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PROGRAM

Brian Gustafson, Administrator
Air Quality Program
Department of Environment and Natural Resources
523 East Capitol, Joe Foss Building
Pierre, South Dakota 57501

**Re: Comments on the Draft Prevention of Significant Deterioration Air Quality
Preconstruction Permit for the Hyperion Energy Center**

Plains Justice, a public interest law group that works to protect Northern Plains communities from offices in Cedar Rapids, Iowa and Vermillion, South Dakota, respectfully submits these comments on the Department of Environment and Natural Resources' (DENR) proposed issuance of a permit for the construction of a petroleum refinery and integrated gasification combined cycle (IGCC) power plant at a greenfield site in southeastern South Dakota. The Hyperion Energy Center (HEC) would be one of the largest refineries and electric generating units in the United States. Due to the proximity to the Iowa border, the HEC will subject Iowa residents to excessive air pollutants. The pollutants emitted from a facility like the HEC have significant public health impacts that transcend state borders. These comments are intended to summarize Iowans' most serious concerns about the construction of this facility so close to the Iowa-South Dakota border. Iowans risk public health and air quality impacts from the proposed facility, and economic development on the Iowa side of the border may also suffer unjustly due to the large consumption of NAAQS increment by a single South Dakota facility.

I. Introduction

The Clean Air Act (CAA) was created "to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare."¹ Section 109 of the CAA requires the Environmental Protection Agency (EPA) to establish "national ambient air quality standards"

¹ 42 U.S.C. § 7401(b)(1).

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(NAAQS) to protect human health and the environment for seven “criteria pollutants.”² NAAQS have been established for all seven pollutants: sulfur dioxide, nitrogen oxides, volatile organic compounds, particulate matter less than 2.5 micrometers in diameter (PM_{2.5}), particulate matter less than 10 micrometers in diameter (PM₁₀), carbon monoxide, and lead.³ Under Section 107(d), each State is required to designate areas within its borders where the air quality meets and does not meet the NAAQS set for each criteria pollutant.⁴ An area that meets the NAAQS for a pollutant is said to be in “attainment;” areas that do not meet the NAAQS are in “nonattainment.”

The Prevention of Significant Deterioration (PSD) Program sets out the requirements to protect air quality in attainment areas.⁵ Section 165(a) prohibits the construction and operation of a “major emitting facility” without first obtaining a construction permit that contains emission limitations for air pollutants subject to the CAA.⁶ Additionally, the owner/operator of a facility must demonstrate that the construction or operation:

[w]ill 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 to which this part applies 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 Act.⁷

Major emitting facilities must also apply “best available control technology” (BACT) emission limitations for each pollutant subject to the CAA.⁸

As HEC is proposed near the Iowa-South Dakota border, air pollutants emitted from this facility will affect Iowa’s air quality. Due to the short timeframe and given the very technical and specialized nature of the proposed facility, these comments address just a few concerns Plains Justice has with the Draft PSD permit.

² 42 U.S.C. § 7409.

³ 40 C.F.R. Pt. 50.

⁴ 42 U.S.C. § 7407(d).

⁵ 42 U.S.C. §§ 7470-7490.

⁶ 42 U.S.C. § 7475(a).

⁷ 42 U.S.C. § 7475(a)(3).

⁸ 42 U.S.C. § 7475(a)(4).

II. The PM_{2.5} air monitor in Sioux City, Iowa has already registered exceedances of the PM_{2.5} NAAQS

PM_{2.5} is the smallest fraction of particulate matter and a severe public health risk.⁹ As seen in Table 1, the air monitor in Sioux City has exceeded the PM_{2.5} NAAQS value of 35 µg/m³. While air modeling shows that PM_{2.5} emissions from HEC will not violate the NAAQS, any additional PM_{2.5} in the region will exacerbate the exceedances of the 24-hour NAAQS recorded at the Sioux City monitor in 2007 and 2008.

Table 1. Ambient PM_{2.5} concentrations (µg/m³) at Sioux City, Iowa

Year	24-hr 1 st Max (µg/m ³)	24-hr 2 nd Max (µg/m ³)	24-hr 98 th Pct (µg/m ³)	Annual Average (µg/m ³)
2008	37.6	27.8	27.8	10.47
2007	45.7	36.7	31.2	10.64

Source: EPA AirData, available at www.epa.gov/air/data/monvals.html?st~IA~Iowa

Moreover, condensable particulate matter emissions and the secondary formation of PM_{2.5} from chemical conversions have been omitted from Hyperion and DENR's modeling. The omission of these two "sources" of PM_{2.5} can cause a drastic underestimation of PM_{2.5} impacts, leaving the actual PM_{2.5} emissions from the HEC completely unknown. DENR should include these metrics in its modeling.

III. The Draft PSD permit lacks a BACT analysis and emission limitation for PM_{2.5}

The PSD Program requires a BACT analysis for PM_{2.5} emissions. As stated above, BACT limits are required for each pollutant *subject to regulation* under the CAA. This includes PM_{2.5}, as EPA's promulgation of a PM_{2.5} NAAQS in July 1997 triggered the duty to apply the PSD requirements for this pollutant. Without a BACT limit for PM_{2.5}, DENR cannot be certain that the PM_{2.5} NAAQS will not be violated. Further, to issue a PSD permit without a BACT emission limit for PM_{2.5} threatens the public health of not only Iowans, but also South Dakotans.

Without consideration of PM_{2.5} precursors like ammonia, which will be emitted in large quantities, the impact of PM_{2.5} is disturbingly underestimated. The same is true of condensable particulates, a subcategory of PM_{2.5}.¹⁰ Condensable particulates comprise a much larger fraction of PM_{2.5} than of larger particulate matter.¹¹ Without the necessary analysis and application of

⁹ See EPA, "PM_{2.5} NAAQS Implementation," available at http://www.epa.gov/tnn/naaqs/pm/pm25_index.html.

¹⁰ PM_{2.5} is generally subdivided into filterable PM_{2.5}, which can be collected on filter paper, and condensable PM_{2.5}, which condenses out of the gas phase.

¹¹ Proposed Rule To Implement the Fine Particle National Ambient Air Quality Standards, 70 Fed. Reg. 65,984, 66,044 (Nov. 1, 2005).

control technologies, PM_{2.5} emissions will be wholly unchecked, resulting in severe air quality and public health impacts on both sides of the border.

IV. Hyperion's air quality models are deficient

The air quality impacts modeling done by Hyperion has several flaws. First, the radius was limited to 12 km. DENR's modeling covered an even smaller area. The AERMOD model, used by Hyperion, has a maximum radius of 50 km. Analyzing the additional area allows the air impacts in Iowa to be considered. As the project is located near the Iowa-South Dakota border and will have serious impacts on Iowa residents and businesses, it is necessary to include Iowa receptors in the modeling domain. Hyperion restricted its modeling domain to South Dakota receptors only. Without including Iowa receptors, the modeling results give an inaccurate portrayal of the air quality in the region. Moreover, without including emissions from the flares in the modeling analysis, it is impossible to achieve an accurate model.

V. The refinery flares have not been properly analyzed

Numerous chemicals are emitted from refinery flares, including hydrocarbon gases, particulate matter, polycyclic aromatic hydrocarbons, sulfur oxides, carbon dioxide, carbon monoxide, nitrogen oxides, dioxins, and various heavy metals, including mercury and lead. These chemicals all have known health impacts, and must be limited with emission limitations in the HEC PSD permit.

a. The Draft PSD permit does not contain a BACT analysis or emission limitations for the air pollutants emitted from the refinery flares

The CAA requires BACT analyses for the air pollutants emitted from the HEC's refinery flares. Without BACT limits for these pollutants, some of which are criteria pollutants and required to have a BACT limit, the HEC will emit tons of these toxic pollutants in violation of the CAA.

The requirement for flare management plans, Conditions 12.3 and 13.3 of the Draft PSD permit, does not satisfy the requirements of BACT. The management plans are to be created at a later date and do not allow for public comment or input. Even more disturbing is the fact that Hyperion can change the management plans at will, without DENR's input. The management plans do not meet the BACT requirements and are not incorporated into the actual permit. Any kind of emission control or emission limit that may be listed in the Management Plan will not be federally enforceable. This too is a violation of the CAA. When a facility's annual emission limits can be exceeded in a single flaring event, it is necessary to have federally enforceable emission limitations written into the HEC PSD permit.

b. The air quality modeling is inaccurate when it comes to modeling the impact of pollutants emitted from the refinery flares

Hyperion's analysis of the refinery flares lacks a basic characterization of the emissions to be expected during flare-up events. Without information on the air pollutants being emitted or the quantity of these pollutants, air quality modeling cannot accurately predict the impact of sulfur dioxide, PM₁₀, and PM_{2.5} in the region. Because of the failure to account for pollutants emitted from the refinery flares, Hyperion's air quality modeling underestimates the effect HEC will have on regional air quality. This omission renders Hyperion and DENR's air modeling completely inaccurate. Without accounting for this significant source of air pollution, DENR can have no certainty that NAAQS violations will not result.

c. The Draft PSD permit does not consider the effects of start up, shutdown, and malfunction events

Start up, shutdown, and malfunction (SSM) events are considered a part of normal operation for a facility such as HEC. However, neither Hyperion nor DENR accounted for SSM events when establishing BACT emissions limits for all pollution sources. Nor did Hyperion or DENR consider SSM events when analyzing refinery flares. It is well known that a single SSM event can cause flares to exceed a facility's annual emission limits. Without any consideration of SSM, the emission limits in the Draft PSD permit are not actually BACT.

VI. The Draft PSD permit lacks a BACT analysis for the emission of carbon dioxide

As a "major stationary source" of air pollution, the HEC must have a BACT analysis of all its carbon dioxide (CO₂) emissions. The HEC is estimated to emit over 19 million tons per year of CO₂. In 2007, the Supreme Court ruled that CO₂ is an "air pollutant" under the CAA.¹² Moreover, just yesterday, EPA's Environmental Appeals Board held that EPA has no valid reason for refusing to limit CO₂ emissions.¹³ Therefore, DENR must require Hyperion to have a BACT analysis for the HEC's CO₂ emissions.

VII. Conclusion

For the foregoing reasons, Plains Justice respectfully requests that the Prevention of Significant Deterioration Air Quality Preconstruction Permit for the Hyperion Energy Center be denied at this time so that the recommended additional analyses can be performed.

¹² See *Massachusetts v. EPA*, A, 127 S. Ct. 1438, 1443 (2007) ("greenhouse gases . . . fit well within the Clean Air Act's capacious definition of 'air pollutant.'").

¹³ See *In Re Desert Power Electric Cooperative*, PSD Appeal No. 07-03 (E.A.B. Nov. 13, 2008).

Thank you for your consideration of these comments.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Nicole Shalla", is written over a horizontal line.

Nicole Shalla
Staff Attorney