



January 3, 2012

*By Electronic Mail and Overnight Delivery*

Dean Studer  
Hearing Officer  
Illinois Environmental Protection Agency  
1021 North Grand Avenue, East  
P.O. Box 19276  
Springfield, IL 62794

RE: Draft Construction Permit PSD Approval for Christian County Generation  
Application No. 05040027

Dear Mr. Studer:

Attached please find the comments of Clean Air Task Force ("CATF") on the draft construction permit and PSD approval for Christian County Generation, L.L.C.'s Taylorville Energy Center ("TEC") project, Application No. 05040027. We thank you for the opportunity to comment on this important facility.

Sincerely,

A handwritten signature in black ink, appearing to read "John Thompson", followed by a horizontal line extending to the right.

John Thompson  
Project Director -- Coal Transition Project

Enclosures.

**BEFORE THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

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) )  
IN THE MATTER OF: ) )  
CHRISTIAN COUNTY GENERATION, LLC ) )  
TAYLORVILLE ENERGY CENTER ) I.D. NO. 02106ACB  
DRAFT PSD PERMIT APPROVAL ) )  
(10/17/2011) ) )  
) )  
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**COMMENTS OF CLEAN AIR TASK FORCE**

Clean Air Task Force is a non-profit organization dedicated to reducing atmospheric pollution through research, advocacy, and private sector collaboration. CATF has offices in Boston and other locations nationwide, including Illinois. Our attorneys and experts have offered comments to Illinois Environmental Protection Agency (“IEPA” or the “agency”) on previous draft air permits for coal-fired electricity generating facilities in the state including from previous configurations of this electric generating facility. *See* Comments of Clean Air Task Force on Christian County Generating LLC in Taylorville, IL, Application No. 05040027 (Feb. 10, 2007).

As part of our mission, CATF also actively participates in the national conversation about climate air pollution regulation, for example through membership in the Clean Air Act Advisory Group, and on the Climate Change Work Group subcommittee tasked with advising U.S. Environmental Protection Agency (“U.S. EPA”) concerning the best available control technology (“BACT”) reviews for climate air pollutants/greenhouse gases. In general we have been very supportive of the development of this facility, as it is a pioneering project allowing electricity generation from coal with significantly lower carbon dioxide (“CO<sub>2</sub>”) emissions, and therefore significantly lower climate impacts. The rapid adoption of such technologies, including the CO<sub>2</sub> capture they facilitate, and the sequestration of at least some portion of the captured CO<sub>2</sub>, is critical to our country’s ability to combat climate change.

We appreciate the opportunity to offer comments on the climate air pollutant limits included in the BACT analysis for this draft Prevention of Significant Deterioration (“PSD”) permit for construction of the Taylorville Energy Center (“TEC”). Our comments are limited to issues raised by Illinois EPA’s characterization of the facility as other than an electric generating unit, and by the greenhouse gas BACT limits included in the Project Summary and Draft PSD Permit Approval issued by Illinois EPA for this facility.

Specifically, as described in detail below, we note that the Project Summary and Draft PSD Permit Approval for the TEC unfortunately contain significant errors of law and fact, and do not, as they must, set a CO<sub>2</sub> BACT limit for this facility based on carbon capture and sequestration (“CCS”) technologies, which the record demonstrates are available at this site and would allow significant CO<sub>2</sub> control, and which the applicant asserts it will implement at this site. First, this facility, taken as an integrated whole, is an electric utility steam generating unit, as defined in 40 C.F.R. §60.40Da. This is borne out by the applicant’s own statements, in the PSD permit application and in its related submissions for other permits and under other programs. Redefining it, as the applicant and IEPA attempt to do, as an assemblage of pieces regulated under separate regulatory provisions, rather than subpart Da, flies in the face of all the facts in front of the agency. Moreover, it is a transparent attempt to avoid otherwise applicable requirements of the Clean Air Act, and therefore is unlawful.

However the facility is defined, the CO<sub>2</sub> BACT analysis contains significant errors of fact and law, by failing to fully evaluate the option of an adjustable BACT limit that would facilitate the expected phased in implementation of carbon sequestration at this site. Christian County Generation, L.L.C. (“CCG” or “applicant”) has completed extensive geologic and technical evaluations of the availability of carbon sequestration resources at the TEC site, and on September 20, 2011 submitted a permit application under the Safe Drinking Water Act, to the United States Environmental Protection Agency’s (“U.S. EPA”) Underground Injection Control program for two Class VI sequestration wells to enable near term sequestration of captured CO<sub>2</sub> from the facility. Additionally, the Illinois Senate recently approved a bill providing a path that TEC, as an “initial clean coal facility,” must follow for purposes of the Illinois Clean Coal

Portfolio Standard.<sup>1</sup> Not only is CCG's PSD permit application and BACT analysis out of date (because it was not amended to reflect the Class VI permit application), but also the IEPA BACT analysis is incomplete because it fails to reference the permit application, or assess its promise.

Under Title 35 of the Illinois Administrative Code, these comments are due 30 days after the December 1, 2011 public hearing. ILL. ADMIN. CODE tit. 35, §166.191 (2011). As the 30<sup>th</sup> day falls on a Saturday and Monday, January 2, 2011 is a federal and state holiday, these comments are timely submitted if postmarked on January 3, 2012. *See id.* §§101.300, 166.225 (2011) (computation of time for deadlines falls on the next business day after weekend or holiday); 101.300(b)(2) (a document received after a closing date is deemed filed as of the postmarked date). CATF submits its comments by email and by Federal Express on January 3, 2012 for overnight receipt. These comments are therefore timely filed.

For all these reasons, the permit must be revised before it is finalized, to include CO<sub>2</sub>/greenhouse gas BACT limits reflecting the application of CCS technologies at this site.

1. The Taylorville Energy Center is an integrated "Coal-fired Electric Utility Steam Generating Unit"

IEPA's Draft Construction Permit- PSD Approval ("Draft Approval") and accompanying Project Summary for the TEC describe the TEC variously as an "SNG Plant," (Draft Approval at 1 (Applicant's Designation)), and as a "plant [that] would use coal gasification technology to produce substitute natural gas ("SNG") for sale or use on-site to generate electricity." (Project Summary at 3). In fact, however, the permit application and other materials reveal that the Taylorville Energy Center is, just as its name implies, an integrated facility for energy production – a coal-fired electric utility steam generating unit.<sup>2</sup> As presented to the Illinois Commerce

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<sup>1</sup> Senate Bill 678 was approved by the Illinois Senate during the last week of November, 2011. Public Hearing Transcript at 13 lines 3-9. The Illinois Clean Coal Portfolio Standard Law, PA 95-1027, provides financial support to "electric generating facilities" that use "primarily coal as a feedstock and that capture[] and sequester[]...at least 50% of the total carbon emissions that the facility would otherwise emit if, at the time construction commences, the facility is scheduled to commence operation before 2016." 20 ILCS §3855 §1-10.

<sup>2</sup> CCG's PSD/Construction permit application refers to the project as a "fossil fuel-fired steam electric plant[] of more than 250 million (MMBtu/hr)" heat input. Updated Prevention of Significant Deterioration and State Construction Permit Application ("Application"), Vol. 1 page 4-1 (October 2010).

Commission in a review of the TEC Facility Cost Report, “the primary purpose of [TEC] is to produce clean coal electricity for Illinois, not to produce [SNG] for the pipeline or operate fully on pipeline natural gas.” (ICC, Analysis of the Taylorville Energy Center Facility Cost Report, Attachment A (Review of TEC’s Facility Cost Report) at 360 (Sept. 1, 2010)) (“ICC Report”). Attempts by the applicant and IEPA to redefine the source as something other than an EGU are based on significant errors of law and fact.

First, the TEC facility, which will gasify coal and use the SNG and sometimes also pipeline natural gas to generate electricity, clearly has as its primary purpose electricity generation. ICC Report at 9, 11; *id.* Attachment A at 8, 360; *id.* Attachment C (ICC Press Release); *see also* IEPA, Air Permit Control-Permit Record for Christian County Generation, LLC available at:

[http://yosemite.epa.gov/r5/in\\_permt.nsf/93a421690cb50df18625762300769ee3/72edc5201496bac58625797a004ed785!OpenDocument](http://yosemite.epa.gov/r5/in_permt.nsf/93a421690cb50df18625762300769ee3/72edc5201496bac58625797a004ed785!OpenDocument) (describing the facility as an IGCC power plant).

Although the applicant and IEPA assert that the gasifier is distinct from the turbine, so as to permit them to be subject to different new source performance standards (“NSPS”) requirements than those to which an EGU/IGCC plant is subject, in fact the facility taken as a whole (gasifier through turbine) meets the regulatory definition of an integrated electricity generating facility in the NSPS Da regulations. TEC is an “electric utility steam generating unit” under 40 C.F. R.

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Additionally, CCG’s September 2011 Safe Drinking Water Act Underground Injection Control Program Class VI well permit application describes the TEC project multiple times as an “electric generating facility,” using “advanced Integrated Gasification Combined-Cycle technology”. Taylorville Energy Center Underground Injection Control Permit Request – Class VI Permit Application, at 3, 4, 85, Testing and Monitoring Plan at 1 (Sept. 20, 2011) (“UIC Permit Request”) (attached as Appendix A). An August 2011 Fact Sheet about the TEC, available on the project’s website, asserts that “[TEC] will generate electricity using [IGCC] technology with [CCS] ....” TEC: Fact Sheet (Aug. 2011) available at: [http://www.cleancoalillinois.com/pdfs/Taylorville\\_Fact\\_Sheet1.pdf](http://www.cleancoalillinois.com/pdfs/Taylorville_Fact_Sheet1.pdf).

Others also describe the TEC as an electric generating unit. One of the project’s investors describes the facility as “an integrated gasification combined-cycle (IGCC) project,” <http://www.tenaska.com/page.aspx?id=15&pid=8>; and the Illinois Commerce Commission’s September 2010 Analysis of the Taylorville Energy Center, pursuant to section 1-75(d)(4)(ii) of the Illinois Power Agency Act, describes TEC as “a proposed electric power plant...that...will purchase a substantial amount of pipeline natural gas to supplement its SNG when it wants to produce maximum electricity output.” ICC Report at 9 (citing and quoting the ICC’s consultant, Boston Pacific Company, Inc. and MPR Associates (“BP/MPR”) Evaluation of the project, at 1). The ICC further recognizes that “the TEC can be viewed as two separate functioning [electricity] generating plants: one that operates on coal-derived synthetic natural gas, and another that operates on pipeline-delivered natural gas unrelated to the use of coal.” ICC Report at 11.

§60.41Da, as it will be “constructed for the purpose of supplying more than one-third of its potential electric output capacity and more than 25 MW net-electrical output to any utility power distribution system for sale.” 40 C.F.R. §60.41Da (definitions), *see also* Application, Vol. 1 at 1-2 (describing the facility’s electric output potential and expected functioning). TEC is a “coal fired electric utility steam generating unit” under the same section of the rules, because it “burns ... a synthetic gas derived from coal either exclusively ... or in any combination with other fuels in any amount.” Additionally, TEC is an “integrated gasification combined cycle (IGCC) electric utility steam generating unit” because it is an electric utility combined cycle gas turbine “designed to burn fuels containing 50 percent (by heat input) or more solid-derived fuel not meeting the definition of natural gas,” where “solid-derived fuel” includes “gasified coal.” *Id.*

The SNG-fired turbine at TEC, moreover does not satisfy the prerequisites for exception from subpart Da requirements available for “heat recovery steam generators used with duct burners” that meet the applicability requirements of subpart KKKK, as this is available only for turbines that are *not* at an IGCC facility (TEC is an IGCC, as shown above), and that use duct burners (TEC does not). *See* 40 C.F.R. §60.40(e); *see generally*, Application (describing the facility). Nor do the applicability provisions of subpart KKKK fit the TEC burner, in any event, as the KKKK provisions specifically exempt “[s]tationary combustion turbines at [IGCC] electric utility steam generating units that are subject to subpart Da”. 40 C.F.R. §60.4314(c).

Indeed, little is different in terms of the broad concept (or even basic facility design) from that permitted in 2007 for an IGCC facility. *See In re Christian County Generation LLC*, 13 E.A.D. 449, 451 (2008) (describing the plant permitted in 2007 as a facility that would convert Illinois Basin coal into synthetic gas and then burn it in a separate turbine to generate electricity). The main difference is the introduction of a methanation process by which any excess SNG *could* be sold into commerce rather than burned at the integrated combustion turbine to generate electricity. But this is an artificial difference, and indeed one that is unlikely to be necessary – as, according to the ICC Report, the TEC “would normally operate” with both gasifiers available, all turbines operating and available, and no SNG sales to the market – in this “normal” mode, TEC would need to purchase natural gas from the market in order to sustain the nameplate capacity required of an “initial clean coal facility” under Illinois law. ICC Report at 11 & Table 2. The project’s website confirms that “power from the [TEC] is intended to be generated

24/7.” See <http://www.cleancoalillinois.com/index.html>. Therefore, if the TEC can be considered as two separate plants, it is as “two separate functional [electric] generating plants: one that operates on coal-derived [SNG], and another that operates on pipeline-delivered natural gas unrelated to the use of coal.” ICC Report at 11.

Importantly, as noted above, Christian County Generation, LLC, and Tenaska Taylorville seek “initial clean coal facility” status under Illinois law. ICC Report at 1 n.1 (citing 20 ILCS §3855, Public Law 95-1027); Public Hearing Transcript at 13. The state statute offers the benefits of this status, including financial benefits and secure markets for the electricity produced by the facility, only to an “electric generating facility that uses primarily coal as a feedstock and that captures and sequesters carbon emissions at the following levels: at least 50% of the total carbon emissions that the facility would otherwise emit if, at the time construction commences, the facility is scheduled to commence operation before 2016....” 20 ILCS 3855 §§1-10, 1-75(d). The Project Summary is very confused on this point – while IEPA asserts that TEC “is currently not subject to the Clean Coal Portfolio Standard Law,” (Project Summary at 6 n.7.), it also asserts that “Christian County Generation is still developing the project to satisfy [the Illinois] law’s requirements,” *Id.*, and see 22 (Christian County seeks to develop a plant that would qualify as a Clean Coal Facility). And again, this is supported by current information on the project website, see <http://www.cleancoalillinois.com/index.html>, and provided at the December 1, 2011 public hearing. Public Hearing Transcript at 14 lines 7-12.

TEC’s clear primary purpose is the generation of electricity. In so far as the sale of gas is an element of this project and not of the previous configuration, furthermore, it is a cost-related design element that is not sufficient justification for treating the facility as anything other than an electric generating facility. See *In re Prairie State Generating Company*, 13 E.A.D. 1, 23 n.23 (EAB 2006) (cost savings generally are not a sufficient purpose or objective that would justify treating a design element as basic or fundamental). And while IEPA cannot ask the applicant to change the fundamental scope of its project, reviewing the TEC as an electric generating facility subject to subpart Da requires no such change in what is proposed. Indeed, it is the attempt to call TEC something other than an EGU that “redefines the source” in unlawful ways, as it is undertaken seemingly in order to avoid the requirements of subpart Da at this facility. *Cf. Sierra Club v. EPA*, 499 F.3d 653, 654 (remarking that it would be impermissible for the applicant to

design the plant in a way calculated to make measures for limiting the emission of pollutants ineffectual). As an EGU, TEC is subject to the subpart Da conventional air pollutant emissions proposed in May, 76 Fed. Reg. 24,976 (May 3, 2011), and finalized December 16, 2011, as well as the expected subpart Da greenhouse gas limits which were due out September 30, 2011 under the terms of a consent decree between U.S. EPA and various state and environmental plaintiffs. *See AEP v. Connecticut*, 564 U.S. --, 131 S. Ct. 2527, Slip Op. at 3 & 11 (2011) (noting that final NSPS for electricity generating facilities are due by May 2012 under the terms of the agreement).

For all of these reasons, IEPA's acceptance of the applicant's attempt to have emissions limits for the gasifier set separately from the power block, rather than setting BACT emissions limits for the facility as a whole, and based on subpart Da NSPS as the "floor" for the BACT emissions limit, is based on a clear error of law (and fact). The limits contained in the Draft PSD/Construction Permit Approval for this Facility must be revised in the final permit to reflect the fact that the TEC is an electric generating facility subject to subpart Da.

2. The Proposed CO<sub>2</sub> BACT Limit for the TEC is Based on Unnecessary Errors of Fact and Law.

Because the TEC is an EGU, it must meet facility wide BACT limits, which shall "in no event...result in emissions of any pollutants which will exceed the emissions allowed" by the applicable new source performance standards (subpart Da for conventional and greenhouse gas pollution) that are in place at the time the permit is finalized. 42 U.S.C. § 7479 (3), *see also Ziffrin v. U.S.*, 318 U.S. 73, 78 (1943) (commission required to apply the law that is current at the time the final permit is issued, not at the time the application is filed); *In re: Phelps Dodge Corp.*, 10 E.A.D. 460, 478 n.10 (E.A.B. 2002) (permit issuing authority is obliged to apply the statute and regulations in effect at the time the final permit decision is made); *In re: Dominion Energy Brayton Point, LLC*, 12 E.A.D. 490, 614-616 (E.A.B. 2006) (at the very least the IEPA must consider and evaluate the application in light of changed regulatory requirements arising before the permit decision is finalized).

Rather than treating the facility as an EGU, however, IEPA sets separate BACT standards based on efficiency for the gasifier, and on efficiency and good combustion practices for the turbine. Both the applicant and IEPA fail to investigate the availability of an adjustable CCS-based BACT emissions rate for the whole electric generating facility. Such adjustable rates have

been used in several instances where a new control technology or method is introduced. *See In re Hadson Power 14 – Buena Vista*, 4 E.A.D. 258, 288 (E.A.B. 1992) (basing BACT emission limits on the first application of selective catalytic reduction technology for a spreader-stoker boiler at a coal-fired plant); *In re AES Puerto Rico L.P.*, 8 E.A.D. 324, 347 (E.A.B. 1999) (setting BACT emission limits for PM10 that included condensible PM10 and the use of a new test method, though there was very little information on which to base such a limit from the particular units). An adjustable BACT emission limit is clearly an option here, as the applicant has proved the availability of carbon dioxide capture, and the full, updated and corrected record for this permit would show that the applicant expects implementation of geologic sequestration at this facility (and when available, pipeline shipment of the captured CO<sub>2</sub> and transport for use in enhanced oil recovery). Unfortunately, without that information and analysis, the permit application and proposed approval are incomplete, and based on significant errors of fact and law that must be corrected before the final permit is issued.

Initially, IEPA errs by asserting – through its proposed BACT limits –that CCS technology is not available at this site as a factual matter. The applicant proves that capture technology is available at this facility, and indeed the gasifier’s design incorporates such technology into its design as “capture or separation of CO<sub>2</sub> is inherent in coal gasification for production of SNG.” Project Summary at 29. The applicant further notes that demonstrated technology for such capture of CO<sub>2</sub> from syngas exists as shown by at least four U.S. plants. *Id.* at 29 n.24. There is no doubt that capturing CO<sub>2</sub> from the facility is available to the applicant.

Moreover, the applicant, in a separate forum has proved the availability of sequestering the facility’s captured CO<sub>2</sub> in its application to the U.S. EPA for a Class VI Well Permit. As the Class VI Well Permit application notes, “[t]he results of the geologic and reservoir evaluation study indicate that the [chosen site] has sufficient porosity... and permeability..., and therefore provides a storage reservoir target suitable and capable of accommodating all of the CO<sub>2</sub> produce by the TEC over the planned operational life of 30 years.” Appendix A, UIC Permit Request – Area of Review and Corrective Action, at 10. Unfortunately, the applicant failed to update its PSD application to reflect the UIC Permit Request, and, IEPA fails even to mention the UIC Permit Request in its draft approval, even though the applicant submitted it on September 20, 2011, nearly four weeks before IEPA’s October 17, 2011 draft approval. Our expert affirms the

availability of geologic sequestration of CO<sub>2</sub> at and in the vicinity of the TEC site. *See* Affidavit of Dr. Bruce Hill ¶¶ 3-12 (determining after reviewing available material that the applicant’s chosen site holds substantial promise for geologic carbon sequestration)(attached hereto as Appendix B). By contrast, CCG and IEPA assert that sequestration is not available at the site because there is no currently existing pipeline for the offtake of captured CO<sub>2</sub>.<sup>3</sup> Project Summary at 31. That no pipeline to enable enhanced oil recovery currently exists does not mean there is no means to accommodate a lower CO<sub>2</sub> BACT emission limit, however. And as noted above, the applicant failed to update the record for the PSD permit application when it filed for a Class VI UIC permit for on-site sequestration. Christian County Generation’s PSD permit application and the BACT determination are therefore incomplete and out of date due to IEPA’s error in concluding CCS is not available at the TEC site.

Apart from the factual availability of carbon sequestration, IEPA errs by failing to consider CCS in light of the applicant’s objective to qualify as a “clean coal facility” under the Clean Coal Portfolio Standard Law, PA 95-1027, recently passed by the Illinois Senate. As stated above, to qualify as a “clean coal facility” under this law, the applicant must capture and sequester at least 50% of the CO<sub>2</sub> emission for a facility that plans to begin operation before 2015. 20 I.L.C.S. 3855 §1-10 (2011) (definitions). If the facility is to commence operation in 2016 or 2017, the capture percentage rises to 70%, and after 2017 it rises to 90%. *Id.* Furthermore, to be an “initial clean coal facility” – and to receive many of the financial benefits – the facility must make such CO<sub>2</sub> reductions “when commercial operation commences.” 20 ILCS 3855 §1-75(d)(3) (2011).

IEPA also made errors of law regarding CCS in its acceptance of the applicant’s BACT analysis regarding CO<sub>2</sub>. First, IEPA failed to even evaluate the possibility of an adjustable BACT limit, despite the availability of such a limit in circumstances similar to those under consideration here. For example, in *Hadson Power*, the Environmental Appeals Board (“EAB”) upheld a BACT limit for nitrogen oxides that set both a design limit and a worst-case limit in a

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<sup>3</sup> IEPA also asserts that sequestration generally is unavailable, citing the now year-and-a-half-old *Report of the Interagency Task Force on Carbon Capture & Storage*, which is neither specific to the location of this facility, nor up to date as of the time of the draft permit issuance. *See* Project Summary at 30 & n.28. The Task Force report came out before the federal regulatory framework for CCS was finalized in December 2010, and before the proposal and development of several full scale projects including CCS technology as discussed by the applicant. *See* Project Summary at 30-32.

case of the first application of a particular control technology to particular unit in this country. *Hadson Power*, 4 E.A.D. at 288-90. The permit allowed the state agency to revise the emission limit downward toward the design limit after operation commenced to reflect the emission rate that was demonstrated to be consistently achievable. *Id.* at 291. Similarly, the EAB has affirmed an adjustable limit, *see AES Puerto Rico*, 8 E.A.D. 324 (EAB 1999), for the control of a pollutant that would otherwise go uncontrolled, and where a new test method was to be employed, so that there was therefore little information on which to base an emission limit for that pollutant at the time the permit was finalized. *Id.* at 348-50. IEPA must evaluate similar adjustable CO<sub>2</sub> emission limits here, based on the demonstrated potential for sequestration, accompanied by a worst-case limit (likely based on the same principles as in the current draft permit) in the unlikely event that sequestration later is shown to be impossible.

Additionally, IEPA wrongly interpreted the legal availability of CCS by its acceptance of the applicant's BACT analysis, which erroneously dismisses CCS in the first step. The applicant impermissibly eliminated CCS technology at the first step of its analysis, arguing that carbon sequestration is not "commercially available" – even though it subsequently applied for a permit for onsite sequestration. Application, Vol. 3 at 6-6. "Commercial availability" of a technology is not the proper standard to apply under step one, however. Step one merely requires IEPA to identify all available control technologies and list them to allow for a proper evaluation of all potential limits. *See In re Desert Rock, Energy Company, LLC*, 14 EAD ---, Slip op. at 70 (Sept. 24, 2009)(noting that where a technology is potentially available at a site, dismissal of the technology without evaluation is impermissible). This is a simple analysis in this case, because

[f]or the purposes of a BACT analysis for GHGs, EPA classifies CCS as an add-on pollution control technology that is 'available' for facilities emitting CO<sub>2</sub> in large amounts, including fossil fuel-fired power plants, and for industrial facilities with high-purity CO<sub>2</sub> streams.... For these types of facilities, CCS should be listed in Step 1 of a top-down BACT analysis for GHGs.

PSD and Title V Permitting Guidance for Greenhouse Gases, 32 (March 2011) ("GHG Permitting Guidance"). IEPA erred by removing – instead of listing – CCS in the first step of the CO<sub>2</sub> BACT analysis for the TEC.

Because IEPA erroneously accepted the applicant's unlawful CO<sub>2</sub> BACT analysis, it also erred by failing to further evaluate partial on-site capture and sequestration as a control option –

to be implemented through an adjustable BACT emissions limit -- in steps two through five. In the first step, as stated above, CCS should be listed as an “available” control technology and thus move on to the second step, where technically infeasible options are eliminated. *See* GHG Permitting Guidance at 33. As noted above, CO<sub>2</sub> capture and sequestration are available and technically feasible from this facility at this location, based on the applicant’s own submissions.

The applicant’s own statements and representations make clear that it views CCS as technically feasible at this location, and CCS therefore must remain on the list of available controls after step 2 of the Greenhouse Gas BACT analysis. The third step in the analysis then calls for the ranking of the remaining control technologies, based on the total CO<sub>2</sub>e, with the most effective listed at the top. *Id.* at 37-38. Clearly, given the applicant’s stated intention to sequester approximately half of the CO<sub>2</sub> from this facility, CCS remains at the top of the list going into step four of the BACT analysis. Step four requires permitting authorities to consider the economic, energy and environmental impacts of the ranked control technologies “to either confirm that the top control alternative is appropriate or determine it to be inappropriate.” *Id.* at 38. After analyzing these impacts, the fifth step calls for the permitting agency to choose the most effective control option that was not eliminated in step four. *Id.* at 44. Without IEPA’s error of law, the five-step BACT analysis would result in the choice of CCS as the basis for the CO<sub>2</sub> BACT emission limit.

As EPA clearly stated, CCS is “available” under step one. *Id.* at 32. When analyzing for technical infeasibility under step two, “CCS may be eliminated...if it can be shown that there are significant differences pertinent to the successful operation for [CO<sub>2</sub> capture and/or compression, transport, and storage] from what has already been applied to a differing source type.” *Id.* at 35. However, in order to dismiss CCS in a case “where CO<sub>2</sub> transportation and sequestration opportunities already exist in the area where the source is, or will be, located,...a fairly detailed case-specific analysis would likely be needed....” *Id.* at 36. This is exactly the situation the applicant and IEPA face, as the TEC is currently planned to be located on a site where sequestration opportunities already exist. Yet, IEPA did not give a detailed, case-specific analysis of CCS but merely dismissed it before even reaching this step.

As shown above, moreover, CCS is not technically infeasible at this location, and IEPA cannot eliminate it under step two. Moreover, as even partial capture and sequestration of the CO<sub>2</sub> emitted by the TEC removes more CO<sub>2</sub> than any other combustion and efficiency practices considered by IEPA in the greenhouse gas BACT review it did conduct, CCS should remain atop the list after step three.

Considering the cumulative impacts in the fourth step, CCS would not be eliminated as IEPA must determine (based on a properly supplemented record and on the case-specific facts already presented by the applicant) “that while [CCS] has higher economic costs, those costs are outweighed by the overall reduction of emissions of all pollutants that comes from that higher efficiency.” *Id.* at 44. Thus, a proper CO<sub>2</sub> BACT analysis would result in the selection of at least partial CO<sub>2</sub> capture and sequestration as the basis for a BACT limit after the fifth step of the BACT analysis.

### 3. Proposed Adjustable CO<sub>2</sub> BACT Emission Limit for the TEC.

The applicant objects to CO<sub>2</sub> emission limits at this plant because it believes that BACT limits are inflexible and cannot address the possibility that sequestration will not immediately be operational when the plant starts operating:

[The applicant] has no certainty about whether or not an AGR vent CO<sub>2</sub> BACT limit based on the use of CCS could be complied with when the TEC becomes operational, so accepting such a limit which carries with it strict penalties up to and including a mandatory facility shutdown is not possible at this time. CCG is, however, committed to meeting the sequestration provisions of CCA which are in no way similar to a strict, not-to-exceed BACT limit, since these provisions provide CCG flexibility in the event that CCS is not available when the plant begins operation. No similar flexibility is permissible under the definition of BACT.

Application, Vol. 3 at 6-9 & n.22.

However, as described earlier, there is no support in the law for the applicant’s assertion that BACT limits cannot be adjustable, where a new technology is brought on line for the significant control of an air pollutant. IEPA has the authority to set adjustable emission limits

that address the applicant's concern that CO<sub>2</sub> sequestration may not be immediately operation at the future point when the plant commences operations.

In its review of the properly supplemented record for the TEC, IEPA must evaluate two approaches to adjustable CO<sub>2</sub> emission limits. Both approaches must rely on 95 percent capture of the CO<sub>2</sub> in the AGR vent. The applicant notes that capture technology is available<sup>4</sup> for the AGR vent and that the project will capture 95 percent of the CO<sub>2</sub> from the AGR vent<sup>5</sup>. Clearly that level of CO<sub>2</sub> reduction is far better than would be the case under the CO<sub>2</sub> BACT limits included in the draft permit approval: the uncontrolled CO<sub>2</sub> emissions from the AGR vent total 2,510,321 tons/year.<sup>6</sup> The total facility CO<sub>2</sub> emissions are 5,031,409 tons per year.<sup>7</sup> The AGR vent CO<sub>2</sub> emissions therefore represent roughly half the facility's total CO<sub>2</sub> emissions – a BACT limit set based on eventual 95 percent reductions of the AGR vent CO<sub>2</sub> emissions, therefore represents approximately half of the CO<sub>2</sub> emissions from the facility, taken as a whole. We offer two options for the establishment of such a standard.

A. Option 1. Establish CO<sub>2</sub> emission limits that adjust downward over time.

IEPA could adjust the CO<sub>2</sub> emission limit downward over a three-year period. In this approach, IEPA could establish emission limits for the facility that do not require CCS in years one and two of plant operation, but instead basically reflect the CO<sub>2</sub> BACT limits included in the draft PSD approval. Beginning in year three, however, the deeper CCS-based emission limit would become effective, reflecting capture and sequestration of 95 percent of the potential CO<sub>2</sub> emissions of AGR system. This formulation would provide the applicant greater flexibility and enable the completion of permitting for onsite sequestration.

B. Establish CO<sub>2</sub> emission limits that reflect CCS at the outset, but provide “worst case” limits in the (unlikely) event that sequestration at the site is not permitted.

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<sup>4</sup> Application, Vol. 3 at 6-3. "For the gasification block, separation of formed CO<sub>2</sub> is inherent to the process of producing natural gas pipeline-quality SNG from coal. CO<sub>2</sub> separation from pressurized syngas is a commercially-available proven process in the SNG production and chemicals sector although not in the power generation sector. Capture or separation of the CO<sub>2</sub> stream alone is not a sufficient control technology, but instead requires the additional step of permanent sequestration." *Id.*

<sup>5</sup> ICC Report, Exhibit 2.1 (Project Description) at 9, states "Over 95% of the CO<sub>2</sub> available to AGR in the synthesis gas will be captured." (Available at <http://www.icc.illinois.gov/electricity/tenaska.aspx>).

<sup>6</sup> Application, Vol. 3 at A-16.

<sup>7</sup> Draft Approval at 1-4.

IEPA could establish an emission limit applicable from the outset of operations that reflects capture and sequestration of 95 percent of the potential CO<sub>2</sub> emissions of AGR system, but provides a fallback or “worst case” emissions limit that would come into effect in the unlikely event that the applicant or its successor (if any) is unable to secure its Class VI permit for sequestration at the facility.

In this approach, the “worst case” scenario – essentially the BACT limit provided for in the draft approval, expressed as a limit for the whole TEC (as an EGU) would allow the applicant to emit CO<sub>2</sub> at a level not reflecting CCS for any period during the first ten years of operation during which no permit is approved for sequestration, either on site or via pipeline to offsite enhanced oil recovery operations.

Both options A and B above require IEPA to establish a numerical limit for annual emissions of CO<sub>2</sub> from the AGR system based upon either total tons. Those limits are easily established based on the information presented by the applicant on total CO<sub>2</sub> emissions potential and the proposed level of CO<sub>2</sub> control using the capture and sequestration options contained in the application and other materials relevant to the facility, including CATF’s submissions to the record here.