circulating water."[10] The Draft FESOP incorrectly calculates PM emissions by using the 1,200ppm value for TDS content instead of the 12,000ppm value.

- The Draft FESOP notes that the cooling tower circulates 14,400 gallons/minute[11] which converts to 7.57 billion gallons/yr. 7.57 billion gallons equates to 7,570,000 thousand gallons.
- The AP-42 factor for drift, i.e. the amount of water lost as mist, is 1.7lb for every 1,000 gallons circulated.[12] 7,570,000 thousand gallons X 1.7lb per thousand gallons = 12,869,000lbs of mist per year.
- The TDS figure is the amount of the water's weight that is dissolved solids where 1,200ppm is .12% and 12,000ppm is 1.2%.
- Therefore, in the draft FESOP, IDEM miscalculated the final TPY using .12% of 12,869,000lbs = 15,442.8lbs or 7.7214tons/yr of PM.
- The correct calculation, using the appropriate AP-42 factor for TDS, would be 1.2% of 12,869,000lbs = 77.214tons/yr of PM.

Pursuant to IDEM's own underlying analysis, the correct emissions calculations push CarbonFree's PM, PM2.5, and PM10 emissions far over the 100tpy limit, thereby subjecting the facility to PSD requirements and Title V major source permitting. Under the incorrect calculation, source-wide PM, PM2.5, and PM10 were calculated at 97.27 tpy, 92.98 tpy, and 99.30 tpy for PM, PM2.5, and PM10 respectively.[13] Of these totals, the cooling tower contributed 7.72 tpy, 3.24 tpy, and 5.4 tpy for PM, PM2.5, and PM10 respectively. Operating under the same ratio makeup of PM2.5 and PM10 within PM, this new calculation brings the cooling tower contributions up to 77.2 tpy, 32.4 tpy, and 54.0 tpy for PM, PM2.5 and PM10 respectively, which results in source-wide totals of 166.75 tpy, 122.14 tpy, and 147.9 tpy for PM, PM2.5 and PM10, respectively.

[8] *Id.* at TSD, App. A at 9.
[9] *Id.* at fn. 2.
[10] EPA, *Compilation of Air Pollutant Emission Factors (AP-42)* vol. I, § 13.4-4, (5th ed. Jan. 1995), available at https://www.epa.gov/sites/default/files/2020-10/documents/13.4_wet_cooling_towers.pdf (emphasis added).
[11] Draft FESOP TSD, App. A at pg. 9.
[12] EPA, *Compilation of Air Pollutant Emission Factors (AP-42)* vol. I, § 13.4-4, Table 13.4-1 (5th ed. Jan. 1995), available at https://www.epa.gov/sites/default/files/2020-10/documents/13.4_wet_cooling_towers.pdf (emphasis added).
[13] Draft FESOP TSD, Pg. 8

IDEM's own AP-42 emissions factor assumptions show that CarbonFree will exceed the major source threshold and trigger PSD requirements for PM. IDEM must re-notice this draft permit as a Title V major source permit and apply the [14] requirements.

III. Comment 3: The Draft FESOP's Source Determination is Incorrect.

The Draft FESOP concludes that the U.S. Steel – Gary Works steel mill and the CarbonFree – SkyCycle facility "do not meet all three criteria of the major source definition and therefore the plants are not part of the same Part 70 major source."[15] In reaching that conclusion, IDEM applied the right test:

> "in order for these plants to be considered as a major source under 326 IAC 2-7-1(20)(B) and (c), all three of the following criteria must be met: (a) The plants must have common ownership and/or control, (2) The plants must have the same two-digit Standard Industrial Classification (SIC) Code or one must serve as a support facility to the other; and (3) The Plants must be located on the same, contiguous or adjacent properties."[16]

But when that test is fairly applied, Gary Works and CarbonFree - SkyCycle meet all three criteria and therefore must be permitted under the same Part 70 major source Title V air permit.

a. The U.S. Steel – Gary Works steel mill and CarbonFree – SkyCycle facility are under common control.

There is a long-standing presumption of a common control relationship when one company locates on another's property.[17] In this case, CarbonFree will be located on U.S. Steel's property.[18] Thus, CarbonFree and U.S. Steel are presumed to be under common control, and that presumption is difficult to overcome given the other indicators of common control at these facilities.

The Draft FESOP applies a disjunctive two-prong test under which common control common exists if either prong is met.[19]

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[14] In the alternative, IDEM must include the appropriate testing and recordkeeping requirements to ensure that the TSD will achieve 1,200 PPM.
[15] *Id.* TSD, pg. 4.
[16] *Id.* TSD, pg. 1.
[17] Letter from Gregg M. Worley, Chief, Air Permits Section, EPA Region 4, to James Capp, Chief, Air Protection Branch, Georgia Department of Natural Resources at 2 (Dec. 16, 2011), https://www.epa.gov/sites/default/files/2015-07/documents/ps2011.pdf ("PowerSecure Common Control Determination").
[18] Draft FESOP TSD, pg. 3.
[19] *Id.* TSD, pg. 2.

The first test asks "[w]hether the plant's or facility's activity directly serves the purpose of a primary activity by supplying a necessary raw material to the primary activity or performing an integral part of the production process for the primary activity."[20]

The second test asks "whether the owner or operator of the primary activity has a major role in the day-to-day operations of the other plant's or facility activity."[21] Under this test,

"day-to-day control... may be evidenced by several factors, including:

- Is a majority of the output of the plant or facility provided to the primary activity?
- Can the plant or facility contract to provide its products/services to a third-party without the consent of the primary activity?
- Can the primary activity assume control of the auxiliary activity under certain circumstances?
- Is the plant or facility required to complete periodic reports to the primary activity?"[22]

Importantly if any "one or a combination of these questions is answered affirmatively, common control may exist."[23]

The second test is satisfied here. First, U.S. Steel has a major role in the day-to-day operations of CarbonFree. U.S. Steel provides the two main inputs for CarbonFree, slag and BFG.[24] Without these inputs, CarbonFree would not have the fuel to run the MGO Hearth Furnace or the PCC dryer,[25] and it would not have the raw materials, i.e. slag, to produce precipitated calcium carbonate ("PCC").Therefore, without U.S. Steel, CarbonFree would simply not be able to operate.

Second, the majority of CarbonFree's output is provided to U.S. Steel. IDEM incorrectly answers this question in the negative by noting that "[t]he PCC output from the CarbonFree facility is sent to third parties for sale on the open market and is not provided to U.S. Steel."[26] This statement ignores that CarbonFree not only outputs PCC, but also outputs depleted slag and the Draft FESOP notes that CarbonFree will truck up to 330,000 tons per year of depleted slag to U.S. Steel.[27] Section A.2(b) notes that the PCC dryer (emissions unit EP-02A) has a nominal rate of 15 tons per hour.[28] Even if the PCC dryer ran every hour of the year at the nominal rate, i.e. 15tph X 8,760 hours, the emissions unit would output 131,400 tons per year of PCC. This figure is well below the maximum depleted slag output, and it is assuming unrealistic production figures. Therefore, IDEM has no basis to claim that a "majority" of CarbonFree's output will be sold on

[20] *Id*.
[21] *Id*.
[22] *Id*.
[23] *Id*.
[24] *Id.* TSD, pg. 2.
[25] *Id*. TSD, App. A., pgs. 4-5.
[26] *Id*.
[27] *Id.* App. A, pg.13.
[28] *Id.* Sec. A.2(b).

the open market. In fact, it is more than likely that a majority of CarbonFree's output will be provided to U.S. Steel in the form of depleted slag.

Third, although not explicitly stated in the Draft FESOP, CarbonFree is likely required to complete periodic reports to U.S. Steel given the interconnected nature of materials and activities. U.S. Steel is authorized to send 398,000 tpy of slag to CarbonFree and CarbonFree is authorized to send 330,000 tpy of depleted slag back to U.S. Steel.[29] Given these caps, the two parties almost certainly need to coordinate, with CarbonFree communicating how much slag it is receiving and how much depleted slag it is sending back to U.S. Steel. Similarly, because CarbonFree is taking BFG from U.S. Steel to run its operations,[30] the parties likely have to coordinate about how much BFG CarbonFree is using. IDEM may not assume that no such reporting occurs given the clearly interconnected relationship of the parties. IDEM must inquire into whether such reporting occurs and factor such information into its common control analysis.

b. U.S. Steel's Draft Permit Demonstrates that CarbonFree is Under Common Control.

U.S. Steel – Gary Works's draft Title V permit, which includes a proposed significant source modification and significant permit modification, indicates that there will be a hot metal output increase from 5,641,790 tpy to 6,674,199 tpy.[31] This increase comes with higher BFG usage, projected to be 103,725 mmcf/year.[32] The projected BFG flares usage is 41,280 mmcf/year.[33] The projected BFG boiler usage is 268,695 mmcf/year.[34] Of that total boiler usage, 22,160 mmcf/year of BFG is allocated to the new Boiler 7 unit.[35] Therefore, the total projected BFG usage between stoves, boilers, and flares is 413,800 mmcf/ton.[36] However, the 22,160 mmcf/year of BFG allocated for use in the new boiler 7 will not be utilized in practice as restricted by U.S. Steel's own permit terms. Section D.15.4(b) states that "TBBH Boiler No. 7 (OTB60468) shall burn natural gas only until the date the requirements in 326 IAC 7-4.1-20 are revised."[37] Furthermore, every corresponding equation to document compliance for Boiler 7 is written with natural gas as an input.[38] The TSD appears to shift 15,979 mmcf/year of BFG usage from the original Boiler 7 allocation to flares.[39] Therefore, of the 22,160 mmcf/year originally allocated for Boiler 7, the U.S.

[29] *Id.* App. A, pg. 13.
[30] *Id.* TSD, pg. 2 (where IDEM notes that "[t]he U.S. Steel facility will provide blast furnace gas and steel slag to the CarbonFree facility.")
[31] IDEM, *Preliminary Findings Regarding a Significant Modification to a Part 70 Operating Permit for U.S. Steel Corporation – Gary Works in Lake County*, PSD/Significant Source Modification No. 089-50605-00121, Significant Permit Modification No. 089-50609-00121, TSD, App. A, pg. 86 (Oct. 1, 2026) ("U.S. Steel Draft Permit").
[32] *Id*.
[33] *Id*.
[34] *Id.*
[35] *Id*.
[36] *Id*.
[37] *Id*. Sec. D.15.4(b).
[38] *Id.* Sec. D.15.9.
[39] *Id.* TSD, App A., pg. 87.

Steel draft Title V permit does not account for 6,181 mmcf/year. The Draft FESOP establishes that U.S. Steel will be sending BFG to CarbonFree40 and the amount of BFG unaccounted for in U.S. Steel's draft permit is roughly the amount required by CarbonFree. CarbonFree emissions unit EP-01 utilizes 4779.066667 mmcf/yr[41] and EP-02A utilizes 1703.33MMscf/yr,[42] which is a total BFG usage of 6,482.396667 mmcf/yr.

This BFG arrangement further shows common control: it is a prime example of "the owner or operator of the primary activity [playing a] major role in the day-to-day operations of the other plant's or facility activity."[43] CarbonFree plans to run on a combination of BFG and natural gas, but with a heavy reliance on BFG;[44] therefore, U.S. Steel plays a major role in the day-to-day operations of CarbonFree by providing such fuel to operate the core emissions unit which produces PCC.[45]

c. CarbonFree Maintains a support facility relationship with U.S. Steel.

IDEM notes that "[a] plant is a support facility to another plant if it dedicates 50% or more of its output to the other plant."[46] CarbonFree's depleted slag output, which is likely a majority of the total output,[47] is sent back to U.S. Steel. Therefore, CarbonFree is a support facility for U.S. Steel.

d. CarbonFree and U.S. Steel are on the same property.

Lastly, IDEM correctly identifies that "[t]he CarbonFree facility will be co-located on the same property that the U.S. Steel mill currently operates. The proposed CarbonFree facility is within the boundary of the U.S. Steel fenceline and therefore the plants meet the third criteria of the major source definition."[48]

Based on the information provided above, U.S. Steel and CarbonFree appear to be a single stationary source. Accordingly, IDEM must reanalyze the aggregation test with the information discussed above and revise the FESOP, as necessary, including a complete PSD major modification analysis for PM, PM2.5, PM10, SO2, and CO emissions, as well as a NNSR major modification analysis for NOx and VOC emissions.

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[40] Draft FESOP TSD, pg. 2.
[41] *Id.* App. A, pg. 4.
[42] *Id.* pg. 5.
[43] Draft FESOP TSD, pg. 2.
[44] *Id.* App. A, pgs. 4-5 (where the BFG throughputs far outweigh the natural gas throughputs at the MGO Hearth Furnace and PCC Dryer.)
[45] *Id.* pg. 5.
[46] *Id.* TSD, pg. 3.
[47] *Compare* the depleted slag throughput at App. A, pg.13 *with the* PCC dryer nominal 15 tpy rate at Sec. A.2(b) indicating a maximum output of 131,400 tons per year of PCC.
[48] *Id.* TSD, pg. 3.

Conclusion:

Commentors respectfully request the following:

- That IDEM add a reporting requirement for BFG in addition to the existing natural gas reporting requirement to assure compliance with underlying NOx limits.

- That IDEM re-notice the CarbonFree draft permit as a Title V major source draft permit with appropriate PSD requirements.

- That IDEM treat CarbonFree and U.S. Steel Gary Works as components of the same Title V and PSD/NSR major source and re-notice a combined draft permit accordingly, including complete PSD and NNSR major modification analyses.

Respectfully Submitted,

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