ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF AIR

October 2003

Responsiveness Summary
for Public Questions and Comments on the Construction Permit Application from Indeck-Elwood LLC

Site Identification No.: 97035AAJ
Application No.: 02030060

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INTRODUCTION

Indeck-Elwood LLC (Indeck) has applied for an air pollution control construction permit for a coal-fired electric power plant near Elwood. The proposed plant would be located on site in the CenterPoint Intermodal Center, approximately one mile west of the Village of Elwood. The proposed project is considered a major source of air emissions and is subject to the federal rules for Prevention of Significant Deterioration of Air Quality (PSD), 40 CFR 52.21.

Upon review of comments received during the public comment period and final review of the application, the Illinois EPA has determined that the application meets the standards for issuance of a construction permit. Accordingly, on October 10, 2003, the Illinois Environmental Protection Agency (Illinois EPA) issued to Indeck a permit to construct the proposed facility. The facility must be constructed and operated in accordance with applicable regulations and the conditions of the permit.

DESCRIPTION OF PROPOSED PROJECT

The proposed power plant would have two circulating fluidized bed boilers. This is a modern boiler design in which the fuel is suspended or floated on a cushion of air blown in through ports at the bottom of the combustion chamber. The design provides high turbulence, which allows efficient combustion while minimizing formation of nitrogen oxides (NOx). The addition of limestone to the bed with the fuel, as is required in the proposed boilers, also absorbs sulfur to control emissions of sulfur dioxide (SO_2). Each boiler would be equipped with an add-on selective non-catalytic reduction (SNCR) system, supplementary reagent injection in the ductwork, a trim dry scrubber and a baghouse to reduce and control its emissions. Even though the boilers would be coal-fired, natural gas would be utilized for startups of the boiler. The plant would also include handling and storage facilities for coal, limestone and ash, cooling towers, and other ancillary operations with appropriate emission controls.

The plant would have a nominal electrical output of 660 megawatts (gross).

COMMENT PERIOD AND PUBLIC HEARING

The Illinois EPA Bureau of Air evaluates applications and issues permits for sources of emissions to the atmosphere. An air permit application must appropriately address compliance with applicable air pollution control laws and regulations before a permit can be issued. Following its initial technical review of Indeck's application, the Illinois EPA Bureau of Air made a preliminary determination that the application met the standards for issuance of a construction permit and prepared a draft permit for public review and comment.

The public comment period began on April 7, 2003, with the publication of a notice in the Joliet Herald News. Notices were also published in this paper on April 14 and April 21, 2003. A public hearing was held on May 22, 2003, at the Elwood Community Church in Elwood to receive oral comments and answer questions regarding the application and draft air permit. The comment period remained open until June 28, 2003, to receive written comments.

AVAILABILITY OF DOCUMENTS

The permit issued to Indeck and this responsiveness summary are available on the Illinois Permit Database at www.epa.gov/region5/air/permits/ilonline.htm (please look for the documents under All Permit Records, PSD, New). Copies of these documents may also be obtained by contacting the Illinois EPA at the telephone numbers listed at the end of this document.

APPEAL PROVISIONS

The permit being issued for the proposed plant grants approval to construct pursuant to the federal rules for Prevention of Significant Deterioration of Air Quality (PSD), 40 CFR 52.21. Accordingly, individuals who filed comments on the draft permit or participated in the public hearing may petition the U.S. Environmental Protection Agency (USEPA) to review the PSD provisions of the issued permit. In addition, as comments were submitted on the draft permit for the proposed facility that requested a change in the draft permit, the issued permit does not become effective until after the period for filing of an appeal has passed. The procedures governing appeals are contained in the Code of Federal Regulations (CFR), "Appeal of RCRA, UIC and PSD permits," 40 CFR 124.19. If an appeal request will be submitted to USEPA by a means other than regular mail, refer to the Environmental Appeals Board website at www.epa.gov/eab/eabfaq.htm#3 for instructions. If an appeal request will be filed by regular mail, it should be sent on a timely basis to the following address:

U.S. Environmental Protection Agency
Clerk of the Board, Environmental Appeals Board
MC 11038B
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460-0001
Telephone: 202/233-0122

GENERAL RESPONSE TO COMMON PUBLIC CONCERNS

The proposal to issue a permit for the construction of a coal-fired power plant near Elwood has generated a variety of comments from the public and a number of environmental organizations. These comments were helpful to the Illinois EPA in the decision making process.

A major concern was the specific affect of the plant on ozone air quality in the greater Chicago area. The Illinois EPA has conservatively evaluated the potential impact of the proposed plant on ozone and found that improvements in ozone air quality will continue and compliance with the one-hour ozone air quality standard should be met on schedule.

Another major concern was the potential impacts of the emissions of the proposed plant on public health. The health impacts of coal-fired electric power plants has been the subject of considerable scientific scrutiny. Power plants do emit pollutants that in sufficiently high concentrations can have health effects, particularly for people suffering from asthma, chronic respiratory diseases or heart disease. Some studies have found that emissions from existing coal-

fired power plants in Illinois do contribute to these effects at levels that can be predicted mathematically. However, those studies do not demonstrate that new power plants, like the proposed plant, pose a significant risk to public health. Indeed, having an adequate, reliable and affordable supply of electricity is also essential to modern society, and to the health and well-being of the public. Rather, the purpose of those studies is to influence public policy toward reducing the emissions and any associated health impacts from these existing plants, many of which are over forty years old. As such, one goal of those studies is to have these existing power plants upgraded to approach the levels of emission control that would be present at the proposed plant. This goal is also achieved by construction of new, modern, well-controlled coal-fired power plants, like the proposed plant, that over time displace existing plants and reduce adverse health impacts from use of coal for power generation.

Another concern was that the proposed plant is not needed because Illinois currently has adequate generating capacity. While Illinois does have adequate generating capacity to meet the demand for the power, this does not mean that Illinois would not benefit from development of new power plants, like the proposed plant. In addition to benefits in terms of lower emissions, Illinois would benefit from new plants, as they would be more efficient than older plants and would use local Illinois coal contributing to the state's economy.

Another general comment was that the proposed plant should use Integrated Gasification Combined Cycle (IGCC) technology because IGCC would be able to achieve lower emission levels than the modern boiler technology that is proposed. The Illinois EPA has examined the status of IGCC technology at the present time. While various claims have been made that the technology is available, they do not survive close scrutiny. While IGCC is expected to be the next generation of technology for coal-fired power plants, it is still a developing technology that is not yet mature. It is not appropriate for the permit to require use of a technology by the proposed plant that is not yet sufficiently developed to be commercially accepted.

Some commenters stated that the proposed plant is inappropriate because it would be located next to the Midewin National Tallgrass Prairie (Midewin). As limited by the issued permit, the emissions of the plant should not have a significant effect on the Midewin. Other discharges from the plant will also be appropriately regulated to prevent significant impacts. The proposed plant also should not have a significant affect on the character of the Midewin as the plant would be located next to the portion of the Midewin in which commercial and industrial facilities were historically planned and are already present.

Another concern was that the proposed plant would be a nuisance due to dust from coal handling operations and associated rail and truck traffic. All coal handling activities will be located inside buildings and dust suppression measures will be used to prevent dust from escaping to the outside air. With respect to train and truck traffic, the plant is located next to a major Intermodal center in an industrial area and levels of traffic in the area will not increase significantly.

A final concern is that the permit decision should be based on public opinion. The decision to whether to grant a permit is a legal and technical one, based on compliance with applicable environmental laws and rules.

QUESTIONS AND COMMENTS

The following is the Illinois EPA's detailed response to significant questions and comments submitted during the public comment period. Individual comments have been consolidated where a common concern was expressed and a single response could be provided.

General Background

1. Coal-fired power generation is a dirty technology, with emissions far in excess of those of gas and oil-fired plants. The proposed plant will cause large-scale negative environmental impacts.

Response: Coal-fired power plants are not a dirty technology as suggested by this comment. Coal-fired power plants, by selection of coal, efficient combustion, and add-on control systems, are designed to minimize and control emissions. As technology continues to improve and evolve, coal will become an even cleaner fuel.

The availability of reliable and affordable electrical power, as provided by coal, is a critical factor in the high standard of living enjoyed in Illinois and the United States. Use of coal in power plants allows natural gas and oil to be used for heating homes, businesses, and the vast majority of industrial establishments. It is thus inappropriate to directly compare gas and oil-fired power plants to coal-fired power plants as suggested by this comment.

2. Illinois doesn't need the generating capacity of the proposed plant. Power plants in Northeastern Illinois are not operating anywhere near capacity. Indeck's motive for building a power plant of this size is to sell to out-of-state consumers. While they will benefit from abundant energy, the residents of Elwood would experience the environmental effects.

Response: This is not correct. As a general matter, Illinois certainly needs new, cleaner, coal-fired power plants to begin replacing the generating capacity of its older, coal-fired power plants. Moreover, Indeck has publicly stated that the plant will not be developed unless it can obtain purchase agreements for the electricity that the plant can produce, i.e., there is a demand for the power. The location of the plant is consistent with a plant that is intended to supply the greater Chicago area. This is because the existing power transmission system in the Midwest is not capable of allowing electricity from the proposed plant to consistently be delivered to distant customers. Finally, air quality modeling analyses show that the plant will not have any noticeable effect on the air quality in Elwood and surrounding areas.

3. Indeck should amend its application to show the exact location of the proposed power plant.

Response: The application already includes this information. The proposed power plant would be located west of the Village of Elwood at a site on the southwest corner of the intersection of Baseline and Drummond Roads.

4. Indeck should provide the exact layout of the coal storage area.

Response: The application adequately describes the layout of the coal storage and handling area. These activities will be enclosed inside a building so that the exact location of individual emission units within the building is not critical for the purpose of this permit.

5. What is the expected annual throughput of ammonia?

Response: Depending on the level of operation of the boilers and the amount of NOx that must be controlled by the selective noncatalytic reduction system (SNCR) system, the usage of ammonia would likely be in the range of 900 to 1,500 tons per year (tpy). This is based on a nominal factor for ammonia usage by an SNCR (0.75 pounds of ammonia per pound of NOx emissions controlled by the SNCR).

6. Since ammonia is an extremely hazardous substance, what is the maximum possible accidental release of ammonia?

Response: This information is not yet available as a detailed design for the ammonia storage and handling system has not been completed. USEPA rules under Section 112(r) of the Clean Air Act require sources to develop and maintain plans to prevent accidental releases of extremely hazardous substances, like anhydrous ammonia, and to minimize the consequences of any such release that does occur. These plans are to be developed working with local emergency response personnel in a process that is separate from the permitting of the proposed plant.

7. We support the proposed plant because of the economic benefits from the proposed plant, considering the jobs and business that it would generate for the local economy and the boost for Illinois's coal industry.

Response: This is not a relevant factor that the Illinois EPA can consider in the permitting of the proposed plant. Similarly, the Illinois EPA cannot consider general opposition to the plant, which is unrelated to its emissions and impacts on air quality. The permitting of the proposed plant is governed by state and federal law and is based on whether the application for the plant demonstrates that it would comply with the established environmental standards and criteria that are applicable to the proposed plant.

Proposed Equipment and Control Systems

8. The Illinois EPA should order Indeck to use gasification technology at the proposed plant.

Response: The Illinois EPA has considered whether the proposed plant should use gasification technology (Integrated Gasification Combined Cycle or IGCC) and has required Indeck to conduct a detailed evaluation of the feasibility of using this technology. The Illinois EPA concluded that gasification is still a developing technology for power generation. As a result, the uncertainty about the performance and cost of this technology would prevent the plant from

being developed with gasification technology. Given these findings, the Illinois EPA does not have the authority to order Indeck to use coal gasification technology at the proposed plant.

9. The Illinois EPA should order Indeck to build a wind-powered power plant to help offset the pollution created by burning coal.

Response: The Illinois EPA certainly recognizes the air quality benefits of wind power and encourages companies to pursue such projects. However, the Illinois EPA does not have the legal authority to require Indeck to develop a wind-power plant as part of the proposed project.

It should also be recognized that development of a wind power plant is a major undertaking. While an individual wind turbine may occupy a fraction of an acre, a utility-scale wind plant involves many wind turbines spread out over large areas of open agricultural land. The Illinois EPA cannot ensure that current landowners in the limited areas in Illinois that are suitable for development of wind power would be willing to cooperate with Indeck to allow it to develop a wind power plant.

Moreover, a wind power plant would not be a substitute for the proposed plant. Wind power is dependent on the strength of the wind, which is neither dependable nor consistent. On an annual basis, a wind plant in Illinois would have an annual capacity factor of about 25 percent. This is equivalent to being available for at most six random hours each day. In contrast, the proposed plant is intended to be available at its full capacity for up to 24-hours each day.

10. Indeck needs to identify any chemicals (algaecides, biocides, corrosion inhibitors, surfactants, etc.) that it would propose to use in the cooling towers, explain whether these compounds will be present in emissions and in what concentrations, and explain whether associated emissions would be in particulate or gaseous form.

Response: Indeck has provided general information on the types of water treatment chemicals that it expects to use in the cooling towers. As these materials are added to the water in the cooling towers, they would be present in the particulate matter emissions emitted from the cooling towers. However, they would be a small component of these emissions. The effects of these materials in the emissions are indirectly addressed; these materials would also be present in much larger quantities in the wastewater discharged from the cooling tower and will be addressed in the permitting of that discharge. In addition, provisions have been included in the issued permit requiring Indeck to keep detailed records for these materials so that they may be readily addressed during the Illinois EPA's continuing oversight role in the operation of the plant.

11. Indeck should be required to pave all roads at the plant that receive more than highly infrequent travel, not just regularly traveled roads.

Response: The suggested language would not require a significantly different level of roadway paving than the language of the draft permit and would be more likely to result in disputes as to

what the permit actually intends. However, a definition of regularly traveled roads has been included in the issued permit to better describe the roads that must be paved. It would treat roads as regularly traveled if on a daily basis the roads are normally traveled by vehicles driven by the plant operating and maintenance staff or by security personnel, and thus subject to paving.

12. Will the hopper cars delivering coal to the proposed plant be covered or open top cars? If open top, there will be fugitive coal dust. Will this dust impact the plant and animal life at the Midewin Prairie?

Response: Coal is routinely shipped in Illinois in open top rail cars. The Illinois EPA's experience with coal trains is that they are not a source of fugitive dust, because potential dust either is removed from the coal in the washing process or controlled by the residual moisture in the coal or application of an encrusting agent. The coal trains already passing through this area have not been identified as sources of fugitive dust.

Emissions

13. What are the expected levels of nitrogen oxides (NOx) achieved by the combustion controls on the proposed boiler, as would be measured at the inlet of the selective noncatalytic reduction (SNCR) control system?

Response: The inlet NOx loading to the SNCR is expected to be in the range between 0.12 and 0.08 pounds per million btu (lb/mmbtu). The exact rate will depend upon how effective the design of the fluidized bed combustion technology is in preventing formation of NOx.

14. What are the intended permitted hourly and annual emissions of mercury

Response: The annual emissions of mercury from the proposed plant are limited to 0.05 tons per year or 100 pounds per year. No limits on hourly emissions of mercury are established, although certain control practices related to mercury emissions are applicable on a short-term basis.

Best Available Control Technology (BACT)

15. The determination of Best Available Control Technology or BACT for the proposed boiler for sulfur dioxide (SO_2) is deficient. A lower limit could be set if more limestone reagent were required to be used, as is appropriate. The decision not to use more limestone is an economic one, and was not explained by the Illinois EPA in the project summary. The BACT limit for SO_2 should be set at 0.095 lb/mmbtu.

Response: The BACT determination was not an economic decision based on the cost of limestone used to capture the SO_2 emissions. The BACT limit set for SO_2 is 0.15 lb/mmbtu, a stringent limit requiring that a nominal control efficiency of 98 percent be achieved, comparing the SO_2 equivalent in the raw coal supply and the SO_2 emissions. It is consistent with the level of performance being required of other new coal fired power plants.

16. The BACT limits for emissions of NOx and carbon onoxide (CO) should apply as a three-hour average, not as a 30-day average and 24-hour average, respectively. In addition, the alternative expression of the CO BACT limit, expressed in pounds per hour, should be deleted.

Response: The averaging times and formats of these limits are appropriate. They are similar to the limits recently established by the Iowa Department of Natural Resources for the coal-fired Boiler 4 at the Council Bluffs Energy Center**.**

17. The BACT determination is deficient because a numerical emission limit has not been set for emissions of fluorides. What is the expected fluorine content of the coal and the limestone, so that the potential emissions may be calculated? BACT for total fluorides should be set at 0.0001 lb/mmbtu and 98 percent control of the fluorine contained in the fuel and limestone.

Response: BACT for fluorides is being established by the limits on SO_2 and particulate matter emissions and by the Maximum Achievable Control Technology or MACT limit for hydrogen chloride required by Section 112(g) of the Clean Air Act. In particular, the fluoride of greatest concern, hydrogen fluoride, is chemically similar to hydrogen chloride and effective control of hydrogen chloride also assures effective control of hydrogen fluoride. Accordingly, it is not necessary to set a separate BACT limit for total fluorides nor has any justification been provided for the specific limit recommended by this comment.

18. The determination of BACT for particulate matter (PM) for the proposed boiler is deficient. The BACT limit for the baghouse should be set at a rate not greater than 115 pounds of PM per billion dry standard cubic feet, expressed as 115 lbs PM/billion dscf. (Baghouses have achieved measured control rates of 42 lb PM/billion dscf.) BACT should also be set at 0.0095 lb/mmbtu, since the North Hampton Generating Station in Pennsylvania has achieved an emission rate of 0.01 lb/million Btu.

Response: The comment does not show that the BACT determination for PM for the proposed boiler is deficient. The BACT limit is consistent with limits set for other new coal-fired utility boilers, including those at the proposed Thoroughbred Generating Station in Kentucky and proposed Boiler 4 at the Council Bluffs Energy Center in Iowa. The emission limit set for PM, 0.015 lb/mmbtu, is appropriate.

19. The determination of BACT for the proposed boiler for particulate matter is deficient because it failed to consider condensable particulate matter (CPM). USEPA has determined that when addressing particulate matter, PSD permitting must address CPM, if present. USEPA has repeatedly required PSD permits to include limits and testing provisions for CPM. CPM must also be considered in the BACT determination. The permit for the proposed boiler should include a BACT limit for emissions of CPM, with testing performed by USEPA Method 202.

Response: The Illinois EPA considered CPM in the permitting of the proposed boiler. Indeck provided information with respect to add-on control for CPM from the proposed boiler. This

information shows that CPM will be effectively controlled by the combination of a fluidized bed boiler and a baghouse. While particulate matter of ten microns or less (PM10) includes both filterable and condensable fractions, there is limited information available upon which to base a numerical BACT limit for the condensable fraction. Thus, the BACT limit for PM only addresses the filterable fraction of PM.

With respect to the air quality analysis, the results of the analysis submitted by Indeck for filterable PM emissions from the boilers were doubled to account for condensable PM. The maximum PM air quality impacts of the proposed boilers are still *de minimis*, i.e., below the air quality significant impact levels established by USEPA.

Measurements for both filterable and condensable particulate must be performed as part of the testing of the proposed boiler (please refer to Unit-Specific Condition 1.8(b)). The issued permit requires the testing for condensable particulate to be performed with Method 202. This testing provision and other conditions in the issued permit dealing with PM emissions were revised to make clear whether the provisions apply to both filterable and condensable PM or only filterable PM.

20. The determination of BACT for the proposed boiler for NOx is deficient because the emission limit is not stringent enough. When applied to gas-fired facilities, selective catalytic reduction or SCR can achieve a NOx emission rate of 0.008 lb/mmbtu. The performance of the selective non-catalytic reduction system or SNCR for the proposed boiler can be enhanced by its design, e.g., increased residence time and better temperature control. Considering cost and equipment degradation over time the BACT limit for NOx for the proposed boiler should be set at 0.024 lb/mmbtu, rather than 0.10 lb/mmbtu.

Response: The NOx limits set for the proposed boilers are consistent with NOx limits set for other new coal-fired boilers. The NOx emission rates required of and achieved by natural gas-fired boilers are not a reasonable basis to set a NOx limit for the proposed boiler, which is coal-fired. This is because there are fundamental differences in the combustion process and the composition of natural gas and coal that affect the level of NOx emissions and control of those emissions.

The permit also appropriately relies on the capabilities of SNCR to control NOx. As a general matter, the preferred approach to "control" NOx emissions is to use combustion technology that minimizes the formation of NOx, rather than add-on control devices to collect and "neutralize" NOx. The permit achieves an appropriate balance between the preventative approach and the remedial approach. This is done by setting the NOx limits for the proposed boiler at a level consistent with or slightly better than that required of other new coal-fired boilers (0.07 to 0.10 lb/mmbtu). If the permit were to simply require 90 percent removal by the SNCR, a level of control nominally achievable with SNCR, irrespective of the level of "uncontrolled" NOx, as suggested by this comment, it would reduce the incentive for the source to prevent formation of NOx. It would also significantly increase both the costs and environmental impacts associated with operation of an SNCR system, as it takes more effort to maintain the efficiency of a control device as the concentration of the pollutant entering the device goes down.

21. The determination of BACT for the proposed boiler for emissions of NOx is deficient because it does not clearly require operation of the SNCR system whenever it would be effective in controlling NOx emissions. In particular, the permit should require injection of ammonia reagent whenever the temperature and level of NOx present at the SNCR system are in the range for the SNCR to be effective in controlling NOx emissions.

Response: Operation of the SNCR system, as requested by this comment, will be appropriately achieved with the NOx emission limit established for the boiler by the permit. The continuous emission monitoring system required for NOx will measure not only compliance with the NOx limit but also to provide the necessary information to allow Indeck to effectively operate the SNCR to control NOx emissions.

Moreover, this comment does not suggest a particular approach to the degree to which the SNCR system should be operated, separate from and beyond compliance with the applicable emission limit set for NOx. This is important because, as noted by another comment, of the use of ammonia in the SNCR, which may also react with SO_2 present in the exhaust and contribute to the formation of PM emissions. Arguably, to minimize this impact, the SNCR system should be used to the least extent practical, that is, only as needed to reasonably assure compliance with the NOx limit.

22. The determination of BACT for the proposed boiler is deficient because the emission limit for carbon monoxide (CO) is not stringent enough. An unfavorable trade-off has been made to allow operation of the boiler at a low temperature and with little excess air to reduce the cost of NOx emission control, with CO emissions that are too high in the absence of an oxidation catalyst system. Recent emission measurements for gas-fired boilers indicate that a CO emission rate of 0.015 lb/mmbtu is achievable. The BACT limit for CO should be set at 0.04 lb/mmbtu.

Response: The CO emission rates required of and achieved by natural gas-fired boilers do not provide a reasonable basis to set a CO limit for the proposed coal-fired boiler. As with NOx, there are fundamental differences in the combustion process for gaseous and solid fuels that affect the levels of CO emissions. In addition, the CO emission limit for the proposed boilers has not been set to allow low temperature operation of the boiler as suggested by this comment. Moreover, the SNCR system on the boiler allows for control of NOx without the need to skimp on excess air, which could also affect the thermal efficiency of the boiler.

For coal-fired boilers, control of CO emissions is achieved with good combustion practices to prevent formation of CO, not with add-on control devices that provide post combustion cleanup of CO emissions. This is because high-temperature combustion as present in a well-designed and operated boiler inherently acts to minimize formation of CO, when setting a CO limit for a coal-fired boiler, consideration must be given to the specific design and other circumstances of the unit. For the proposed boiler, the CO limit has been set an appropriate level reflective of good combustion control as achieved on a modern coal-fired boiler.

23. The determination of BACT for the proposed boiler is deficient because it failed to address emissions of beryllium.

Response: Beryllium is not subject to a BACT determination pursuant to the PSD rules. This is because emissions of hazardous air pollutants (HAPs), such as beryllium, are generally regulated under Section 112 of the Clean Air Act and not under the PSD rules. (Refer to Section 112(c) of the Clean Air Act, 42 U.S.C. § 7412(c).)

The control technology determination for the boiler does address beryllium and other heavy metals present in coal by the requirements established for control of PM. There are a number of trace heavy metals present in coal, including beryllium, that are appropriately controlled by effective control of PM and further specific devices and measures are not appropriate for these metals.

24. The determination of BACT for the proposed boiler is deficient because it did not consider emissions of ammonia in the BACT determination for particulate matter (PM). The PSD rules implicitly command consideration of ammonia, which is a precursor compound for formation of PM10 in the atmosphere. The permit should require that the source take measures to minimize use of ammonia. The emissions of ammonia from the proposed boiler should be limited to three parts per million (ppm) with compliance determined by continuous emissions monitoring. The Illinois EPA also needs to address ammonia as one of the pollutants that would be emitted from the plant.

Ammonia, itself, is not a regulated air pollutant. Accordingly, there is not a direct regulatory basis to set a limit for ammonia or to require continuous emissions monitoring for ammonia slip from the proposed boiler. The comment argues that ammonia may be "indirectly" regulated, as it is a precursor to formation of PM10 in the atmosphere. However, the comment did not discuss the further issues related to this comment, that is, whether ammonia can and should be regulated.

The Illinois EPA's conclusion is that a limit should not be set for ammonia emissions from the proposed boilers. Concerns exist about whether ammonia can be effectively regulated as requested, as there is not a USEPA Reference Method for measurement of ammonia, much less to accurately measure ammonia at 3 ppm. Continuous emissions monitoring for ammonia is also problematic, in part because there is not a method against which to confirm accuracy of monitoring in this range. More importantly, the Illinois EPA did not find that the ammonia from the proposed boilers should be regulated. In particular, the ammonia is being used as a reagent solely to control emissions of NOx, a pollutant and a precursor to ozone and to PM10. It is in the self-interest of the source to minimize its use of ammonia, using only as much as needed to reasonably comply with the applicable limit set for NOx. Finally, if a limit were set for ammonia, the limit could directly interfere with and hamstring the source's ability to comply with requirements for NOx, with the nature of such impacts dependent on the limit that is selected.

25. The determination of BACT for the proposed boiler is deficient because it does not adequately address periods of startup, shutdown and malfunction. Periods of startup, shutdown and malfunction have been excluded from the numerical limits set as BACT. The permit also does not provide details on the number and nature of startups, shutdowns and malfunctions. The permit should include numerical BACT limits for startup and shutdown.

Response: The determination of BACT for the boilers adequately addresses periods of startup, shutdown and malfunction. The permit builds upon information in the application that generally describes the number and nature of startups of the proposed boiler. The Permit requires that the source follow good air pollution control practice to minimize emissions during these periods. In particular, reasonable practices must be used to minimize emissions during startup and shutdown of a boiler. Among other items, these practices must include use of natural gas during startup to heat a boiler prior to initiating firing of solid fuel, operation of the boilers and associated air pollution control equipment in accordance with written operating procedures that include startup, shutdown and malfunction plan(s), and inspection, maintenance and repair of the boilers and associated air pollution control equipment in accordance with written maintenance procedures.

The approach to these periods taken by the permit allows refinement to the required practices based on actual experience with the boilers over time, with the continuing objective of minimizing emissions during these periods of transitional operation. As such, this approach more effectively controls emissions than an alternative approach involving fixed limits set in the construction permit, as suggested in this comment, based only on the information available at the time of permitting.

26. The determination of BACT for PM emissions from minor emission units at the proposed facility is deficient. For material handling operations controlled by fabric filters, PM emissions should be limited to no more than 0.0008 grains per dry standard cubic foot (gr/dscf) of exhaust (equivalent to 115 lb/billion dscf), since fabric filters have achieved measured emission rates of 0.0003 grain/dscf. These limits should be accompanied by appropriate compliance procedures, including annual performance tests, opacity monitoring, and monitoring of pressure differential and fan motor power.

Response: For material handling systems controlled with fabric filters or baghouses, BACT was determined to be control devices designed and operated to comply with an emission limit of no more than 0.005 grain/dscf (refer to Unit-Specific Condition 2.3). This is an appropriate limit for filtration devices in this type of service. Compliance should be able to be readily determined by direct observation of stacks for the presence of visible emissions, review of operating and maintenance records for the units, and emission tests performed upon specific request by the Illinois EPA. This general approach can be supplemented in the CAAPP Permit for the facility, if needed, based on actual operating experience with these units. The compliance procedures recommended by this comment, which were not accompanied by detailed, supporting information, are not necessary for these types of units. The recommended emission limit is also an unrealistic emission limit for these units. Although compliance testing of baghouses routinely shows emissions that are significantly below the applicable emission limit, emission limits for baghouses are set at levels that reflect acceptable operation and maintenance of the units and that can be reliably achieved on a continuing basis.

27. The determination of BACT for the proposed facility is deficient as it does not adequately demonstrate that so-called "fugitive" emission units excluded from the BACT determination in fact qualify as fugitive emissions, as defined by 40 CFR 52.21(b)(20).

Response: In the contrary, fugitive emissions have been included in and are subject to a determination of BACT. This is because the proposed project is a major project subject to PSD based on its "non-fugitive" emissions. Once a project becomes a major project under the PSD

rules, all of the project's emissions, both fugitive and non-fugitive, become subject to the BACT requirement of the PSD rules. In particular, the permit requires Indeck to follow good air pollution control practices to minimize nuisance fugitive dust from plant roads, parking areas, storage piles and other open areas of the plant. These practices must include pavement on all regularly traveled roads and treatment (flushing, vacuuming, dust suppressant application, etc.) of paved and unpaved roads and areas that are routinely subject to vehicle traffic for very effective control of dust. Emissions from storage piles must be controlled by material quality and enclosure as practicable.

Maximum Achievable Control Technology (MACT)

28. What does the Illinois EPA consider to be the best controlled similar source that is the basis of the determination of MACT?

Response: The determination of MACT is based on other new fluidized boilers equipped with baghouses. In particular, the fluidized bed boiler at the Stockton Cogeneration Company in Stockton, California, is an example of such a boiler. This is a 620 mmbtu/hour boiler permitted to burn coal, petroleum coke and tire-derived fuel. Emissions data for this boiler collected by USEPA indicates that it achieves about 95 percent control of mercury emissions.

29. Does the application address the specific informational requirements of 40 CFR 63.43(e)(2)? Is additional control technology required as that term is used in 40 CFR 63.43(e)?

Response: The application fulfills the informational requirements set forth by 40 CFR Part 63. The Illinois EPA does not expect that additional control technology will be required to comply with MACT, given the control technology already required by BACT and LAER. However, the MACT determination does allow additional control technology to be used if needed to comply with the MACT determination. Further evaluation during the detailed design of the CFB boilers, as well as ongoing research in control technology, may lead Indeck to install an injection system for a mercury sorbent to allow mercury to be effectively controlled without relying entirely on the sorbents used for controlling emissions of sulfur dioxide and other acid gases.

30. The MACT determination is flawed because the Illinois EPA did not determine the "MACT floor," i.e., the level of emission control that is achieved in practice by the best controlled similar source.

Response: The MACT floor for coal-fired boilers is good combustion practice, effective add-control of emissions of acid gases, as achieved on a conventional boiler by scrubbing, and effective add-on control of particulate matter emissions. These control elements are generally present with a fluidized bed boiler, with control of acid gases achieved through injection of limestone into the fluidized bed of the boiler. The emissions limits set for the proposed CFB boilers would require that these general principles be effectively carried out at the proposed plant.

31. The MACT determination is flawed because it fails to set emission standards for each HAP. Moreover, particulate matter is not a valid surrogate for non-mercury metal emissions because factors other than end of stack controls may affect emissions. In addition, USEPA has stated that particulate matter is not a valid surrogate for semi-volatile metals like lead and cadmium. Similarly, CO cannot be used as a surrogate for all HAP because it does not adequately address the dioxin emissions from coal combustion.

Response: A review of USEPA determinations of MACT for combustion sources confirms that MACT determinations can limit only certain pollutants, using the selected pollutant as a surrogate for other related pollutants. In particular, in the MACT rulemaking for non-utility boilers, USEPA grouped HAPs into four categories, i.e., mercury, non-mercury metallic HAP, inorganic HAP and organic HAP. USEPA indicated that "…the pollutants within each group have similar characteristics and can be controlled with the same techniques. For example, non-mercury metallic HAP can be controlled with PM controls." (68 Federal Register 1671, January 13, 2003) Emissions of dioxin are addressed by combination of CO and hydrogen chlorides (HCL) limits. Other recent permits for new coal-fired boiler also take this four category approach to setting MACT.

32. The MACT determination is flawed because it failed to include a "beyond-the-floor" analysis to address non-air quality health and environmental impacts.

Response: This comment reflects a misunderstanding of the provision for "beyond-the-floor" analysis, as this provisions requires an analysis of the impacts from the control technology itself, i.e., its cost and any negative environmental impacts that would accompany application of the control technology. When USEPA pursued its analysis, it determined that beyond the floor control was not needed. Moreover, as related to power plants, the environmentally beneficial aspects of MACT control are being and should be addressed on a regional and national basis.

33. The MACT determination for mercury and hydrogen chloride is illegal as it proposes a number of compliance options for MACT. This is contrary to the legal requirement that MACT must be no less stringent than is achieved by the best controlled similar source. In addition, in the absence of evidence that the various options are equally protective of human health, it is reasonable to conclude that one option will result in less emissions and the Illinois EPA must select that limit as MACT.

Response: Providing compliance options for MACT is clearly not illegal. USEPA evaluates and provides compliance options in its MACT regulations. Based on the example set by USEPA, providing these compliance options is an appropriate approach in circumstances where there is the potential for variability in the level of uncontrolled HAP emissions and such emissions may be controlled by either operating practices that minimize the presence of such emissions or specific add-on devices to control those emissions. This is the case for the proposed CFB boilers as there is potential variability in the level of mercury and chlorine in the fuel supply to the boilers and potential variability in the effectiveness of the required add-on control devices for

control emissions of mercury and hydrogen chloride.

At the same time, in response to this comment, the Illinois EPA has reevaluated the various compliance options proposed in the draft permit and has eliminated one of the options from the issued permit. In particular, the Illinois EPA has concluded that it is not necessary to provide a compliance option in which control requirements may be reevaluated if performance guarantees cannot be obtained for the other compliance options. This is because the remaining compliance options rely on demonstrated performance levels and control techniques for control of emissions and performance guarantees should be readily available for these options.

34. USEPA has determined that the MACT floor for mercury is use of a baghouse to comply with an emission limit of 0.000003 lb/mmbtu. Indeck should be required to use a wet or dry scrubber to control emissions of acid gases to comply with this limit.

Response: The numerical emission limit set by the permit as MACT is 0.000002 lb/mmbtu, below the level requested by this comment. In addition, the issued permit requires that the boilers be equipped with a trimming scrubber, which is type of dry scrubber.

35. The Illinois EPA fails to appropriately address the issue of variability in the amount of mercury, chlorine and other constituents of the fuel supply as related to the emissions that are generated by burning such a fuel.

Response: The permit appropriately addresses this issue. As already discussed, the MACT determination includes appropriate options to address such variability. In addition, the permit includes limitations on the total emissions from the plant for mercury, and chlorine is emitted as hydrogen chloride for which a limit has also been set.

36. The emission limit proposed as MACT for hydrogen chloride (HCl) does not reflect MACT. It is higher than a limit recently proposed by USEPA for industrial boilers. The Illinois EPA needs to consider the information compiled by USEPA as part of this proposed rulemaking in making its determination of MACT for Indeck.

Response: USEPA's rulemaking does not apply to utility boilers like the proposed boilers. Upon further evaluation, Illinois EPA agrees that advantage can be taken of this USEPA action as a source of relevant data. As a result, the HCl limit has been lowered to a level that is half that proposed by USEPA for industrial boilers.

37. USEPA has determined that the MACT floor for inorganic HAP gases is use of a wet or dry scrubber to comply with an HCl emission limit of 0.02 lb/mmbtu. (USEPA determined that the new MACT floor for coal-fired boilers is a combination of a baghouse, a wet scrubber, and CO monitoring.) Indeck should be required to use a wet or dry scrubber to control emissions of acid gases to comply with this limit or an even stricter limit equivalent to the emissions limits required of Peabody's Thoroughbred Power Plant.

Response: The issued permit requires the proposed boilers to be equipped with a scrubbing system as suggested by this comment. Because the scrubber would supplement the removal accomplished by limestone injection into the bed, rather than being the principle control device, it is referred to as a trimming scrubber. The emission limit for HCI in the issued permit is 0.01 lb/mmbtu.

38. The emission limit proposed as MACT for hydrogen chloride does not reflect MACT. Hydrogen chloride should be readily controlled by the limestone present in a fluidized bed boiler. The only possible reasons why the hydrogen chloride emission rate proposed by Indeck is so high is that there is either a deficiency of residence time or surface area of limestone for the pollution control reaction to take place. Both of these deficiencies are related to cost of control and nature of these costs have not addressed, so as to justify the proposed emission limit.

Response: The proposed limit in the draft permit was set at the level it in the permit because of the high chlorine content of Illinois coal. The limit has been lowered based on a finding that even with this level of chlorine in the coal, the combination of the fluidized bed boiler and trimming scrubber enable a lower limit to be achievable.

39. The MACT determination is flawed because it failed to consider different emission limits that may result from burning petroleum coke or waste coal in the proposed plant. The calculations of hazardous air pollutants emissions were based on exclusive use of coal. The analysis of hazardous air pollutant emissions must be redone to project the maximum emissions from the various types of fuels that the proposed plant would be authorized to burn.

Response: Incidental usage of these other fuel materials would not alter the MACT determination for the plant. This is because the alternate fuels would only make up a fraction of the fuel supply to the boiler and generally would contain lower levels of HAP constituents than the coal fuel supply. This has been specifically confirmed by the data and analysis provided by Indeck for these supplemental fuels.

40. Ancillary engines at the proposed plant should be powered by natural gas, be more fully "permitted" with determinations of BACT/MACT control, limits on hours of operation, and monitoring and reporting requirements.

Response: Ancillary engines at the proposed plant are fully permitted with determinations of BACT/MACT. These determinations limit the size of the engines, limiting larger engines to operation as emergency engines. Fuel is limited to very low-sulfur oil. It is not appropriate to further restrict these small engines to natural gas, as it could interfere with the reliable operation of these engines, which are important for the safe operation of the plant.

Lowest Achievable Emission Rate (LAER)

41. The draft permit does not comply with the mandate to achieve LAER. IGCC technology should be required as Lowest Achievable Emission Rate (LAER) for VOM emissions.

Response: For a variety of reasons, use of IGCC at the proposed plant cannot be supported or justified by the LAER requirement for emissions of volatile organic material. This is explained in more detail below in response to particular comments.

Local Air Quality Impacts

42. Because of the emissions already present in Will County, the potential emissions of the proposed plant would put the area at risk of becoming a nonattainment area for nitrogen oxides, sulfur dioxide, and particulate matter.

Response: The evaluation performed for the proposed plant shows that it would no way pose such a risk. This evaluation, which is performed using computerized dispersion models, shows that the concentrations of these pollutants in the air would continue to be below the National Ambient Air Quality Standards, which are established by USEPA to protect human health and welfare.

43. Because westerly winds prevail for much of the year and the Village of Elwood is one mile due east of the plant, residents of Elwood will be unable to avoid the emissions of the plant.

Response: The modeling evaluation shows that these maximum concentrations of potential emissions from the plant are well within the applicable ambient standards, with most of the concentrations attributable to existing sources rather than from the proposed plant. Given the conservative way that this evaluation is conducted, it is protective of people in the vicinity of the proposed plant, including the residents of Elwood, irrespective of their location relative to that of the proposed plant. However, while the Village of Elwood may be located to the east of the proposed plant, it is not where the maximum pollutant concentrations would occur with the plant, given the nature of existing sources in the area and the nature of the proposed source, and the range of weather conditions that occur. In this regard, the dispersion modeling used five years of hour-by- hour weather data to evaluate the air quality impacts for particulate matter, sulfur dioxide, nitrogen oxides and carbon monoxide over different averaging times, from one hour to one year, depending upon the particular air quality standards, and identified the maximum concentrations that would potentially accompany the proposed plant. Again, the maximum concentrations of potential emissions are well within applicable ambient air quality standards.

44. The Illinois EPA did not make available maps showing where the zone of significant impact from the plant is located.

Response: The air quality modeling reports prepared for proposed sources do not usually include such maps. This is because the air quality modeling is normally conducted to determine the maximum ambient air quality impacts from a proposed source. Permitting decisions are based on conclusions about maximum air quality impacts, not average air quality impacts.

45. The modeling was conducted with high questionable meteorological data, as this data was from O'Hare Airport, which is about 75 miles from Elwood.

Response: This statement is not correct. Meteorological data from O'Hare is reliable given regional weather patterns and is routinely used for modeling conducted throughout the greater Chicago area. Although weather conditions in Elwood may differ from conditions at O'Hare on a day-to-day basis, the O'Hare weather data is representative of the mix of weather experienced at sites in the Chicago area over the course of a number of years.

Other Air Quality Impacts

46. The handling of coal and ash at the plant, along with the trains, will produce dust, dirt and other emissions.

Response: The potential emissions of dust from material handling are readily controlled. Stringent control measures are required to be used by the proposed plant, and these will prevent nuisance conditions.

The emissions from locomotives are outside the scope of the permit, as locomotives are regulated as mobile sources. In addition, emissions from locomotives engines are not readily controlled by sources. However, USEPA does regulate the emissions from locomotive engines, just as it does automobile engines. As new locomotives, with engines that are subject to more stringent emission limits, replace existing locomotives, the overall emissions from rail traffic in the area will decrease.

47. The plant will be noisy because of the machinery and periodic blowdown and safety valve testing of the boiler. The trains hauling coal to the site will also be noisy.

Response: Illinois has separate regulations for noise, 35 Illinois Administrative Code Part 901, that address noise from stationary sources and that protect against excessive noise from industrial facilities. Indeck must build and operate the proposed plant with appropriate features to contain and absorb noise to comply with these rules. With respect to any steam releases associated with the boilers, Indeck has stated that to comply with the noise rules and to generally avoid noise impacts, it will equip the blowdown and safety valves on the boiler with silencers, i.e., mufflers. This will control noise from any steam releases.

With respect to noise from trains, the area already experiences a heavy volume of train traffic, including coal trains that serve power plants to the north. The proposed plant would not

significantly increase the volume of train traffic in the area.

48. The proposed plant will be smelly.

Response: Power plants are not a source of odorous emissions.

49. The cooling towers would be located within a few hundred feet of the Midewin Prairie and the Abraham Lincoln National Cemetery. We are concerned that the water vapor plume and the windage water droplets from the cooling towers, will adversely impact: (1) the Midewin Prairie, (2) the National Cemetery, (3) road traffic in and out of the CenterPoint Intermodal Center, and (4) nearby Jackson Creek. Has a study been conducted to determine the physical and aesthetic effects of the plume from the cooling tower? Did this study consider the prevailing winds, which are typically out of the east, toward the nearby prairie, during the warmer summer months, and out of the west, toward the cemetery during the colder months?

Response: As freezing rain and fog are natural weather conditions, icing and fog are potential concerns near large cooling towers as related to human activity in the vicinity of the cooling tower, i.e., vehicle traffic on nearby roadways. In response to this comment, the Illinois EPA has conducted modeling for the proposed cooling towers to evaluate the potential effects of the proposed towers. This analysis indicates that the towers could increase icing and fog in their immediate vicinity. In particular, this analysis indicates increased occurrence of icing up to 300 meters away at a frequency of one hour per year, worst-case. Increased occurrence of fog is indicated up to 800 meters away at a frequency of at least one hour per year, worst case.

Because of this finding, a provision has been included in the permit requiring Indeck to submit further modeling and analysis showing that the cooling towers will be sited and designed so that they will not contribute to a significant increase in the frequency or extent of icing and fog on public roadways, subject to review and approval by the Illinois EPA. Alternatively, Indeck must equip the proposed cooling towers with a "reheat" system for the exhaust from the cooling tower or other device so as to be able to counteract the potential effect of the towers on icing and fog. Indeck must operate this system when the natural weather conditions are conducive for icing and fog as needed to prevent the cooling towers from causing or significantly contributing to unsafe travel conditions on public roadways.

The Illinois EPA has allowed Indeck to conduct further detailed modeling to address this issue because such modeling could demonstrate that the cooling towers are located far enough from public roadways that such effects will not occur. In this regard, the characterization of wind directions made in this comment is wrong. Prevailing winds are better characterized as coming from the south during the summer (which can include winds that range from the southwesterly through southeasterly) and from the north during the winter (again extending from the northwesterly to northeasterly). Thus fog and especially icing, which are winter phenomenon, would more commonly be expected to impact the proposed plant itself or the CenterPoint Intermodal Center to the south and southeast.

Water Impacts

50. The proposed plant would use vast quantities of water, which will probably be in excess of the amount that Indeck can withdraw from the DesPlaines River. Indeck has stated they would rely on wells tapping deep aquifers to make up the difference. This would place the reliability and purity of Elwood's water supply, which also relies on wells, in jeopardy.

Response: While this comment is outside the scope of this permit, it is nevertheless appropriate for the Illinois EPA to respond to correct a misunderstanding concerning the water usage of the proposed plant. Indeck has stated that water for cooling, which makes up the vast majority of water required for the plant, would be obtained from the DesPlaines River. A much smaller quantity of higher quality water is required for use in the boilers. Indeck would like to obtain this water from the Village of Elwood. This is because the Village's existing well system and water treatment plant has been developed with ample capacity and ability to meet this particular water need, without any effect on the Village's water supply for residents and other users of water. However, as an alternative to obtaining the water for the boilers from the Village, Indeck has stated that it could drill its own wells and develop its own water supply. This alternative still would not place the Village's water supply in jeopardy given the available groundwater resources in the area.

Impacts on the Midewin National Tallgrass (Midewin) Prairie

51. The Illinois EPA should fully consider environmental impacts of the proposed plant on the Midewin Prairie. Based on the limited information available, I must conclude that the emissions from the proposed plant would adversely impact the Midewin, undermining the goals of ecosystem restoration and outdoor recreation.

Response: As shown by the detailed modeling included in the application, the emissions of the proposed plant will have a very small effect on the air quality at Midewin. In addition, the overall air quality in Illinois is steadily improving, both as a result the specific regulatory programs that apply to existing sources and a result of the natural turnover of equipment at existing sources.

52. We are concerned about the impacts of the proposed plant on the Midewin because of the location of the coal storage facility in the West TNT Ditch Wetlands Area. This area was to be reserved as wetlands pursuant to commitments made under the wetlands permit issued for the CenterPoint Intermodal Center. In particular, the site of the proposed coal storage facility covers existing wetlands that are hydrologically and ecologically connected to adjacent existing wetland on the Midewin Prairie. Under the existing wetlands permit, CenterPoint is to preserve these wetlands and protect them with a vegetated buffer zone. In particular, CenterPoint indicated that the large wetland complex east of West TNT Road would be avoided and protected with a 75 foot vegetated upland buffer. CenterPoint

also located its loop rail track on an existing railroad bed, to avoid impacting this area. If the existing wetland sites are covered by Indeck's coal handling facility, as now proposed, they will no longer function as a groundwater recharge area for the adjacent wetlands on the "Drummond Prairie," a large remnant dolomitic prairie located in the northwest corner of the Midewin Prairie. This could affect the overall hydrology of the nearby Drummond Prairie, harming its rare and fragile ecology, which includes a population of Leafy Prairie Clover, an endangered species. These types of hydrological impacts on the Drummond Prairie would impact the ability to achieve the goal of ecosystem restoration for Midewin.

Response: These concerns related to the hydrological effects of the plant are beyond the scope of this air quality permit. However, the Illinois EPA is hopeful that Indeck can design and develop the coal handling facility to minimize unnecessary impacts on existing wetlands and to fully compensate for any impacts that do occur. In this regard, most of the wetlands addressed by this comment are to the south of the parcel at CenterPoint where Indeck proposes to develop its coal handing facility and should be unaffected. With respect to the actual site planned for the coal handling facility, changes to wetlands are addressed by the wetlands permitting process.

53. The emissions of pollutants that are precursors to acid rain from the proposed plant upwind and in close proximity to the Midewin Prairie are a serious concern, as they would pose a threat to sensitive habitat areas in the Midewin Prairie. Acid deposition can affect soil chemistry, with direct effects on sensitive habitats. Species listed as threatened, endangered or sensitive are present in some of the affected habitats at the Midewin Prairie.

Response: Acid rain is generally a "transport" phenomenon. That is, acid rain is caused by the combined impacts of many coal-fired power plants and emissions that may have traveled hundreds of miles. Accordingly, a localized contribution to acid rain should not be anticipated from the proposed plant.

Moreover, national concern over the effect of acid rain on certain sensitive regions of the country led to the adoption of the federal Acid Deposition Control program pursuant to Section IV the Clean Air. Since the control requirements of this program began taking effect in 1995, there have been substantial reductions in the nation's sulfur dioxide emissions and the contribution of sulfates to acid deposition. These benefits have extended to Illinois, as Illinois is also subject to transport, even though Illinois itself is not considered sensitive to acid deposition because its surface waters have adequate acid neutralizing capacity due to the underlying limestone rock.

54. Will the emissions of dust from the proposed coal handling facility, which are proposed to be permitted at 5.5 tons per year, impact the leafy clover and other plants at the nearby Drummond Prairie, which are adapted for alkaline soil conditions?

Response: In terms of impacts, the amount of permitted particulate matter emissions is again trivial. No impact should be anticipated. The appropriate focus of concern for protection of the soil conditions at the Midewin is national, as addressed by the Acid Rain program and other

national programs controlling emissions from coal-fired power plants.

55. The proposed plant would likely have impacts that are not directly related to air quality, including impacts on wildlife, water quality, and recreation. In particular, stormwater if polluted with coal dust would affect streams and wetlands, and their aquatic plant and animal communities.

Response: As any such impacts are not related to emissions and air quality, they are outside the scope of this permit. However, Indeck must comply with other regulations and permit programs that exist to address such discharges and prevent unacceptable impacts from the proposed plant.

56. The Illinois EPA has not adequately evaluated the effects of the proposed plant on soils, vegetation, or visibility due to the combined impacts from air emissions, water usage, wastewater discharge, and noise. There is significant evidence to suggest that the total impacts from the plant, considering all media, would have a significant effect on soils, vegetation, and visibility.

Response: No evidence has been supplied that indicates that any effects, much less significant effects, would occur. In Illinois EPA's judgment, no such impacts should be anticipated as a result of the emissions of the proposed plant. The evaluation of the effects of the emissions on soils, vegetation, and visibility was included as part of the application. With respect to vegetation, this evaluation indicates that the ambient concentrations of pollutants, other than ozone, would still be far less than the screening levels developed by USEPA to protect sensitive vegetation, which represent the minimum reported concentrations of pollutants at which damage or growth effects to vegetation may occur. As confirmed by the assessment of ozone impacts conducted by the Illinois EPA, coal-fired power plants do not have localized impacts on ozone air quality.

Moreover, while aspects of the proposed plant unrelated to air quality are beyond the scope of this permit, it is unclear how noise, water usage, and wastewater discharge would generally have any effect on visibility, vegetation or soil. To the extent specific concerns may exist with respect to aquatic vegetation or benthic soils, such concerns are appropriately considered separately as part of the regulatory review processes for water usage and any wastewater discharge from the proposed plant.

57. Has a study been conducted to determine the impacts of the proposed coal handling facility on the Drummond Prairie? Indeck did conduct a study to address the impact of the facility on the finish of new vehicles being transferred from rail cars to transport trucks at the CenterPoint Intermodal Center.

Response: The PSD dispersion modeling did address emissions from the coal handling facility at the proposed plant. In addition, Indeck indicates that it responded to potential concerns from the CenterPoint Intermodal Center about coal dust. The proposed design of the facility, with material handled indoors, adequately answered concerns about the design of the facility. The

continuing interest of the CenterPoint for dust to vehicles will serve to assure proper operation of the coal handling facility, thus indirectly preventing impacts on the Drummond Prairie and other neighbors in day-to-day practice.

58. How will Indeck manage secondary wastewater streams? In particular, if water flushing is used to control dust on roadways and other open areas, where would the wastewater be discharged or collected? If a dust suppressant is applied to these areas, what type of suppressant would be used? How will precipitation that collects in the coal cars be collected and managed?

Response: Under applicable rules governing wastewater and related permits that have been issued to CenterPoint, Indeck must collect secondary wastewater streams so that they can be appropriately treated. This will be accomplished by collecting this water in retention ponds, with discharges routed through the new wastewater treatment plant, which is being developed by the Village of Elwood to serve the CenterPoint Intermodal Center.

59. In the plan for the Midewin Prairie, lands to the west and south of the CenterPoint Intermodal Center are to be restored to native prairie communities to establish and maintain grassland bird habitat. The structures, lighting, noise and activity of the proposed plant, together with the existing and planned development of the Center will diminish the quality of this bird habitat.

Response: This concern is generally outside the scope of the air permit. In addition, no evidence has been provided to support this claim. This is important as birds do not exhibit the same sensibilities as humans and various species of birds are affected differently by the presence of people and human activities.

60. The proposed power plant, and its associated noise, would contribute to heavy industrial background sights and sounds that visitors to the Midewin Prairie already experience, further impacting the aesthetic experience of visitors to the Midewin Prairie, and the recreational programs at the Midewin Prairie. The coal handling facilities, in particular, would be located on an area that would have served as a buffer between the Midewin Prairie and the CenterPoint Intermodal Center. The first trail being developed for the Midewin is in this area, and the view from the trail will now be a coal storage facility and a train of coal cars.

Response: This concern is generally outside the scope of the air permit. This part of the Midewin Prairie, sandwiched between CenterPoint and ExxonMobil, and formerly occupied by explosives manufacturing, is already subject to these impacts, as acknowledged by the comment. High-tension lines already run across the center of the adjacent prairie. A levee, which covers the water supply pipe from the DesPlaines River also cuts across the prairie. There are already rail lines running on raised embankment alongside the prairie and trains, cranes and truck traffic at the Intermodal Center. Also, the Drummond Prairie as it is a natural remnant area, will not be affected by the visual proximity of this industrial activity and should continue to survive, just as

when the Joliet Army Ammunition Plant (Arsenal) was in operation.

61. How will Indeck protect and preserve the Midewin Prairie? Given its plans for the location of the coal storage facility, we do not believe that Indeck has shown the same degree of commitment for preservation of the Drummond Prairie that CenterPoint displayed.

Response: The applicable regulations and permitting programs applicable to the proposed plant serve to protect and preserve the Midewin Prairie.

62. Will Indeck construct coal-handling facilities on land that was designated to be a buffer zone for the Drummond Prairie west of the site under a wetlands permit issued in 2000 to CenterPoint? CenterPoint stated that it would accept deed restrictions to protect the TNT Ditch Wetland Areas.

Response: This concern is generally outside the scope of the air permit. In this regard, this permit does not supersede any commitments or restrictions that have been established for buffer zones to protect the Drummond Prairie.

63. The proposed power plant, as now planned, will do more harm than good. The Midewin Prairie is likely our last chance to bring prairie back to Illinois. If a new coal-fired power must be built, the plant should be built elsewhere so as to not ruin this unique opportunity to preserve Illinois' natural heritage.

Response: The Illinois EPA recognizes the importance of the Midewin Prairie. However, with regard to the air pollution addressed by this permit, there should be no significant impact on the Midewin Prairie. More generally, it should be remembered that the federal law that created the Midewin Prairie from the former Joliet Arsenal did not set aside the entire property for establishment of a national prairie. It also provided for creation of an industrial park, which is where the proposed plant would be located.

Other Local (Non-Environmental) Impacts

64. The construction of the proposed plant on the former Joliet Arsenal contradicts a USEPA plan for development of the Arsenal. In that plan, it was stated that a clean-burning natural gas fired power plant would be erected to supply power to industrial/commercial development.

Response. This comment is not accurate. It incorrectly describes a plan developed by CenterPoint Properties, a private company, as a plan developed by the USEPA. In its plan, CenterPoint indicated that it would pursue development of a natural-gas fired power plant. These plans have changes and Indeck has approached CenterPoint to develop a coal-fired plant at the site. As already explained, both modern gas and coal plants should be considered clean burning.

65. The proposed plant will reduce property values in the Village of Elwood, potentially making our homes unsaleable. Written statements by residents living near other large power plants, such as individuals living near the Ocean State Power Plant in Rhode Island, paint a grim picture of financial losses that have resulted.

Response: This comment was not accompanied by meaningful factual support, only anecdotal comments by one individual who lived within ½ mile of a new gas-fired power plant in Rhode Island. In contrast, the history of the Village of Elwood suggests that the village has not been negatively affected by the Joliet Arsenal and other industrial plants in the area and has maintained its quality and character of life.

66. A power plant of this size would expose the Village of Elwood to potentially serious operational safety hazards.

Response: This is not a significant concern, given safety codes and separation from the village.

67. The power plant will result in a long-term degradation of the quality of life in Elwood. Written statements by residents living near other large power plants paint a grim picture of untenable living conditions that have resulted.

Response: This comment was not accompanied by meaningful factual support that such conditions generally exist, much less would occur from the proposed plant. Given the range of requirements that will apply to this modern plant and its location, this comment is wholly without support.

<u>Regional Air Quality Issues - Ozone</u>

68. By emitting thousands of tons into the environment each year, the severe ozone non-attainment problem that the Chicago area faces will be exacerbated.

Response: The Illinois EPA has completed a regional modeling study assessing the impacts of this proposed plant and other proposed coal-fired power plants elsewhere in Illinois. This study conservatively evaluated the potential effect of these plants on attainment of the current 1-hour ozone air quality standard, assuming that all proposed plants would be built and that no existing plants would be retired. The study found that the emissions from these plants would not jeopardize timely attainment and maintenance of the current ozone air quality standard.

Moreover, the development of the proposed plant will be accompanied by reductions in overall NOx emissions, as the new NOx Trading Program will take effect in the summer of 2004, before the proposed plant would begin to operate. This program establishes a budget for NOx emissions, considering both existing coal-fired power plants and new natural gas-fired power plants, to address the critical effect of NOx emissions on ozone air quality within the region. Indeck will be required to obtain NOx allowances under this program, and other plants will have

to reduce NOx emissions to accommodate Indeck's NOx emissions.

69. The Chicago area is known as the asthma capital of the country. We don't need another major source of pollution in the area. Why would the Illinois EPA propose to permit a new coal-fired power plant that would increase the risks to health even further?

Response: The prevalence of asthma in the Chicago is of grave concern. However, it is not a basis to refuse to grant a permit for a proposed new source that will be well controlled and will comply with the stringent standards set for new sources.

The ambient air quality that poses a particular threat to asthmatic individuals is the cumulative result of emissions from the variety of existing sources that contribute to air pollution in urban areas, including trucks, buses, cars, household products, manufacturing facilities, and power plants. On a long-term basis, emissions have been reduced and regulatory programs are ongoing to further reduce the emissions from these sources. This is appropriate and necessary because continuing improvements in urban air quality require that these existing sources be better controlled, replaced with new, lower emitting sources, or discontinued entirely. On an immediate basis, efforts are underway to improve public awareness of daily air quality levels. This is particularly important for individuals with asthma or other chronic respiratory diseases because it allows them to take appropriate measures to reduce any added risk to their health posed by poor air quality, by reducing time spent outdoors, avoiding physical exertion, and taking prescribed medication, or for these measures to be carried out on their behalf.

Regional Air Quality Issues - Mercury

70. Coal-fired power plants are the largest source of mercury emissions in Illinois.

Response: Existing coal-fired power plants do contribute significant amounts of mercury to the environment through their emissions. However, this plant would be equipped with modern emission controls and emit a fraction of the mercury emitted by existing plants per megawatt of electricity produced.

71. The levels of mercury measured in rainwater in Chicago are already unhealthful, as they are many times the levels that USEPA considers safe for wildlife and humans in the Great Lakes.

Response: The levels of mercury in rain and bodies of water are higher than desirable, but do not pose a direct human health threat. Mercury and mercury emissions pose a threat as they make their way into aquatic organisms and up the food chain. Accordingly, mercury poses a general threat to aquatic ecosystems. In addition, human consumption of predatory fish, which are at the top of the food chain, may significantly increase the risk of adverse health effects from consumption of mercury, especially for the populations that are at higher risks for such effects.

72. In 2001, for the first time in Illinois history, the Illinois EPA, Department of Public Health and Department of Natural Resources issued a statewide methyl mercury advisory.

Response: This advisory was issued as a protective measure given recent studies indicating that consumption of certain fish with high mercury levels may pose a greater risk than previously thought for sensitive populations, i.e., women who are or may become pregnant, to protect fetuses and nursing infants, and children younger than 15 years of age.

This statewide mercury advisory only applies to individuals in the sensitive populations and recommends that they eat no more than one meal per week of predatory fish, such as black bass, striped bass, northern pike, or flathead catfish, taken from Illinois' waters. In addition, more restrictive advisories were given for certain bodies of water, such as the Ohio River and Kincaid and Cedar Lakes, recommending that sensitive populations restrict the consumption of largemouth black bass and, in some cases, white crappie, to one meal per month. Other individuals are advised to restrict consumption of largemouth bass to one meal per week.
www.idph.state.il.us/envhealth/fishadv/specialmercury.htm

73. The Permit should not be issued because the proposed plant would emit mercury in an amount that would cause or contribute to air pollution, in violation of 35 IAC 201.141.

Response: As already explained, the mercury emissions of the plant would not contribute to air pollution, i.e., unhealthy levels of mercury in the ambient air.

<u>Regional Air Quality Issues - Emissions Of Power Plants</u>

74. The emissions of the proposed power plant would be added to the unregulated emissions of existing "grandfathered" power plants.

Response: This is not correct. The emissions of existing or "grandfathered" power plants are regulated and continue to be more stringently controlled by new regulatory programs, such the Acid Rain Program, which was adopted in 1990, and the NOx Trading Program, which was adopted in 2000. Initiatives exist to further regulate the emissions of existing coal-fired power plants and lower emissions below the levels that are achieved with current control measures.

75. The emissions of coal-fired power plants contribute to pollution that has health effects on the public, including causing asthma attacks and aggravating other respiratory diseases, leading to emergency room visits and premature death. The emissions of this plant should be minimized with Integrated Gasification Combined Cycle (IGCC) technology.

Response: The contribution of the emissions from coal-fired power plants to health effects experienced by the general public, as identified in a number of recent studies, is not a basis to require use of IGCC for the proposed plant as suggested by this comment. The emissions of the proposed plant would be well-controlled to minimize its contribution to any such health effects.

The appropriate focus of concerns about such public health effects is existing power plants, and development of regional and national programs to further control the emissions from these plants, through their retirement and by installation of additional control measures.

Consideration of IGCC – BACT/MACT – Performance of IGCC

76. IGCC would achieve lower emission rates than the proposed power plant. It should be considered significantly cleaner than the fluidized bed boiler technology:

SO_2 would be 80% lower
NOx would be 10% to 30% lower
Mercury would be 40% lower
Particulate matter would be 25% to 50% lower
Carbon monoxide would be 60 to 75% lower.

Response: The emissions performance of current IGCC technology and the proposed boilers is not as easily compared as suggested by this comment. In fact, existing IGCC plants in practice achieve emission levels that are generally comparable to those being required of the proposed plant.

77. With IGCC, carbon adsorption is used to collect mercury emissions, which is more efficient than the control system that Indeck proposes. Mercury removal rates greater than 95 percent are possible with IGCC. The cost is also very reasonable, only about $ 0.25/MW-hour as estimated by the United States Department of Energy.

Response: This is not entirely correct. One of the additional elements that is still being developed for IGCC technology is the use of systems to specifically control emissions of mercury. Such systems are not present in the demonstration plants in existence that would be the basis for considering IGCC technology. Testing for mercury emissions at these plants indicates that the plants only achieve about 50 percent control of mercury, compared to the 90 plus percent control achievable with a modern CFB boiler.

Also relevant in this regard, is the IGCC power plant being contemplated by Wisconsin Energy, Wisconsin Electric Power, and WE Power LLC. The limit being discussed for the mercury emissions from that facility is 0.0005 pound/million Btu, many times higher than the limit being set for the proposed plant. (Public Service Commission of Wisconsin/Department of Natural Resources, *Final Environmental Impact Statement: Elm Road Generating Station*, July 2003)

78. In its application, Indeck refused to address the proposed Lima Energy Project and the Kentucky Pioneer Project because it claimed there has not been a "commercial demonstration." In addition, it also refused to consider the Kentucky Pioneer project as a relevant precedent for its proposed project because as it is being developed by Global Energies, a company with a significant economic interest in demonstrating the commercial viability of IGCC technology. However, these proposed plants should be evaluated and considered as precedents for use of IGCC as they have received construction permits and

money from the U.S. Department of Energy (USDOE) and IGCC is generally a feasible technology for the proposed plant.

Response: These proposed plants are relevant information for the use of IGCC technology and were appropriately considered by Indeck. They do constitute binding precedents for use of IGCC. Most obviously, the fact that these plants have received funding from the USDOE indicates that these plants are still using technology that needs to be demonstrated and that should not be expected to be used in projects that are commercially financed.

79. Indeck mischaracterizes the Lima Energy Project and the Kentucky Pioneer Project as innovative, given the clear meaning of the term innovative in USEPA's New Source Review Manual. In particular, the manual states that "a permit requiring the application of a certain technology or emission limit to be achieved is usually sufficient justification to assume the technical feasibility of that technology or emissions limit." Accordingly, Indeck erred by excluding these plants from further consideration its review of IGCC technology.

Response: This comment misrepresents the significance of a technology being technically feasible. Indeck did evaluate IGCC as a technically feasible technology for the proposed plant. The determination being made for BACT rests on the level of emissions performance that is achievable by IGCC, and more importantly, the economic feasibility of using IGCC in a commercial venture.

80. Indeck failed to evaluate the IGCC plant planned by Wisconsin Electric Power. Indeck should be required to consider the emission rates projected for this plant. This is because even though the plant is not scheduled to be in service until 2011, information in the permit application submitted for that plant is based on an evaluation of today's technology.

Response: This comment neglects to mention that this IGCC project being considered is the third phase in a three-phase project, with the first two phases involving boiler power plants similar to that proposed by Indeck. Moreover, while the IGCC phase is nominally targeted for 2011, the actual date is likely to be later given the uncertainty in the projection for electric power demand in Wisconsin. Accordingly, the actual development of the IGCC plant is questionable. If developed, it would certainly incorporate developments in IGCC technology and may have already presumed that such developments would occur over the next decade. Thus, the Wisconsin proposal confirms that IGCC technology is likely the <u>next</u> generation of technology. This does not demonstrate that IGCC technology is currently available or does it provide authoritative data for the current performance of this technology.

81. For IGCC, Indeck claims that only the Polk and Wabash power plants represent demonstrated IGCC emission rates. However, this ignores the experience at IGCC plants worldwide. Other IGCC plants that should be considered are the NUON plant in the Netherlands and the ELCOGAS plant in the Netherlands. This is particularly important

as these IGCC plants have SO_2 control efficiencies that are significantly better than those of the Polk and Wabash plants that are in the United States. This is because the IGCC can accommodate modest or deep SO_2 emission reductions, with higher efficiencies able to be achieved by increasing the size of the amine unit that is used to recover sulfur or by increasing the recirculation rate of amine solution in the unit. The relative performance of the Wabash and Polk plants confirm this, as the Polk plants with its near capacity sulfur recovery system has higher SO_2 emissions.

Response: For technologies that are still developing, effectiveness varies between what can be achieved in design and in practice, and for many technologies, effectiveness depends on the level to which it is applied. This has variability consequences for the size, complexity and cost of the equipment and the cost of operating and maintaining this equipment. As confirmed by these comments, available information indicates that achievement of high levels of performance with IGCC technology requires more than basic level of technology as provided in the demonstration IGCC plants. This has implications for the economical feasibility of using IGCC technology on a commercial basis.

82. Use of IGCC would reduce the health and environmental risks associated with a coal-fired power plant.

Response: Considered long-term, this is the overall goal for IGCC or other technology to replace old coal-fired power plants with new technology that is better as it has lower emissions, is more energy efficient, and has other benefits compared to existing coal-fired power plants. However, the proposed plant is also controlled to minimize any associated health and environmental risks and also reduces any such risks as compared to existing coal-fired power plants.

83. IGCC is technically superior to fluidized bed boiler technology because it is more energy efficient. For example, the Polk IGCC plant is 10 to 12 % more efficient than a conventional coal-fired power plant.

Response: A simple comparison of the energy efficiency of coal-fired power plants is not possible as the efficiency depends upon the amount of power consumed internally for the operation of the power plant. The type of coal that is processed or the type of cooling system also affects energy efficiency. For example, the power plants on Lake Michigan, like those proposed in Wisconsin, are more energy efficient than the plant proposed by Indeck as they use lake water for cooling rather than cooling towers.

84. IGCC is technically superior because the sulfur in the fuel coal is recovered as elemental sulfur or sulfuric acid, which are marketable products, reducing the volume of gypsum waste generated by a power plant, which is costly and inefficient to dispose of.

Response: This is correct. Recovery of sulfur in a useable form is one of the other benefits that will accompany future use of IGCC technology.

85. IGCC is also technically superior because it can be adapted for geological carbon sequestration, a process in which the carbon dioxide in the exhaust is collected and pumped deep underground where it is absorbed and retained in the rock strata.

Response: This is correct. Carbon sequestration is another benefit that is hoped to be achievable with IGCC technology for which research and development activities are ongoing.

Consideration of IGCC – BACT/MACT – Cost of IGCC

86. The cost analysis of IGCC conducted by Indeck is incomplete and inaccurate. A properly conducted cost analysis would be unlikely to eliminate IGCC technology on the basis of cost.

Response: The cost analysis prepared by Indeck reasonably evaluated the cost of using IGCC technology at the proposed plant, as compared to using boilers. It is important to understand that the cost analysis for a BACT determination is used to compare alternatives at a very early stage in the planning for a project. Accordingly the standard for the cost analysis is whether it allows a fair and reasonable comparison of the alternatives. This standard has been met.

87. The NSR Manual makes clear how a cost analysis should be conducted in a BACT determination, indicating that average and incremental cost effectiveness are the two economic indices that are to be considered. However, Indeck did not present information in these terms. Instead, Indeck calculated the cost of electricity, concluding that the cost of electricity from an IGCC plant would be 26 percent higher than the cost of electricity from a plant with circulating fluidized bed boilers.

Response: The NSR Manual provides detailed guidance on how cost analysis should be conducted when comparing alternatives for the add-on control systems that could be applied to a proposed emission unit for a particular pollutant. It does not provide the same level of guidance for conducting a cost analysis to evaluating alternative projects.

88. The economic assumptions used by Indeck to evaluate an IGCC plant are incorrect and misleading. This compounds the flaws in its analysis.

Response: Indeck has used an acceptable approach in its economic analysis. While other reasonable assumptions could have been used, the Illinois EPA does not believe that they would alter the overall conclusion when applied on a consistent basis.

89. Indeck erroneously alleges that IGCC is commercially infeasible. This is contradicted by the fact that there have been several successful federally funded IGCC power plants.

Response: The fact that there have been successful demonstration projects for IGCC technology, supported with federal funds, does not demonstrate that IGCC projects can now be developed without such federal funds. Moreover, there have also been unsuccessful demonstration projects,

notably Pinon Pines, which effectively never operated.

90. Getting a correct capital cost of an IGCC plant is key to doing a proper financial evaluation of IGCC technology in the BACT analysis. Other sources cite lower capital costs for IGCC, in the range of $1,300,000 to $1,400,000 per MW. Wisconsin Electric identified a capital cost of $1,461,000 per MW.

Response: As already explained, the relative costs of these two technologies are what is at issue. Authoritative comparisons of the capital costs of the two technologies consistently show that the capital cost of IGCC technology is substantially higher than the cost of conventional boiler technology.

91. Indeck must amend its application to include an analysis of the incremental cost per megawatt for fluidized bed boilers and IGCC plants using the most modern analysis procedures. In particular, information on the USDOE website indicates that IGCC plants are estimated to cost about $1,200,000 per MW of capacity whereas conventional plants cost $900,000 per MW.

Response: This comment notes the significant difference in the capital cost between IGCC technology and boiler technology.

92. IGCC is more reliable than claimed by Indeck in its application. In particular, Eastman Chemicals has achieved an annual reliability rate of 98% for its coal-to-chemical gasification plant in Kingsport, Tennessee.

Response: The reliability achieved by Eastman Chemicals with its IGCC plant generally confirms Indeck's claims. This is because Eastman has achieved this level of reliability by having redundant gasifiers, with only one of the two gasifiers operating at a time and the other on hot standby. The economic investment in the "spare" second gasifier is made possible by the higher value of the chemicals being produced by the system, as compared to the value of electricity. In addition, gasification allowed Eastman to use low-cost coal as the feedstock for this plant, in place of the oil that was previously used as a feedstock.

93. The reliability of power plants using IGCC is improving. The reliability of the Wabash River in 1999 was about 80% and was steadily increasing.

Response: These levels of reliability still do not approach the levels of reliability achieved by modern coal-fired power plants. In addition, the underlying concern for a power plant is not just how much of the time it is able to provide power but whether the plant can be relied upon to provide power when there is a need for its power. In this regard, a more meaningful measure of the reliability or usefulness of a power plant may be its "unreliability." As indicated by this comment, in 1999, the gasification system at Wabash River was not operating 20 % of the time. If the proposed Indeck plant would not able to be relied upon to provide power 20 % of the time, it would clearly affect the usefulness and worth of the proposed plant.

94. The Illinois EPA failed to consider the presence of the $50 million in state subsidies that Indeck is seeking when evaluating IGCC technology and making its related determinations of BACT, LAER and MACT for the proposed plant. These public subsidies must be considered.

Response: Any economic incentives or subsidies that may be provided by the state will be a minor factor in the ultimate economics of the proposed plant. In contrast, the IGCC facility being considered in Wisconsin would effectively be guaranteed a return on investment, as currently planned, as it would entail a leased generation agreement between a public utility and a non-utility company, which is subject to approval by the Wisconsin Commerce Commission. The USDOE provided 50 percent of the funding for the Wabash River and Polk County demonstration projects. Any role by the State of Illinois in the financing of the proposed plant clearly is not substantial enough to fund a demonstration project. At best, it is an attempt to counterbalance the economic factors that discourage development of new power plants in the state that would be designed to use Illinois coal. For example, the design coal supply for the power plants proposed by Wisconsin Power is Pittsburgh No. 8, a coal mined in Ohio, Pennsylvania and West Virginia. Accordingly, any State subsidy or incentive for the proposed plant should not be a significant factor in the control technology determination for the plant.

95. What was the purpose of the Illinois EPA's statement with respect to IGCC technology in the Project Summary that "The higher costs and uncertainties associated with IGCC would prevent the proposed plant from being built. At this time, this would likely be the case for other similar power plant projects that are being financed primarily with private (non-governmental) financing."

Response: This statement confirmed that the Illinois EPA's determination with respect to IGCC technology was broader than simply the proposed Indeck plant, as it did not consider factors that would be unique to Indeck, and could also be likely for other similar proposed commercial power plant projects. However, this statement was not intended to make any representation about IGCC technology at some point in the future, and was carefully designated as reflecting a determination that was applicable "at this time."

Consideration of IGCC – LAER

96. The information about cost and economics of IGCC that Indeck includes in its analysis of IGCC technology for purposes of BACT is not relevant to the determination of LAER.

Response: This information on cost may be relevant to a LAER determination in this case as it is needed to determine the ability to achieve an emission limit in practice.

97. LAER determinations do not allow for consideration of economics or cost as is possible when determining BACT. The only term in the definition of LAER that allows for interpretation is the term "class or category of source." For the purpose of interpreting

this term, the Illinois EPA should rely on the list in Section 169(1) of the Clean Air Act, which is commonly known as the list of 28 source categories. One of the categories on this list is "fossil-fuel fired steam electric plants of more than 250 million Btu per hour heat input." This category also covers IGCC power plants. Accordingly, the LAER determination for the proposed plant should consider VOM emission rates achieved by IGCC plants, as well as VOM emission rates achieved by power plants using boiler technology.

Response: The provision of the Clean Air Act cited by this comment is not instructive for the meaning of the term class or category of source. The provision is relevant to the PSD Program, not nonattainment new source review, and it is a listing of types of stationary sources. Some of the source categories include iron and steel mill plants, chemical process plants, petroleum refineries and fossil fuel fired steam electric plants. The meaning of term class or category of source must be determined from the nonattainment review program, preferably from the language of the definition of LAER itself. In this regard, the meaning of this term is linked to regulations and achievability of emissions standards. This is also an appropriate meaning for this term because emission standards are set for specific types of equipment (e.g., fluidized bed boilers boilers, pulverized coal boilers, or gas turbines), not classes of source as more generally addressed in the applicability provisions of PSD.

98. The Illinois EPA is acting within its authority by requiring consideration of IGCC technology in the evaluation of LAER. This is because the class or category of source, i.e., coal-fired power plants, includes IGCC plants, as IGCC plants use coal as fuel and generate electricity.

Response: The reasoning in this comment is flawed. Gasification of coal produces a gaseous material, which at an IGCC power plant is used as fuel in gas turbine generators. Accordingly, if one started to define the source category beginning with the IGCC plant one could as easily argue that IGCC plants are in a class or category of source that also includes combined cycle natural gas-fired power plants, as such plants also burn gaseous fuel in turbines to generate electricity.

99. Indeck's analysis of LAER indicates that IGCC technology emits VOM at a rate that is half the limit contained in the draft permit. The factors that Indeck identifies to justify a VOM limit for the proposed plant that is less stringent are not relevant to a LAER determination. LAER must be set at a level that does not exceed the level achieved in practice, which based on Indeck's own analysis is 0.002 lb/mmbtu.

Response: The relevant rule provides that LAER shall be set at the level of the most stringent emissions limitation that is achieved in practice by the same class or category of source (35 Ill. Adm. Cosw 203.301). The gas turbines used to generate power at IGCC plants are fundamentally different than coal-fired boilers. There also fundamental differences between IGCC power plants and boiler based power plants, as IGCC plants include gasifiers and sulfur recovery systems, equipment that are not present at coal-fired power plants.

Also, measured VOM emission rate of 0.002 lb/mmbtu, through an emission test, is not an emission limitation and does not demonstrate that an emission limitation of 0.002 lb/mmbtu is achievable. When establishing emission limitations, consideration must be given to the normal variation in the performance of equipment even when properly designed, operated, and maintained, and to the capabilities of the applicable measurement methods.

100. Indeck states that "…the proposed VOM emission limit of 0.004 lb/mmbtu on a 3-hour average corresponds well with the two year annual average VOM emission rate of 0.002 lb/mmbtu demonstrated by the Wabash IGCC plant, especially in light of short term excursions that cause violations of the 3-hour standard. However, Indeck does not provide any evidence to show that these exceedances are occurring. The Illinois must err on the side of the more stringent standard in order to comply with the LAER mandate.

Response: This comment demonstrates that the proposed CFB boilers' VOM emissions would normally be significantly lower that the LAER limit that is set. However, a tested emission rate of 0.002 lb/mmbtu or even an average emission rate of 0.002 lb/mmbtu over the course of two years does not demonstrate that it is inappropriate for a limit to be set at 0.004.

101. Indeck's discussion of fluctuations in VOM emissions is flawed because VOM emissions are not continuously monitored but are measured during periodic stack tests. The actual VOM tests at the Polk plant show VOM emissions that are well below the 0.004 lb/mmbtu being proposed as LAER. The results of these tests are then correlated to the CO emissions, which are continuously monitored. Continuous monitoring for CO then indirectly assures compliance with VOM limit.

Response: Assuming the statements in the comment are correct, the conclusion is flawed. If the VOM emissions of the Polk plant simply reflect the results of periodic emissions tests, they cannot be accepted as a basis to set a VOM limit for the proposed plant. A limit based on test results should be higher than those test results to account for the normal variability in the test results. Given the very low levels of VOM emissions from properly operating fuel combustion equipment, it is not unreasonable to set an emission limit that is twice a tested value.

102. Indeck points out that the two recently permitted IGCC plants, Lima Energy and Kentucky Pioneer, have emission limits for VOM that are higher than the VOM limit for the proposed plant. This is not relevant, as Indeck does not explain whether these limits reflect LAER, BACT or some other determination. The determination of LAER must be made by comparison to the best performing facilities and most stringent standards.

Response: In the circumstances of the proposed plant, this is relevant information. These plants provide information on the limits that have been set for VOM at two IGCC plants.

103. Because LAER focuses on the most stringent limitation, the starting point for LAER for the proposed plant should be the most stringent emission limits that have been set for a

power plant using IGCC. These are the limits that Florida set for the Polk IGCC plant, 0.0017 pound/million Btu. The Illinois EPA must then consider whether the limits set for the Motiva IGCC plant, which uses petroleum coke as a feedstock and has a VOM limit of 0.0011 pound million Btu, should define LAER for the proposed plant. Information from Chevron Texaco, a supplier of IGCC technology, and General Electric, who supplied the combustion turbines for the Polk plant, shows that this limit is consistent with claims that they make for their technology and actual emissions should be lower in practice.

Response: This comment places undue reliance on the Motiva permit, which did not reflect a determination of LAER. Moreover, closer review of the Motiva permit reveals that the IGCC plant at Motiva does not provide the precedent for VOM emission limits suggested by this comment. The Motive IGCC uses petroleum coke as the feedstock to produce fuel gas, and the gas turbines at Motiva are permitted to use oil as an alternative fuel when IGCC fuel gas is not available. When fuel oil is used in the turbines, the applicable VOM limit is 0.0082 lb/mmbtu. Even if fuel gas is available, the VOM limit is 0.0048 lb/mmbtu when natural gas is being fired in the duct burners.

Similarly, the Polk plant is also allowed to use backup fuel. Also relevant is the IGCC power plant being contemplated by Wisconsin Energy. The limit being discussed as LAER for this facility, which would be built in an ozone nonattainment area, is 0.004 pound VOM/million Btu.

104. Indeck puts forward a theory that IGCC facilities, unlike the proposed plant, may also have VOM emissions from the gasification facility and the sulfur removal system, including flares, the tail gas stack and leaking components in the piping. This theory is not supported and must be considered speculation. Accordingly it should not be relied for purposes of the LAER determination.

Response: There are clearly other emissions points at an IGCC plant other than the power generating facility. For example, the permit for the Motiva IGCC plants permits the flare associated with the gasification process for annual SO_2 emissions of over 500 tons. The flaring of gases will also be accompanied by VOM emissions. In addition, the processing of the fuel gas entails chemical processing of organic material and VOM emissions should be expected.

105. The emissions of the other units that are associated with an IGCC plant are very small relative to the emissions from the power plant itself. Accordingly, they need not be considered in and should not affect the determination of LAER for the proposed plant.

Response: This is not necessarily true. It is more likely that the VOM emissions of IGCC power plants have not been the subject of much scrutiny as they are a minor component of the emissions of these plants compared to emissions of SO_2 and NOx, just as VOM emissions are a minor component of the emissions of coal fired power plants. It appears however that only limited data is available to address these other VOM emissions in a quantitative manner.

106. LAER should require use of IGCC because it would achieve an SO_2 emission rate that would allow oxidation catalyst systems to be used at the plant. These systems would allow the plant to comply with a VOM emission rate that is substantially lower than 0.004 lb/mmbtu proposed for the boilers.

Response: Oxidation catalyst systems have not been used at IGCC plants.

Analysis of Alternatives – Nonattainment New Source Review

107. Indeck failed to conduct an adequate alternatives analysis and demonstrate that the benefits of the proposal significantly outweigh its environmental and social costs, as required by Section 173(a)(5) of the Clean Air Act and 35 Ill. Adm. Code 203.206. This analysis must address alternative sites, sizes, production processes, and environmental control techniques for the proposed plant.

Response: These topics were adequately addressed by Indeck in its application. In addition, the Illinois EPA has reviewed the circumstances of the proposed plant and has determined that the potential benefits of the proposed plant, as a modern well controlled power plant, significantly outweigh environmental and social costs that may be associated with the plant.

108. Indeck's analysis of alternatives was deficient because the Illinois EPA failed to document the adverse impacts and costs of the proposed project, including the health impact of the millions of residents living downwind of the plant and the threat to the Midewin Prairie and Lincoln cemetery. These impacts from the proposed plant would include human health impacts and healthcare costs related to ozone, impacts from mercury emissions, costs associated with emissions of other pollutants, impacts on the Drummond Prairie at the Midewin Prairie due to changes in water runoff (hydrology) and cooling tower mist, and general impacts on the Midewin Prairie due to visual, noise and light pollution, and indeed no adverse impacts are mentioned, let alone assessed or proposed to be mitigated.

Response: This comment reflects an inaccurate and incomplete understanding of the proposed plant, and misrepresents the review of the project that the Illinois EPA and other regulatory authorities have and will perform. The Illinois EPA has assessed the impacts of the emissions from the proposed plant on ozone air quality and determined that it will not cause new exceedances of the current ozone air quality standard or delay timely attainment with the standard. As a general matter, emissions of from the proposed plant do not have significant impacts on local air quality. The contribution of the plant to regional loadings of pollutants would be addressed by the regulations that are in place to reduce and cap the emissions from coal-fired power plants, such as the provisions for SO_2 and NOx allowances under the federal Acid Rain program and regional NOx Trading Program. As a result, the emissions of ozone precursors and other pollutants from the proposed plant must be accompanied by reductions in emissions at other existing sources so that no net impacts will occur. As the proposed plant is

expected to displace electricity generated by existing coal-fired power plants, whose emissions are not as well controlled, the net effect of the plant would be beneficial.

Other aspects of this project are beyond the scope of the air pollution control permit. They are however addressed by other regulatory programs that are designed and implemented to prevent significant adverse impacts on the environment or the public. In addition, the presence of commercial facilities and industrial facilities, like the proposed power plant, were contemplated as part of the conversion the Joliet Arsenal to civilian use. The construction of the proposed plant in the area that was set aside for such development, and which has already been developed with a major rail yard and various warehouse and distribution facilities, is not inconsistent with the established character as it may effect the Midewin.

109. Indeck's analysis of alternatives was deficient because the Illinois EPA failed to consider all reasonable alternate locations for the proposed power plant. Indeck stated that other sites for its proposed plant are not reasonable without providing supporting evidence. The most obvious alternative sites would be ones that would not adversely impact the Midewin Prairie and that are not downwind of the Chicago area. In this regard, the Illinois EPA has determined that VOM is the primary smog precursor (at least for the 1-hour ozone standard) and that VOM are unstable and typically cause smog within 30 miles of the sources. Accordingly, a reasonable alternate site would be one sufficiently distant from the nonattainment area to allow the destruction of the VOM before it reaches the nonattainment area. Indeck's NOx and SO_2 emissions would also contribute to levels of PM2.5 in the Chicago area, so that is reasonable to consider a site that is sufficiently distant or otherwise situated to avoid adding to the PM2.5 levels.

Response: This comment reflects an incorrect understanding of the manner in which power plants in general and this plant in particular would contribute to ozone formation. Power plants contribute to ambient ozone over long distances downwind, with the effects primarily attributable to their NOx emissions, not VOM emissions. This is a consequence of two phenomena. First, power plants have tall stacks so emissions do not immediately begin to participate in the formation of ground level ozone. In this regard, the VOM emissions of power plants, on a pound per pound basis, have a much smaller contribution to ambient ozone than the VOM emissions emitted from ground level sources. Second, the initial effect of the NOx emissions from a power plant, like NOx emissions from other combustion sources, is to destroy ozone as the NOx, most of which is emitted as NO, is oxidized to NO_2. It is only after the conversion to NO_2 occurs that the NOx begins to participate in reactions contributing to the formation of ozone. Accordingly, the effect of the proposed plant, which would be in the Chicago area, on ambient ozone, would normally be expected to be outside or beyond the Chicago area. If the plant were located further south, outside of the ozone nonattainment area, the plant would be expected to have a similar if not greater impact on ozone in the Chicago area. These effects are demonstrated by the assessment performed by the Illinois EPA of the effects of new power plants on ozone air quality, which conservatively assumes that all existing plants continue to operate. This evaluation shows that emissions from this plant and other proposed power plants would not cause violations of the 1-hour ozone air quality standard. They also

would not jeopardize timely attainment of the standard.

Similarly, as PM2.5 is formed in the atmosphere from SO_2 and NOx emissions, locating the plant further south, outside of the ozone nonattainment area, would not necessarily have a significant effect on its contribution to PM2.5 in the Chicago area. More importantly, reductions in PM2.5 levels in the Chicago area require regional reductions in the emissions of PM2.5 precursors from all major existing sources given the measured high background levels of PM2.5.

110. Indeck's analysis of alternatives was deficient because the Illinois EPA failed to consider cleaner production processes or more stringent control techniques. In this regard, it is essential that a natural gas fired power plant be evaluated as an alternative to the proposed plant.

Response: Given the difference in cost between gas and coal, a new gas-fired power plant is not a realistic alternative to a new coal-fired power plant. While gas-fired power plants have their niches in the power supply hierarchy, they are not a cost-effective way to generate large amounts of electric power on an annual basis. Moreover, Indeck has developed and pursued development of natural gas plants in Illinois at locations and in circumstances where it believed gas plants would be viable. In particular, Indeck has developed a natural gas fired peaking plant in Rockford. It also obtained a construction permit to build a combined cycle plant in Bourbonnais but is not pursuing that project.

Alternatives involving more stringent control techniques and cleaner production processes, i.e., IGCC, were addressed in the LAER and BACT demonstration that Indeck prepared and were considered by the Illinois EPA in that context.

111. Indeck's analysis of alternatives was deficient because it failed to consider cleaner production processes or more stringent control techniques. In this regard, it is essential that Indeck evaluate development of a natural gas fired power plant as an alternative to the proposed plant. This is because a natural gas power plant was originally envisioned for the site and would have much lower emissions of VOM and other pollutants. For example, based on data from the proposed 3426 E. 89th Street power plant in Chicago, VOM emissions of a natural gas fired plant would be about one-third of the emissions of the proposed plant.

Response: Given the cost differential between gas and coal, these fuels are not interchangeable. The 89th Street plant would serve a different "niche" in the power supply system and would not be expected to operate when less-expensive power is available from coal or nuclear power plants. Like Indeck, 89th Street has indicated that development of the plant will depend on the ability to obtain a power supply contract for the plant recognizing the higher cost of the natural gas fuel that would be used at that proposed plant.

112. Indeck's analysis of alternatives was deficient because the Illinois EPA and Indeck failed to consider the alternative of building a smaller power plant.

Response: The proposed plant should be considered a small coal-fired power plant. The capacity of the other new coal-fired power plant projects proposed by investor-owned utility companies in Illinois range from about 1200 to 1500 MW. It is unlikely that Indeck could build a significantly smaller plant and still achieve the economies of scale needed to be competitive. Notably, the smaller coal-fired projects in Illinois have been undertaken by electric cooperatives, which are consumer owned not-for-profit businesses.

113. Indeck has not demonstrated that the benefits of the proposed project significantly outweigh its costs. There is no legal basis for the Illinois EPA to conclude that its obligation under the Clean Air Act is limited to assessing the benefits and costs solely on the basis of VOM emissions. Therefore, the Illinois EPA must expand its assessment beyond the costs of VOM emissions and conduct a more inclusive assessment of the environmental and social costs associated with the entire source.

Response: The Illinois EPA would not agree that the analysis of alternatives must extend beyond ozone air quality impacts. There is a clear legal basis to restrict the analysis of alternatives to matters related to ozone because the requirement has its origin in provisions that are applicable in nonattainment areas. This is a clear purpose for this analysis, as these provisions would not otherwise allow consideration of the impacts of the NOx emissions of the proposed plant on ozone air quality. This comment does not provide any justification for why the analysis should be expanded beyond ozone air quality as other legal requirements apply to those other aspects of the project, many of which are administered by other permits or by other agencies or government authorities.

114. Indeck's assertion that the proposed plant would force other, older coal power plants to close is sheer speculation, as Indeck offers no factual support of this conclusion. The same spurious argument was made when dozens of gas peaker plants were proposed in Illinois. It is just as likely that the proposed plant would displace natural gas plants. In addition, by adding to the existing oversupply of electricity in Illinois, the proposed plant might reduce the resources for new cleaner energy projects, such as new wind projects. Accordingly, I believe that Indeck has failed to identify any benefits from the proposed plant.

Response: There are clear benefits from the proposed plant. New coal-fired power plants are generally needed to replace older plants. Even if older plants are not replaced, the electricity produced at the proposed plant will be accompanied by less emissions than if it were supplied by the existing plants that would otherwise respond to the demand for power.

115. The analysis of alternatives required by the Clean Air Act requires consideration of the environmental and social costs associated with the water discharges from the proposed plant. The information that was needed to make specific comments on this subject was not available to the public.

Response: This comment does not demonstrate why the analysis of alternatives should extend to water issues. This is particularly important because water discharges are addressed by the Clean Water Act, not the Clean Air Act, and are subject to separate permitting requirements.

116. In the absence of state or federal rules setting forth requirements for an analysis of alternatives, the Illinois EPA should follow the rules implementing the National Environmental Policy Act, which also has almost identical language as Section 173(a)(5) of the Clean Air Act. In this regard, we think that an example of the type of analysis that is required is the Environmental Impact Assessment prepared in Wisconsin for the Elm Road Generating Station.

Response: This comment is not accompanied by any legal analysis to demonstrate why such an approach should be followed here. Moreover, a comprehensive evaluation is not reasonable as either a legal or practical matter as it would not affect the scope of the decision that had to be made by the Illinois EPA on this permit, which relates to emissions from a proposed plant. In contrast, the proposed power plant in Wisconsin requires decisions by the Wisconsin Public Service Commission about whether the plant as a whole may be built and how it would be financed, as the current plans for the plant include a leased generation agreement.

117. USEPA has approved rules similar to the National Environmental Policy Act for preparing this analysis of alternatives. In particular, in 2000, USEPA was concerned that the Ventura County Air Pollution Control District in California would bypass its obligation to perform an alternatives analysis by relying on California Environmental Quality Act (CEQA), which is similar to the National Environmental Policy Act. The USEPA did state that the District could "…base its alternatives analysis on materials developed under the CEQA."

Response: This comment misrepresents the actions that occurred in California. The USEPA took action to prevent the governing air pollution control authority from delegating or divesting itself of its obligation under the Clean Air Act to another governmental authority. These are not the circumstances that are present in this matter.

118. In a case involving a proposed landfill on tribal land, the USEPA's Environmental Appeals Board concluded that USEPA had properly relied on material developed pursuant to the National Environmental Policy Act when conducting an analysis of alternatives.

Response: A closer review of this case shows that it supports the position of the Illinois EPA with respect to the scope of an analysis of alternatives. That is, a permit authority is not required to conduct a comprehensive detailed evaluation of all potential impacts of a proposed plant as suggested by various comments, but need only conclude based after a reasonable review that the benefits of a project outweigh its environmental and social costs.

119. It is likely that a federal agency will have to prepare an environmental assessment in conjunction with other aspects of the proposed plant, such as wetlands or power line

easements. In that case, the Illinois EPA should be a cooperating agency as provided by California Environmental Quality regulations. This possibility is another reason why the Illinois EPA should consult with other agencies and develop a coordinated review process.

Response: This possibility of federal involvement in other approvals for the proposed plant does not provide a legal basis for the Illinois EPA to delay action on the air pollution control permit. Incidentally, Indeck has stated that the proposed plant would use existing power transmission lines in the area and new lines would not have to be developed over the Midewin Prairie.

120. Indeck's analysis of alternatives for purposes of 35 Ill. Adm. Code 203.306 was deficient because the draft permit and public notice prepared by the Illinois EPA were deficient. These materials did not adequately describe where the proposed plant would be located. The draft permit is also deficient because it fails to discuss environmental conditions at or around the proposed site, fails to mention the proximity to the Midewin National Tall Grass Prairie and the Lincoln National Cemetery, and fails to consider alternatives, including the possibility of building a smaller power plant.

Response: The nature of the information provided by the Illinois EPA in the public notice and draft permit is not a relevant consideration in determining the adequacy of the analysis of alternatives that Indeck submitted. The analysis of alternatives was addressed in the draft permit (Finding 8) and in the accompanying project summary (Section VI-D) at an appropriate level of detail for these documents. Finally, information describing the Midewin Prairie is readily available on the Internet, www.fs.fed.us/mntp. Information of the Lincoln National Cemetery is also present on this Internet site, as well as from the Veterans Administration.

121. Under the PSD program, a PSD permit may be issued only after an opportunity for a public hearing at which the public can appear and provide comments on the proposed source, including alternatives thereto and other appropriate considerations. The draft permit fails to comply with this provision because it fails to describe the location and the conditions on the site and neighboring land uses and does not consider other reasonable sites, production processes, and controls and did not consider a smaller size power plant.

Response: The relevant provision of the of the Clean Air Act (Section 165(a)(2)) specifically requires that a public hearing be held "with opportunity for interested persons be able to appear and submit written or oral presentations on the air quality impact of such source, alternatives thereto, control technology requirements, and other appropriate considerations." This statutory PSD requirement concerns the scope of the public hearing and was satisfied by the public hearing and comment period held by the Illinois EPA. Information on the existing air quality at the site of the proposed plant, as is relevant to the permit, was made available by the Illinois EPA. Beyond this, there is no legal requirement that a draft PSD permit must address alternatives to a proposed project, as suggested by this comment, nor would it be appropriate for a permit to address an alternative project that was not actually the subject of the permit.

Other Regulatory Requirements – Offsets for VOM Emissions

122. The permit fails to obtain offsets for the VOM emissions associated with storage and handling of coal.

Response: Information is not available that would allow these emissions to be quantified, so as to allow them to be explicitly addressed in the permit. In such circumstances, the Illinois EPA believes that they are adequately and appropriately addressed by the conservative provisions for offsets, notably the fact that offsets must be provided at a ratio of 1.3 to 1.0 for the permitted emissions of the plant.

123. Indeck has not supplied enough information to show that the emission offsets that would be provided are of a type with approximately the same qualitative significance for public health and welfare as the VOM emissions from the proposed plant. A review of the application shows no information addressing this requirement of 35 Ill. Adm. Code 203.303(b)(1).

Response: This aspect of the offsets is adequately addressed. The various compounds present in the VOM emissions from the proposed plant, as they would be emitted, do not pose particular concerns for public health and welfare other as they are VOM.

124. The emission offsets that Indeck would be relying upon are not federally enforceable by permit, as required by 35 Ill. Adm. Code 203.303(b)(4). This is because Line 6H at 3M's Bedford Park plant is still fully permitted to operate. The CAAPP Permit for this plant must be revised to bar operation of Line 6H if the shutdown of this line is to provide offsets, as emission offsets must be federally enforceable.

Response: The emissions offsets are readily enforceable because Line 6H has been shutdown. In fact, the entire facility has shut down. If 3M proposed to resume operation of the line, it would have to obtain a construction permit.

125. The emission offsets that Indeck would be relying upon are not creditable because they are not based on the actual emissions of Line 6H, as required by 35 Ill. Adm. Code 203.303(c). In this regard, Line 6H complied without use of add-on control equipment, based on the VOM content of the coating applied on this tape coating line. However, the application provides no meaningful analysis of the actual VOM emissions of Line 6H.

Response: The emissions offsets are based on the actual VOM emissions of Line 6H, as emitted before it was shutdown. The VOM emissions of Line 6H were readily quantified as the Line 6H complied by means of compliant coatings and it was assumed for purposes of 3M's permit that all VOM contained in the coatings used on the line were emitted to the atmosphere.

126. The application does not provide information to support a determination that the proposed offsets would replace one volatile organic material with another of lesser reactivity, as required by 35 Ill. Adm. Code 203.303(e).

Response: This comment reflects a misunderstanding of the cited rule. No further information is needed in the application to address this provision. In particular, this rule prohibits certain changes in operation of emission units that do not result in actual reductions in VOM emissions from being used as emission offsets. The emission offset at Line 6H is not such a change. The emission offset at Line 6H is the result of a shutdown of the line, that is, total elimination of VOM emissions. The emission offset is not based on the continued operation of Line 6H, but with coatings that have contained VOM compounds that are less reactive in forming ozone in the atmosphere. It is this type of operational change that is prohibited from being used as an emission offset by 35 Ill. Adm. Code 203.303(e).

127. To the extent that the proposed emission offsets are required for 3M to comply with the Emissions Reduction Market System (ERMS) or other regulatory programs that originate in the Clean Air Act, the offsets are not creditable. In this regard, it would be a violation of 35 Ill. Adm. Code 203.303(f) for emission reductions that 3M is already committed to by its required participation in the ERMS from being used as emission offsets.

Response: This comment reflects a misapplication of the cited rule and no further information is needed in the application for the proposed plant to address this rule. In particular, Line 6H was in compliance prior to being shutdown and the emission reduction that is being relied upon for an emission offset is not otherwise required by the ERMS or other rules adopted pursuant to the Clean Air Act.

<u>Other Regulatory Requirements - Existing Source Compliance</u>

128. The Illinois EPA should not grant this permit until compliance issues at NRG Rockford, which is a natural gas fired power plant in Rockford, Illinois that Indeck operates, are satisfactorily resolved.

Response: The compliance issues at this plant have been resolved by issuance of a revised permit for that the plant that correctly addresses its emissions of condensable PM10.

<u>Compliance Procedures in the Draft Permit</u>

129. The permit fails to establish adequate compliance procedures to assure compliance with the limits for mercury and hydrogen chloride. The mercury and chlorine content of the fuel supply must be tested on a more frequent basis than would be required by the draft permit. For example, Wisconsin requires that the sulfur content of every shipment of coal to power plants be tested.

Response: The issued permit requires appropriate sampling of the fuel supply for metals, including mercury, and chlorine and fluorine.

130. The testing requirements in the permit for hydrogen chloride are inadequate. The USEPA's proposed MACT standard for hydrogen chloride emissions from coal-fired industrial boilers would require annual performance testing. The provisions of this proposed MACT rule, which also includes provisions for operating limitations based on chlorine content of the fuel supply and operating conditions during performance testing, should be applied to the proposed plant.

Response: Such requirements may be established in the CAAPP Permit, if the monitoring provisions for SO_2 are determined to be insufficient to reasonably assure compliance with the emission limit for hydrogen chloride.

131. Each boiler should be equipped and operated with a continuous monitoring system for particulate matter emissions.

Response: The use of such systems is required if USEPA completes its development of a Performance Specification for such systems in time to allow them to be installed with the other continuous emissions monitoring systems that must be installed on each boiler.

132. Each boiler should be equipped and operated with a continuous monitoring system for mercury emissions.

Response: A Performance Specification has not been developed for such systems. In addition, continuous monitoring for mercury is not needed to reasonably assure compliance with the requirements that have been established for mercury.

133. While the permit requires records be kept for the pressure drop across the baghouses on the boilers, the permit does not specify the frequency with which such measurements should be taken. Continuous monitoring should be required for this operating parameter.

Response: Continuous monitoring is not needed, as continuous opacity monitoring is required. However, the permit has been revised to require automatic measurement on at least an hourly basis.

134. The permit should not allow certain compliance procedures to be revised or relaxed when the Illinois EPA acts on the Clean Air Act Permit Program (CAAPP) permit for the source. The Illinois EPA does not have the authority to relax or in any other way weaken a PSD permit when it issues a PSD permit.

Response: The permit is appropriately drafted to accommodate the possibility of future changes to compliance procedures, given the basic extent to which these procedures are specified in the

permit. As a general matter, a CAAPP operating permit is intended to "gap fill" to address any deficiencies in the compliance procedures accompanying applicable requirements. They are also intended to streamline redundant or unnecessary compliance procedures. In either case, such refinement of compliance procedures would occur with opportunity for public review and comment and with opportunity to appeal any revisions to USEPA.

135. The permit should require testing of the proposed boilers for emissions of dioxin as part of the initial compliance testing for the boilers and annually thereafter. Loeschner XIV

Response: A provision for testing of dioxin emissions has been added to the permit. However, periodic testing for dioxin emissions, as broadly requested by this comment, is not justified. This is because coal-fired utility boilers have not been identified as sources that generally warrant testing of dioxin emissions. This is a consequence of the combustion characteristics of coal, the good combustion conditions found in utility boilers, and the air pollution control equipment installed on utility boilers. Notably, USEPA has not proposed to adopt control requirements for emissions of organic HAP, such as dioxin, from non-utility boilers. However, because the proposed boilers are utility scale boilers, a dioxin emission test is required during the boilers' initial years of operation.

136. The permit should require continuous monitoring for mercury emissions from the proposed boiler when such systems have been approved by USEPA.

Response: The control requirements for mercury have been crafted to use compliance procedures that are currently available, i.e., periodic emission testing, fuel sampling, and operational monitoring. They do not rely on a continuous emission monitoring system that has yet to be developed. Accordingly, there is no need to require such a system until it is developed. Moreover, it would be inappropriate for the permit to impose requirements that rely on some future monitoring system, whose capabilities and limitations cannot be assessed at this time.

<u>Other Provisions of the Draft Permit</u>

137. The permit should not provide the plant with the flexibility to burn other fuels, as provided in Condition 1.12(b) of the draft permit. If other fuels are proposed to be burned, a formal permit revision should be required, to allow the adequacy of the existing emission calculations and modeling to be fully reviewed.

Response: Provisions allowing the use of supplemental fuels is appropriate for a solid fuel fired boiler. This is demonstrated by other new "coal-fired" boilers that use fuels such as petroleum coke, as well as the use of such fuels at IGCC plants.

138. Additional requirements should be imposed in the permit to address mercury emissions of the proposed power plant, including a limit on annual heat input to the boilers and continuous emissions monitoring for mercury, to ensure that the plant is not a significant source of mercury under the PSD rules.

Response: Additional requirements, as suggested by this comment, are not appropriate. The mercury emissions of the proposed plant are regulated by Section 112 of the Clean Air Act, and are being appropriately addressed by a determination of MACT for this project.

139. The permit should limit the annual heat input to the proposed boilers. This is necessary to bound the annual emissions of the boilers in a manner that is federally enforceable, because all the proposed limits are based on heat input. In particular, based on an SO_2 BACT limit of 0.15 lb/mmbtu and an annual SO_2 emission limit of 584 tpy, the heat input to the boiler should be limited to 7,787,000 lb/mmbtu.

Response: Even though the design heat input of the boiler was used to calculate short-term emission rates, the resulting short-term emission limits are enforceable independent of the heat input to the boiler. These short-term emission limits are directly enforceable through testing, monitoring, and recordkeeping as required by the permit. The annual emission limits on the boiler reflect continuous operation at these short-term limits. They do not reflect any adjustment for less than full continuous operation. Thus, there is no need to place operating limitations on the annual operation of the boiler as might be needed if the permit relied upon a significant restriction on the annual operation of the boiler.

Administrative Procedures

140. Indeck's application is deficient because it did not identify the proximity to the Midewin Prairie. The application indicates that the "immediate vicinity of the site is industrial in character (Deer Run Industrial Park). Beyond the immediate vicinity of the project is rural." Moreover, the Illinois EPA had an independent duty to inform the public about existing land uses.

Response: Indeck reasonably described the location of the proposed plant in its application. The development of a power plant at this location at the CenterPoint Intermodal Center has been discussed for a number of years. Local residents and others that are interested in the Midewin Prairie are familiar with the fact that it effectively surrounds the Village of Elwood and occupies most of the former Joliet Arsenal.

The Illinois EPA was not under any legal obligation nor did it act improperly by not thoroughly describing the site of the proposed plant and surrounding areas and land uses. This is because the air quality standards and other control requirements that apply to the plant are independent of nearby land uses. In addition, local land use is not a subject that the Illinois EPA has the authority to address in permitting.

141. The Illinois EPA's processing of the air pollution control permit application is deficient because it failed to coordinate its review of the application with applications for permits that address other aspects of the proposed plant. The project will also require a permit for its wastewater discharge and likely will require a permit to address wetlands at

the site. By proceeding as it has, the Illinois EPA has fragmented the public's involvement in permitting thereby thwarting meaningful public review of the project. This is contrary to fundamental notions of due process and fair play.

Response: Exactly the opposite is true. The Illinois EPA is proceeding separately with the individual aspects of the plant, as addressed by separate regulatory programs. This simplifies public review of the various aspects of the proposed plant, concentrating attention on one aspect at a time.

142. The Illinois EPA's processing of the air pollution control permit application is deficient because it failed to engage in consultation concerning endangered species with the Illinois Department of Natural Resources and United States Fish and Wildlife Service. This consultation is required under state and federal law for protection of endangered species. The Illinois EPA should consult with these agencies to determine the impact of the proposed plant on threatened, endangered and sensitive species.

Response: The Illinois EPA did consult with the Illinois Department of Natural Resources (DNR) under the Illinois Endangered Species Protection Act. Consultation was completed and the Illinois EPA appropriately incorporated the recommendations of the Illinois DNR into the issued permit. Sensitive vegetation and soil screening criteria, conducted as part of the air quality modeling for the project, demonstrate that the proposed plant should have no direct impact on the endangered or threatened species. The proposed plant can also be developed so that other aspects of the plant do not interfere with the ecological conditions at the Midewin.

The Illinois EPA also contacted the United States Fish and Wildlife Service. Subsequent discussions revealed that consultation was not required at the federal level.

143. The public notice was deficient because it did not describe the location of the proposed plant in more detail. For example, it did indicate which corner of the intersection of Drummond and Baseline Roads the plant would be located. More importantly, the notice also did not indicate the proximity of the proposed plant site to the Midewin Prairie, which is a significant national endeavor to restore Illinois' natural heritage. It also did not indicate the proximity to the Abraham Lincoln National Veterans Cemetery. Why didn't the Illinois EPA alert the public to these abutting areas?

Response: The site of the proposed plant was properly and adequately addressed by identifying the site relative to the nearest community. In this regard, both the proposed plant and the Midewin Prairie are located on the grounds of the former Joliet Arsenal. The Arsenal is being converted to uses other than the Midewin Prairie as part of multiple-use plan that included economic development as one of its objectives. Over 2,000 acres of the former Arsenal, in the portion of the Arsenal that had been contaminated by manufacture of explosives, was set aside for commercial and industrial development. The CenterPoint Intermodal Center (formerly the Deer Run Industrial Park) has already been developed in this area following remediation of soil and groundwater contamination. This is a rail to truck, warehouse and distribution complex,

which includes a large rail yard operated by the Burlington Northern and Santa Fe railroad. The proposed plant would also be located in this part of the Arsenal, which was formerly occupied by explosive production operation and must be cleared as part of the remediation of the site. The plant would actually be located next to the sewage treatment plant currently being developed by the Village of Elwood to serve the new CenterPoint complex. Another key component of the plan for the reuse of the Arsenal is development of over 400 acres as the Prairie View Landfill, a large municipal waste landfill. The Arsenal was not the only industrial activity in the area and other existing industrial sources in the vicinity of the Arsenal that are still in operation include the Exxon-Mobil oil refinery immediately west of the former Arsenal and Midwest Generation's coal-fired Joliet plant less than 10 miles to the north. In addition, the army still has a presence in the area as it has a training facility to the north of the Arsenal. With respect to natural features, the majority of the Midewin Prairie does not yet exist as prairie and is to be created by restoring prairie to Arsenal land that has been farmed for decades. The Goose Lake Prairie State Natural Area, the Des Plaines Fish and Wildlife Area, and McKinley Woods are important natural areas already in existence in the vicinity of the Arsenal. While in the future the Midewin will be a valuable natural area and perhaps a national attraction, simple mention of the Midewin Tallgrass Prairie in the public notice, as suggested by this comment, would not have accurately portrayed the history and character of the area in which the proposed plant would be located.

144. The public notice on the draft permit was deficient because it did not recite the potential emissions of the proposed source, for either criteria pollutants or hazardous air pollutants. To address this deficiency, the Illinois EPA should republish a public notice with this information and reopen the public comment period.

Response: The public notice was not deficient as there is no legal requirement for a public notice on a PSD permit to include the information requested by this comment. The relevant rules, 40 CFR 124.10(d)(iii), only require a brief description of the activities conducted at the source. The public notice adequately described the proposed Indeck facility as it identified the facility as a coal-fired power plant with a nominal capacity of 660 MW that would be a major source of emissions of criteria pollutants and HAPs. Further detail on the emissions of the proposed plant was available in the project summary and draft permit prepared by the Illinois EPA. These documents were readily available to the public as they were posted on the Internet.

145. How is it proper to not publish the permitted and expected ammonia releases from the proposed plant in the public notice?

Response: In Illinois, ammonia is not a regulated air contaminant for the purpose of air pollution control permitting.

146. As the draft permit, project summary and public notice did not include cost discussions related to BACT, there were not legitimate BACT analyses for any pollutants. Given this error, no permit should be issued, and the Illinois EPA should start its review afresh *de novo* if Indeck wishes to pursue a permit.

Response: As explained in its individual responses to comments, provided above, the Illinois EPA does not consider the BACT determination for the proposed boiler to be deficient. Enhancements to the permit as a result of public comment do not require a permitting authority to re-notice a draft permit.

147. The public hearing held by the Illinois EPA was inadequate. The meeting room selected for the hearing only had capacity for 100 people and could not accommodate everyone who came to the hearing. I am aware of at least two dozen local residents that could not be accommodated at the start of the hearing and either left or missed the initial part of the hearing. In addition, police officers questioned certain individuals at the door of the hall, asking them their names and association. What was the purpose of this?

Response: The hearing was not inadequate. All who wished to provide oral comments or ask questions of the Illinois EPA had an opportunity to do so. As at any hearing, not all individuals could be accommodated at once and individuals had to wait their turn to speak. Given the capacity of the room, it was also not possible to physically accommodate everybody at the start of the hearing. However, efforts were made to accommodate local residents and other individuals who has concerns about the proposed plant at the beginning of the hearing. Members of various trade unions who were generally present to show support for the proposed plant were asked to and did give up a number of seats, leaving selected spokesmen to express their interests. While it is unfortunate that some individuals left who could not initially be accommodated before a seat became available, this is not a reasonable basis to conclude that the hearing was inadequate.

The Elwood police were present outside the church hall where the hearing was held. Their presence was not requested by the Illinois EPA. This action was taken in response to articles about the hearing in the local newspaper and an announcement that a press conference by opponents of the proposed plant would be held on the church steps before the hearing. Given the strong likelihood that a large number of individuals, both for and against the proposed plant, would come to the hearing as a result, the Elwood police determined that a police presence was desirable to assure that order was maintained. The Elwood police also assisted in the registration process for the hearing to assure that the legal capacity of the room was not exceeded. Their effort to accommodate local residents and other concerned individuals, as generally requested by the Illinois EPA, was most likely the reason why individuals were asked to provide both their name and association. In addition, the names of individuals who could not be accommodated at the start of the hearing were placed on a waiting list. This allowed an orderly process for individuals to enter the hearing room when people left and seats became available. The Elwood police did not participate in the actual conduct of the hearing, other than to assist at the door and assure order outside.

148. The Illinois EPA should correct the procedural deficiencies in the processing of the application by withdrawing the draft permit and holding a new public comment period only after all aspects of the proposed plant have been addressed in a coordinated fashion.

Response: As explained above, there have been no procedural deficiencies in the processing of the application that warrant an extension of the public comment period. While it is unfortunate that the site for the public hearing was not larger, the requirements for a public comment period were satisfied. There is not a legal basis for the Illinois EPA to delay action on the requested permit. Even if the Illinois EPA were able to delay action on the application to coordinate with other aspects of the proposed plant, this would not affect the scope of the permit, which is restricted to matters related to emissions and air pollution control.

149. I would like the Illinois EPA to assemble a catalog identifying comments made on the Indeck application and all prior written communications received or sent by the Illinois EPA on the application. This catalog should be made available on the Illinois EPA's Internet site.

Response: A copy of the transcript from the public hearing was posted on the Internet when it became available. Copies of Indeck's application and other material in the record, including written communications as described above, are available by written request to the Illinois EPA under the process set forth by Illinois' Freedom of Information Act. There is no requirement to prepare a "catalog of information' as requested by this comment.

State Environmental Policy

150. What new coal-fired power plants have been permitted since 1997 in ozone nonattainment areas?

Response: No new coal-fired power plants have been permitted in Illinois' ozone nonattainment areas.

151. The State of Illinois would not support building a new coal-fired power plant, like the proposed plant with its 495 feet tall stack, near the existing New Salem State Park or Camp Butler National Cemetery near Springfield. So why is it supporting the construction of this aesthetically impacting plant near the Midewin Prairie and the Abraham Lincoln National Cemetery?

Response: The location of the proposed plant is consistent with its location near the CenterPoint Intermodal Center, a major petroleum refinery and other industrial sources. In this regard, the presence of industrial activities near and adjacent to the Midewin was contemplated when the decision was made to develop the Midewin Prairie at the former Joliet Arsenal.

152. Illinois taxpayer dollars should not be used to subsidize a coal-fired power plant that would use outdated fluidized boiler technology.

Response: State funds would not be used to subsidize outdated technology. State subsidies are being used to encourage and facilitate use of Illinois coal. Control technology requirements are set by environmental law.

153. Other power companies are taking advantage of the USDOE Clean Coal Power Initiative to develop IGCC power plants. In particular, the 580MW Lima Energy Project in Ohio and the 540MW Kentucky Pioneer Project in both have received construction permits for projects that would receive substantial funding from the USDOE. USDOE has shown a willingness to fund proposed IGCC power plants. The Illinois EPA should order Indeck to seek funding from the USDOE to build a power plant with IGCC technology.

Response: The Illinois EPA does not have the legal authority to impose such a requirement. Moreover, the USDOE does not provide funding to develop power plants. It provides funding to support demonstration projects that advance technology, which projects would most likely not be pursued in the absence of such funding. By their very nature, it would be unreasonable to mandate that a source expend effort to participate in such projects.

154. The USDOE believes that IGCC "represents the next generation of coal-based energy production." The Illinois EPA should support IGCC as it is the most innovative technology available for the plant.

Response: The Illinois EPA would be pleased if development of power plants using IGCC was being pursued in Illinois, as we agree that it almost certainly represents the next generation of coal-based energy technology. However, this is not a basis to mandate use of this "most innovative" technology on a plant that Indeck has proposed to build with modern proven technology.

155. Issuance of this permit would interfere with the adoption of new regulations, as mandated by Section 9.10 of Illinois' Environmental Protection Act, reducing the emissions of Illinois' existing coal-fired power plants. It would be unfair to allow Indeck to build the proposed plant as proposed and then adopt rules requiring it to comply with more stringent limits. By requiring IGCC, Illinois will be free to implement strict pollution control rules without unfairly compromising the opportunities for other companies to construct power plants.

Response: The issuance of this permit for the proposed plant will not interfere with the adoption of these new regulations. In this regard, as noted by the comment, the focus of these new regulations would be to reduce the emissions of the existing older coal-fired power plants whose actual emissions, on a pound per MW basis, are still several times the permitted emissions of the proposed plant.

156. By issuing this permit, the Illinois EPA would not protect the rights of Illinois' citizens to a healthy environment, as established by the Illinois Constitution.

Response: This permit addresses the emissions of the proposed plant and establishes requirements on those emissions to protect the public. By doing this, the permit is protecting the citizens and environment of Illinois.

FOR ADDITIONAL INFORMATION

Questions about the public hearing and permit decision should be directed as follows:

Public Hearing Procedures and Exhibits

Daniel, Merriman, Hearing Officer
Illinois Environmental Protection Agency
Division of Legal Counsel
1021 N. Grand Ave. East
P.O. Box 19276
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217/782-5544

Responsiveness Summary

Bradley Frost
Illinois Environmental Protection Agency
Office of Community Relations
1021 N. Grand Ave. East
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Table 1
Listing of Significant Changes between the
Draft Permit and Issued Permit

Finding 6: Finding revised to clarify the clarify the relationship between the case-by-case MACT determination made in the permit and any determination of MACT applicable to the plant made by rule by USEPA.

Finding 13: Finding added to address the consultation that has occurred between the Illinois EPA and the Illinois Department of Natural Resources.

Source-Wide Condition 5(b)(iii): Condition added requiring that the fuel oil used in ancillary engines be very low-sulfur oil.

Source-Wide Condition 7: Condition added requiring Indeck to compile information on the condition of vegetation and soil in the Midewin Prairie in the vicinity of the proposed plant before and after the plant starts operation.

Source-Wide Condition 9: Condition added acknowledging that Indeck can construct a power plant that is smaller than the plant described in the application.

Unit-Specific Condition 1.2(a)(iv): Condition added requiring that the control trains for the circulating fluidized bed (CFB) boilers include trimming scrubbers.

Unit-Specific Condition 1.2(c): Condition for mercury emissions from the CFB boilers revised to lower the short-term limit to 0.000002 pound per million Btu, to remove one compliance option proposed in the draft permit, and to remove the provision for an interruption in compliance following completion of shakedown, instead only allowing an extended shakedown period as needed for effective control measures for mercury.

Unit-Specific Condition 1.2(d): Condition for hydrogen chloride emissions from the CFB boilers revised to lower the short-term limit for hydrogen chlorine to 0.01 pound per million Btu, to raise the required control efficiency to 98 percent under the control efficiency option, and to remove one compliance option proposed in the draft permit.

Unit-Specific Condition 1.8(a)(iii): Condition for emission testing of the CFB boilers added requiring a follow-up test approximately one year after the initial compliance tests.

Unit-Specific Condition 1.10(d): Condition for monitoring of the CFB boilers requiring use of continuous particulate matter emissions monitoring if an Performance Specification for such systems is adopted by USEPA so as to allow such systems to be included in the emission monitoring systems installed with the boilers.

Unit-Specific Condition 2.6(a)(ii): Condition added addressing transfer of coal from the coal handling facility to the power generating facility, requiring that enclosed conveyors be used.

Unit-Specific Condition 3.6(b): Condition added addressing the potential contribution of the cooling towers to fogging and icing on nearby roadways, requiring that the towers be equipped and operated without a significant contribution to such conditions.

Unit-Specific Condition 5.2: Condition added to generally clarify when roads at the proposed plant must be paved and when roads must be treated to control dust.

General Permit Condition 5(b): Condition added to clarify that all deviations from emission standards are considered deviations for purposes of reporting, even if the permit otherwise provides for exceedances of the applicable emission standard.

Table I: Permitted emissions for the CFB boilers for mercury and hydrogen chloride lowered consistent with the reduction in short-term emission limits.