ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF AIR

December 2000

Responsiveness Summary for Public Questions and Comments on the Construction Permit Application from Carlton Inc. – North Shore Power Plant

Site Identification No.: 097810AAC
Application No.: 99120057

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PERMIT PROCESS

Carlton Inc. (Carlton) submitted an application for an air pollution control construction permit for an electric power facility near Zion in Lake County. The application addresses two options for the proposed facility, either three larger turbines to generate up to about 560 megawatts (MW) of electricity or six smaller turbines to generate up to about 590 MW. The facility is described as a peaking facility. As such it would operate primarily on hot summer days when the demand for electricity is greatest. It would also operate at other times as needed to meet the demand for electric power. The facility would burn natural gas, which is the cleanest commercially available fuel.

The proposed project is not considered a major source because the permitted emissions of pollutants from the facility would be less than major source thresholds. In addition to selection of fuel, the emissions of the turbines would be controlled by the design of the combustors. (The combustors are the part a turbine where the natural gas fuel is burned.)

The Illinois EPA Bureau of Air processes applications for 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 Carlton's application, the 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.

COMMENT PERIOD AND PUBLIC HEARING

The public comment period began on June 30, 2000, with the publication of a notice in the Waukegan News Sun. Notices were also published in this paper on July 7 and 14, 2000. A public hearing was held on Tuesday, August 15, 2000, at 7:00 p.m. at the Zion Park District, Shiloh Center to receive oral comments and answer questions regarding the application and draft air permit. The comment period remained open until September 30, 2000 to receive written comments.

FINAL DECISION

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 November 10, 2000, the Illinois Environmental Protection Agency (Illinois EPA) issued a permit to construct the proposed electrical generation facility. The facility must be constructed and operated in accordance with applicable regulations and the conditions of the permit.

CHANGES BETWEEN THE DRAFT AND FINAL PERMITS

The permit as issued includes the following significant changes compared to the draft permit.

Condition 3(f):	The condition limiting annual emissions was enhanced to specify that emissions factors will be developed from appropriate testing, unless the facility continuously monitors for that pollutant and to clarify that the Permittee must fully account for all emissions from the proposed facility.
Condition 3(g):	A condition was added specifying that the annual emissions of hazardous air pollutants (HAP) from the facility are limited to non-major levels
Condition 4(b)(B):	A condition was added restricting operation of turbines at reduced load.
Condition 10(b)(ii):	The requirement for continuous emission monitoring for nitrogen oxides (NO_x) was enhanced to specify when monitors must be operated in accordance with the provisions of the federal Acid Rain program.
Condition 11:	The requirements for emission testing were enhanced to include testing for particulate matter, testing of emissions during startup of the turbines, and testing for hazardous air pollutants if Method 18 is used to test for volatile organic material emissions.
Condition 12(a)(v) and (vi):	The requirements for recordkeeping were enhanced to include records for additional data and information.
Condition 13(c)(i) and (e):	The requirements for reporting were enhanced to include routine reporting for the number of start-ups and reporting of preliminary emission data if testing is not done within 45 days of gainful operation.
Condition 15:	A condition was added to clarify that the issued permit is based on Carlton being a separate source from the proposed Skygen power plant and that the permit does not authorize construction of the proposed facility if undertaken by the same party as builds the Skygen plant.
Condition 16 (b)	A condition was added clarifying that the facility would be subject to any new requirements that would be applicable to construction or operation of the turbines based on the timing of their actual installation
Tables 1 and 2	Footnotes were added to the Tables listing hourly emission limits to address emissions during reduced load operation of the turbines.

QUESTIONS AND COMMENTS

General

1. How will the proposed gas turbines make electricity?

A gas turbine is a rotary engine in which fuel is continuously burned with the force of the hot combustion gases as they expand pushing on a series of blades to rotate a shaft. When used in a power plant, the power shaft is connected to an electrical generator.

2. Can the proposed gas turbines use fuels other than natural gas?

The proposed facility would fire natural gas as its only fuel. Carlton has not applied to burn kerosene or distillate oil as a back-up fuel. Such an approval would require a new or revised Construction Permit from the Illinois EPA. The gas turbines are not physically able to burn coal or other solid fuel.

3. What is the difference between a peaking facility and so-called "base load" facilities?

Peaking facilities are intended to operate only when the demand for power is at its greatest (in Illinois, typically hot summer week days) and other times when less costly sources of power (such as coal-fired and nuclear plants) are not able to meet the demand for power. Base load power plants are developed so that they can be operated essentially year round, if there is a need for power at the price at which they can produce it.

In this regard, the gas turbines in peaking power facilities are installed in a "simple cycle" configuration, as they exhaust directly to the atmosphere, without using boilers to recover the energy in the hot exhaust gases. This means that peaker plants are also less efficient and more costly to run than "combined cycle" turbines. In a combined cycle turbine, the hot exhaust gases discharged from the gas turbines do not go directly to the atmosphere but instead are ducted through a waste heat boiler and used to make steam. This steam is then used to drive a steam turbine generator, to produce more electricity, which increases the overall output of the system compared to the gas turbine by itself. The recovery of steam in this manner increases the energy efficiency of a combined cycle plant by about 50 percent compared to a simple cycle turbine. However, the greater efficiency and lower operating costs of a combined cycle turbine come at a higher capital cost for the additional equipment, including the waste heat boiler, the steam turbine generator and a cooling tower to condense and reuse the steam, which are not present with a simple cycle turbine.

4. What is a "merchant power plant?"

A merchant power plant sells electricity on a wholesale basis to other companies that then sell the power on a retail basis to individual residential, commercial and industrial customers. Under deregulation of electricity generation, the developer of a merchant power plant is not guaranteed a return on its investment and must compete in a free economic market to sell the power it can produce. A merchant power plant can be either a peaking facility or a base load facility.

5. The proposed facility would not operate as a true peaker based upon the hours of operation for which it is effectively being permitted.

The permitted level of annual operation of the proposed facility is not inconsistent with operation as a peaking facility. Moreover, the aspect of this facility that restricts its operation to peaking operation is the permitted equipment, i.e., natural gas fired simple cycle turbines. Simple cycle turbines (peaking facilities) do not routinely operate when other types of plants are able to meet the demand for power. This is because the cost of electricity, in dollars per megawatt generated by an simple cycle turbine is significantly higher than the cost of electricity produced by nuclear power plants, coal-fired plants or natural gas fired combined cycle plants.

With respect to the proposed facility's permitted level of operation, sources routinely apply for permitted levels of operation that are greater than those at which they expect to operate. This provides capacity or room to accommodate additional operation based on unusually high demand for services. This is certainly an interest of peaking facilities. The operation of peaking facilities can vary greatly from year to year based upon the weather and other factors that affect the demand for power and the ability of other power plants to satisfy that demand. Accordingly, the permitted levels of operation should be understood for exactly what they are, which is the maximum level of operation for which a facility is permitted.

Developers of new natural gas fired combined cycle plants are also requesting permits that overstate the likely level of operation of their facilities. They apply for permits that would allow year-round operation like a base load power plant. Because the power that combined cycle plants produce will still be more expensive than power produced from base-load nuclear and coal-fired plants, these combined cycle plants would typically be expected to actually operate as intermediate or cyclic load plants. Nevertheless, the companies developing these facilities are pursuing permits that would allow continuous year-round operation.

6. Are the turbines at the proposed facility equipped with "dry" combustors or do would they rely on water injection to control NO_x emissions?

The combustors will be "dry" combustors, in which the mixing of air and fuel is carefully managed to minimize the "hot spots" in the flame where NO_x is actually formed. They are not wet combustors in which water, either as a liquid spray or as steam, is injected into the combustor in about a one-to-one ratio with the fuel to reduce peak flame temperatures to "slow down" the combustion process and reduce the formation of NO_x. Accordingly, water would not be used at the proposed facility to control emissions of NO_x, as would occur with wet combustors.

7. During the winter, the plant may create ice fog.

The Illinois EPA does not expect that the proposed facility will ever cause ice fog. During very cold weather, as can be experienced in Alaska, ice fog can occur from turbines equipped with water injection to control emissions of NOx. The turbines proposed by Carlton have dry, rather than wet, combustors. Moreover, as a peaking facility, the facility would not normally operate in the winter and Illinois' winter weather is rarely cold enough for ice fog to be formed.

8. Would cooling towers be used to help chill the inlet air going into the turbines?

No. Carlton indicates that chiller systems, which include cooling towers, would not be used on turbines to cool the inlet air to the turbines on warm days to increase power output. Instead, only evaporative cooling would be used. With evaporative cooling, water is dripped directly onto the media in the inlet air filter to cool the air as it passes through the filter.

Facility Emissions

9. What pollutants would be emitted from the proposed facility?

The pollutants emitted by the proposed facility are the pollutants associated with burning of natural gas for any purpose. The pollutant of greatest concern for a natural gas fired power plant is NO_x. Other pollutants emitted include carbon monoxide (CO) and, in smaller amounts, particulate matter (PM), volatile organic material (VOM) and sulfur dioxide (SO_2). Some of the compounds that make up the VOM are hazardous air pollutants (HAP).

10. Who provides the information regarding emissions?

Carlton provided detailed information in its application on the emission rates that the proposed turbines can meet. It also provided data on emissions of the turbines during startups. Like other applicants, it obtained short-term hourly emission data from General Electric, the supplier of the turbines. Manufacturers of turbines compile the results of tests conducted on their equipment to help determine the emission limits with which their equipment can comply.

11. Neither Carlton nor the Illinois EPA provided the engineering calculations used to determine emissions.

This information, i.e., the specific methodology used by General Electric to makes its projection of maximum hourly emissions of the turbines, was not needed to review the application. Compliance with the emission rates set forth in the application would be verified by during actual operation of the proposed facility with emission testing, monitoring and recordkeeping. An engineering review of the methodology used by General Electric to provide emission data would not excuse the source from such verification of emission data, which must occur before an operating permit could be issued for the proposed facility.

12. Why do the sulfur dioxide (SO_2) emission rates of the two different configurations of turbines vary so greatly?

The emission data for SO_2 differ because of the underlying assumption made for the sulfur content of the natural gas used in the turbines. The emission data for the three larger turbines was based on use of natural gas containing no more than 0.8 grains sulfur per 100 standard cubic feet whereas the emission data for the six smaller turbines was based on a more conservative (higher) sulfur content of 2.0 grains per 100 standard cubic feet. Incidentally, in the federal Acid Rain Program, 40 CFR 72.2, USEPA defines "natural gas" to have a sulfur content that is less than 2.0 grains per 100 standard cubic feet.

13. Why do the particulate matter (PM) emission rates of the two different configurations of turbines vary so greatly?

The differences in projections of PM emissions reflect differences in the data provided by General Electric for the larger and smaller models of turbines. These differences may be the result of differences in the performance of the turbines themselves or they may relate to differences in estimated effectiveness of the inlet air filters on the turbines and other aspects of the turbines that may effect emissions of PM. They may also reflect a more conservative approach (larger margin of compliance) to the emission data for the smaller turbines, due to fewer tests to rely upon or greater variation in test results.

14. How did Carlton develop the annual emission data, which is expressed in tons per year, for the turbines? Was the information provided in the application based on the short-term emission data for operation of the turbines at a particular temperature?

Because the output and emissions of the turbines vary on an hour-by-hour basis with ambient temperature and turbine load, Carlton supplied information for a worst-case distribution of operation. For example, for the purpose of this demonstration, Carlton assumed that the turbines would operate at full load 74 % of the time (16% at -20 ºF, 23 % at 49 ºF and 45 % at 100 ºF). Other assumptions were made for operation at other lesser load conditions for the remaining 26 % of the time. This distribution of facility operation was then combined with data on hourly emission rates under each load and ambient temperature condition to provide data on annual emissions.

15. Because the Illinois EPA does not know for certain under what conditions the proposed facility will be operating, calculations for annual emissions should be done assuming "worst case scenario" just as done for the air quality modeling.

The application does provide emission data for the range of conditions under which the proposed facility will be operating. This includes data for both the conditions during which emissions will be greatest (winter and reduced load) and the conditions during which the turbines will typically operate when emission will be lower (summer weather and full load). Actual emissions can be tracked to verify compliance with annual limits so as to accommodate variability in operation depending upon the condition under which turbines are operated.

Air quality modeling is conservatively performed in the manner that it is performed for a number of reasons that are not present for determination of annual emissions. In particular, modeling is performed to address air quality impacts as related to health based air quality standards, not applicability thresholds for permitting. These standards include short-term standards that are appropriately addressed in terms of maximum hourly or daily emissions. Finally, because modeling is performed conservatively, permits can accommodate variation in actual emissions without affecting the conclusions of the modeling.

16. Data for startup emissions from turbines, a major component of overall emissions, are largely unknown.

Certainly the emission data that is available for startup of turbines is not as extensive as the data that is available for normal operation of turbines. Still, startup of turbines has been investigated by USEPA and information on

emissions of turbines during startup is available. The startup of a turbine does not create any new pollutants, but changes the relative rates of pollutants. Emissions of NO_x during startup are higher as the measures used to reduce NO_x cannot be immediately employed. Emissions of CO and VOM, which are incomplete combustion products, are also higher until combustion conditions stabilize. To the extent that the startup data is not as extensive, the result appears to be that manufacturers of turbines are reluctant to provide this data. As this data is provided, it also appears that this data is more conservative than the data provided for normal operation, that is, it overstates the actual emissions as determined by emission testing by a larger margin of compliance.

17. Hazardous air pollutants that are carcinogenic, such as formaldehyde and acrolein, would be present in the VOM emissions from the proposed facility and would be a threat to people living near the facility.

The pollutants from this facility are the ones that are emitted anytime natural gas is burned whether it is in a home furnace, gas stove or an industrial boiler. As with these other units, trace levels of carcinogenic compounds, which are the product of incomplete combustion, are present in the VOM emissions. The Illinois EPA's evaluation indicates that the impacts of hazardous air pollutants would not be significant.

18. In the Carlton information for toxic emissions, I disagree with Carlton's assumptions as to the percentage of operation at various temperatures and when the evaporative cooler would be on.

As already explained, the estimates of maximum annual emissions of pollutants from the proposed facility vary depending upon the assumptions that are made. However, this permit is based on the facility not being a major source of hazardous air pollutants.

Air Quality Impacts

19. What would be the effect of the proposed facility on ambient air quality?

The proposed facility should not have a significant effect on ambient air quality. This means that existing air quality in the area of the facility should not be affected or threatened by the facility.

20. What are "significant air quality impact levels"?

The term "significant air quality impact level " refers to specific numerical levels established by USEPA for criteria pollutants other than ozone, below which a source's individual impact is considered insignificant. For example, the USEPA has set a significant air quality impact level for NO_x at a concentration of 1.0 microgram per cubic meter (ug/m3), which is one percent of the NO_x ambient air quality standards of 100 ug/m3, measured as NO_2. As a modeling analysis of a proposed source evaluates its maximum ambient impacts, a finding that the impacts are below this level means that the source should not measurably affect the existing air quality. In other words, air quality with the proposed source should be essentially unchanged from current levels and further modeling is not warranted. When used in this manner, the phrase really defines a level of impact that is numerically insignificant or trivial. This is the situation of the proposed facility.

21. Can the Illinois EPA give an absolute guarantee that the proposed facility will not pose a threat to public health or the environment?

The Illinois EPA cannot give an absolute guarantee that the facility is safe. It has relied on experience elsewhere showing that natural gas fired power plants do not have significant effects. Dispersion modeling of the air quality impacts of the proposed facility shows that the facility will not cause an exceedance of any national ambient air quality standard.

22. What would be the impact of the proposed facility on ozone air quality?

The simple answer is that the facility should not have a measurable affect on local ozone air quality, either negatively or positively. The ozone in the air in Lake County is a result of its location in the Greater Metropolitan Chicago area and is caused by emissions from many varied sources. In order to improve ozone air quality in the greater Chicago area, reductions are needed in precursor emissions in both the Chicago area itself and from sources outside the area whose emissions contribute to high-levels of ozone entering the Chicago area. The additional emissions from the proposed facility would be small compared to the emissions of these existing sources. Improvements in ozone air quality require reductions in emissions from existing sources.

By way of more detailed explanation, ground-level ozone pollution is formed in the atmosphere on hot sunny days by the reactions of precursor compounds, primarily VOM and NO_x. Ozone is not directly emitted out of a stack or tailpipe. Detailed analyses conducted for ozone air quality in the Lake Michigan basin indicate that the exceedances of the ozone air quality standard in the Chicago area are the result of a two-step process. First, high levels of background ozone enter the Chicago area, due to the NO_x emissions from sources in attainment areas in both Illinois and nearby states. Then, VOM emitted in the Chicago area reacts to add additional ozone on top of the high background levels, causing exceedances of the ozone air quality standard. NO_x emissions in the Chicago play a limited role in the exceedances, but do add to the background levels affecting areas downwind of Chicago, just like transport of NO_x emissions from downwind attainment areas affects the Chicago area. In light of these findings, USEPA and Northeastern and Midwestern states are working to dramatically reduce their overall NO_x emissions, as this will generally improve ozone in both urban and rural areas in this region. We are also continuing with programs to reduce VOM emissions, particularly in urban areas.

What this means is that the proposed facility should not have a measurable effect on ozone levels in Lake County. At most, any impact would be on areas further down-wind and the facility's impact would be trivial compared to the broader effect of the Chicago area. To the extent that the facility does have an effect on these down-wind areas, it is addressed along with the existing sources in Illinois' ozone attainment demonstration.

23. How far downwind from the proposed facility will the ozone formation take place and should we be concerned?

Modeling of ozone air quality generally suggests that power plants contribute to ozone formation tens of miles downwind. At this distance, the proposed facility would only be a very small part of the overall loading of NO_x in the atmosphere and will not have a significant impact on ozone formation. Of more importance for ozone air quality are the much larger amounts of NO_x emitted from downstate coal fired power plants. Illinois is engaged

in adopting a program to reduce emissions from those facilities to help solve the ozone problem not just in the Chicago area but also in states downwind of Illinois that are affected by long-distance transport of NO_x. The public should be concerned that these programs go forward, so that ozone levels in the ambient air are at safe levels.

24. What is the current air quality in the vicinity of the proposed facility?

For criteria pollutants other than ozone, Lake County is considered an attainment area. Based on data from the Illinois EPA ambient monitoring stations in Lake County and at sites similar to Lake County, air quality is within the national ambient air quality standards. For example, the maximum particulate matter concentration measured at the station in Hoffman Estates in 1999 was 72 micrograms per cubic meter ($\mu g/m^3$), measured as PM_{10}, compared to a daily standard of 150 $\mu g/m^3$.

With respect to ozone, Lake County is part of the Chicago Major Metropolitan Area and is part of the designated ozone nonattainment area. An ozone monitor is located in Zion at Camp Logan in Illinois Beach State Park. In the last three years, this ambient monitoring station has measured two exceedances of the of the 1-hour ozone air quality standard.

25. Clean air quality will be compromised by the emissions of the proposed facility.

Modeling of air emissions from the facility shows that the emissions from the facility will not compromise healthful air quality as measured compared to the National Ambient Air Quality Standard. After construction, the facility will undergo testing to show that it can meet the emission limits in the permit, which reflect the emission rates used in the air modeling.

26. Air quality is already significantly deteriorated.

Air quality in Illinois has been steadily improving year by year. Further improvements to air quality are being sought, especially for areas that still do not meet the ambient air quality standards.

There are several state and federal programs being implemented in the State of Illinois to address the need to bring the Chicago and East St. Louis areas into attainment with the federal ozone standard. Specifically for Lake County, as addressed above, further reductions in NOx emissions from downstate coal fired power plants that are upwind of the Chicago area and reductions in VOM emissions from Chicago area sources are needed to assure that Lake County does not experience ozone exceedances. Programs outside of the permitting process are being implemented to meet these goals.

27. Does Illinois EPA have less stringent air quality standards for industrial areas?

No. Air emissions control requirements in Illinois are based on the air quality in the area, regardless of land use. As a practical matter, the air pollution control program and permitting assume that an area is populated, even if an area is currently agricultural or industrial in character. As a result, the Illinois EPA's review of a permit application is independent of local land use.

28. How does the Illinois EPA determine what a safe level of emissions is?

Air quality standards are set by USEPA on a national basis. USEPA uses both laboratory research and clinical health data to set the health-based National Ambient Air Quality Standards for different pollutants at conservative levels to be protective of sensitive populations. USEPA also sets standards based on other effects of pollutants to protect public welfare and the environment.

29. Are air quality standards developed to protect children and the elderly?

Air quality standards are set by USEPA to be protective of sensitive portions of the general population including both the young and old. In particular, the NO_2 air quality standard was set to protect asthmatic individuals, who are especially sensitive to respiratory irritants. It also protects young children from increased incidence of respiratory infections. This has resulted in a standard that is set well below the level at which NO_2 has been found to have effects on healthy adults.

30. What would be the impact of the proposed facility on Illinois Beach State Park?

The proposed facility should not affect the state park, which would be over three miles away from the nearest boundary of the park. The air quality experienced by the park is a consequence of its location in the Chicago metropolitan area, with its millions of cars and trucks, and thousands of existing stationary sources, including a number of existing coal-fired power plants. While the park's location is one reason that it is such a valuable recreational and educational resource, it also poses concerns to the natural areas in the park, not just for environmental impacts, but also due to the intensity of public use.

31. In addition to modeling for major pollutants emitted from the proposed facility dispersion modeling should also be performed for hazardous air pollutants.

Analysis of the air quality impacts of natural gas fired power plants generally do not show impacts that are of concern, as compared to health impact thresholds developed by USEPA. This is the case for this facility, as confirmed by specific evaluation performed by the Illinois EPA.

Applicable Requirements

32. The proposed facility should be considered a major source of emissions under the federal rules for Prevention of Significant deterioration (PSD), 40 CFR 52.21. If different assumptions were made about the operation of the proposed facility, it would be a major source. As a major source, the proposed facility would be required to use the Best Available Control Technology (BACT) to control its emissions.

Carlton's application indicates that the proposed facility would not be a major source. Different assumptions could certainly be made about the operation of the proposed facility that would then result in it appearing as a

major source. However, this does not demonstrate that Carlton's representation is unrealistic or fundamentally flawed. When the representations in an application that demonstrate compliance are reasonable, an applicant is entitled to a permit and the permit is developed with appropriate conditions to verify and track compliance with the representations in the application.

33. The Illinois EPA should examine the relationships between the proposed facility and the proposed Skygen facility immediately to the south of it to determine whether these two facilities should be considered to be a single source for purposes of permitting. The two proposed facilities are adjacent and are both power plants. If they were to be developed by the same person (or persons under common control), they would have to be considered to one source. This would make the proposed facility a major source of emissions for purposes of permitting.

The Illinois EPA requested additional information from Carlton about any operational relationships it has with Skygen. Carlton stated that no such relationships exist at this time. A condition has been added to the issued permit explicitly stating that the permit is based on construction of the proposed facility being undertaken independently of the proposed Skygen facility. This addresses possible development of a relationship between Carlton and Skygen in the future.

34. In April, Carlton wrote a letter to the Village of Zion indicating that Calpine was interested in working with Carlton to develop the proposed Northshore Power facility. Skygen is now owned by Calpine. This indicates that both the Carlton and Skygen facilities are being developed by a single entity, i.e., Calpine, so that the two facilities are one source.

Carlton has stated that the discussions between Carlton and Calpine, as addressed by a letter in April, have been broken off. Past discussions between these companies do not provide a basis to consider the two adjacent facilities to be a single source. However, because Calpine is now involved in the development of the Skygen facility, if these discussions were to be resumed so that Calpine becomes involved in the development of the proposed Carlton facility, Carlton and Skygen would most likely be found to constitute one source for purposes of permitting.

35. Carlton is also associated with an as yet unnamed peaking facility being considered for Waukegan and the ABB Grande Prairie power plant being developed in Bartlett. Carlton's proposed Northshore Power facility should be considered to be a single source with these other facilities.

These other facilities cannot be considered part of the proposed facility. The Illinois EPA has not received an application for a proposed Carlton facility in Waukegan. When and if Carlton does submit an application for a proposed facility in Waukegan, the Illinois EPA will address the scope of the source in the context of that application. The fact that such a facility is being contemplated, based on newspaper reports and reports from the public, does not substitute for such an application. With respect to ABB Grande Prairie, it is located in DuPage County over 40 miles away from the site of Northshore Power. The two facilities are separate sources because they are not adjacent, irrespective of any specific role of Carlton with the ABB facility.

36. Various new peaking facilities in the Chicago area using General Electric turbines should be

considered one source because the instrumentation for these plants will be connected to a General Electric facility in Georgia. That facility will track how the turbines are operating.

General Electric is not in a position of "common control" over these facilities. General Electric only tracks the new turbines that it manufactures to ensure that they are properly operated and maintained, so that the turbines are not damaged and warranty terms are not violated. However, General Electric does not have day-to-day operational control over the turbines and does not enter into contracts to sell power and does not decide whether turbines are turned on to provide power.

37. The proposed facility and the proposed Skygen facility should both be considered one source because their power will be distributed by transmission lines that are owned by Commonwealth Edison and power from both plants will most likely be purchased by Commonwealth Edison.

These circumstances are also not sufficient to establish common control over these facilities. Commonwealth Edison must provide open access to its power transmission lines, as discussed further below, and does not have the ability to refuse to handle power from independent power plants. Besides the power that is generated from its nuclear power plants, Commonwealth Edison must now purchase all the electricity that it sells at a retail level to individual customers. The fact that two potential suppliers of this power would be located adjacent to each other is not sufficient to establish "common control" for the purpose of permitting.

38. The proposed facility and the proposed Skygen facility should both be considered one source because Calpine (the new owner of Skygen) and Commonwealth Edison both have joined the Midwest Independent Transmission System Operator (MISO).

The fact that both companies are relinquishing day-to-day management authority of their transmission lines to the MISO does not establish "common control" of these facilities for purposes of considering them to be one source. Independent system operators (ISO) are being set up as part of the restructuring of the electric industry under a mandate of the Federal Energy Regulatory Commission. The purpose of these independent operators is to manage the electric transmission system owned by the companies they serve to assure both reliability of and open access to the power transmission system. While an ISO has authority over power transmission, its authority over power generation is limited to cases where there is congestion on the transmission system or the security of the system is threatened. The function of the ISO as it regulates the transmission system is not sufficient to be considered common control or management authority for purposes of air pollution control permitting.

39. The Wisconsin Department of Natural Resources imposed stringent requirements on the new power plant proposed by Badger Generating Company for Pleasant Prairie, Wisconsin. The Illinois EPA should be doing the same for the proposed facility.

The Illinois EPA does not have the authority to impose more stringent emission control requirements on the proposed Carlton facility because the facility would not be a major source under the federal PSD rules. Unlike the proposed facility, the proposed Badger Generating station is a major source under the federal PSD rules, which triggers more stringent control requirements than the proposed Carlton facility.

By way of background, the Badger Generating station would have a nominal capacity of 1050 MW from four combined cycle turbines permitted for continuous operation year round. Even with add-on emission control, the permitted NOx emissions of the station are over 500 tons per year. If the station were allowed to operate without add-on control, with only NOx control by combustor technology, permitted NOx emissions would approach 1500 tons per year. In contrast, the proposed Carlton facility is not a major source, with permitted NOx emissions less than 250 tons per year. Its emissions are effectively minimized by use of combustor technology. In addition, add-on NOx control is difficult to apply to simple cycle turbines, which the proposed facility would use, as compared to combined cycle turbines, which Badger Generating would use, which include waste heat boilers on the turbine exhausts, which can also house add-on NOx control systems.

40. Carlton is not capable of building the proposed facility. Carlton has not demonstrated an ability to obtain financing to purchase the proposed turbines and construct the proposed facility. Carlton has not obtained the necessary approval for the proposed facility from the City of Zion and an official of the City of Zion has stated that such approval will not be provided for the facility. Because the facility cannot be built, it is a waste of the taxpayers' money for the Illinois EPA to work on the application.

If in fact Carlton is not capable of building the proposed facility, as suggested by this comment, the proposed facility will not be built. The issuance of a construction permit for a proposed facility by the Illinois EPA does not require that the facility be built. Rather, if the facility is built, it must be constructed and operated to comply with the conditions of the issued permit for the facility as well as applicable rules and laws governing its emissions. The issuance of a permit also does not alter the Permittee's obligations to comply with other applicable requirements, including applicable siting and zoning requirements administered by Lake County or the City of Zion.

The air pollution control permit program is funded by fees paid by operating sources holding permits. Accordingly, while Carlton would not pay for the costs of it's permitting if it is never built, this cost would be absorbed by the fees paid by other sources that have been built and are operating.

41. Carlton has no viability as a power company and ultimately would not be the owner or operator of the proposed facility.

For purposes of a construction permit application, which addresses equipment that is not yet built, Carlton has identified itself as the owner and operator of the proposed facility. If Carlton's role in the proposed facility changes and ownership of the proposed facility is transferred to another company, the new company would only be authorized to construct and operate the proposed facility in accordance with the terms of the issued permit.

42. The permit makes the unwarranted assumption that a turbine shall emit at the applicable limit ... or the value measured by a continuous monitoring system. These limits are based largely on undocumented and unsupported emission factors supplied by the applicant.

Emission testing to date has shown that turbine manufacturers are able to reliably predict maximum emission levels of new turbines as needed for purposes of permitting. Actual emission testing shows compliance with projected emission rates, often with a substantial margin of compliance for pollutants other than NOx, where

manufacturers are more conservative in their predictions.

In any case, permits rely on the information in the application, including the emission data provided by the manufacturer of the gas turbine. While information that is unreasonable or anomalous can certainly be identified, independent engineering evaluations of sophisticated emission units like gas turbines are not performed. Such a review is also not appropriate as the function of the review of a construction permit application for a proposed project is to determine whether the plans and specifications submitted in the application show compliance. When a permit is issued for a project, significant representations made in the application are made permit conditions so as to govern and restrict the operation of the project. When the source is built, appropriate testing, monitoring and recordkeeping must be performed to verify compliance with these representations, as memorialized in the conditions of the permit.

43. Emission testing should be required for VOM and CO to verify emission information provided by Carlton in its application.

The permit requires such testing. In addition, the issued permit requires testing for CO and VOM to be conducted for startup of the turbines.

44. In verbal communications with the turbine manufacturer, they stated that startup emissions of CO and VOM range from 500 percent to 1000 percent higher than at full load.

The permit as issued has been enhanced to include a requirement that emission testing be conducted for CO and VOM emissions during startup of a turbine. In the event that the factors in the permit do not adequately account for startup emissions, this will be identified by this testing and more accurate factors can be developed for the specific turbines at the proposed facility.

Moreover, this information is not inconsistent with the approach taken to address startup emission in the draft permit. In particular, if the rate of emissions during the startup itself, which takes roughly 20 minutes, is 10 times the rate during normal operation, as indicated in this comment, emissions for an hour that includes a startup would be only 4 to 6 times the rate during normal operation. This is consistent with the multiplier factors for CO and VOM emissions during startup as established in the permit.

45. Emission testing should be required for particulate (filterable and condensable).

The issued permit requires that such testing be performed, with separate measurements made across the normal operating range of the turbines.

46. Emission testing should be required for emissions of organic hazardous air pollutants.

Source-specific emission testing for organic hazardous air pollutants is not essential because emission testing is required for emission of VOM and USEPA has developed factors for turbines for emissions of hazardous air pollutants, which are a subset of the VOM emissions. These factors show that that about half the VOM emissions from a natural gas fired turbine are hazardous air pollutants, with formaldehyde making up about two-thirds of the hazardous air pollutants. This information can be relied upon to address emissions of hazardous air

pollutants from the proposed facility and it indicates that the proposed facility would not be a major source of hazardous air pollutants.

At the same time, the permit does require emission data for organic hazardous air pollutants to be collected if this can be readily done during the testing of VOM that is required. This would be the case if VOM measurements were conducted with the USEPA Test Method that allows constituents in the VOM to be identified.

47. Why does the permit requires emission testing at several points in the normal operating range of the turbines?

Emission testing is conducted at several points over the normal operating range of turbine as needed to address potential variation in emissions with turbine load. Testing must be conducted at ends of the range, i.e., full load and minimum load, and one or two intermediate points. In this regard, the NSPS requires that NO_x emission testing to be conducted at two intermediate points, unless USEPA approves alternative provisions for testing NO_x on a source-specific basis. These provisions were adopted as a time when it was anticipated that NOx emissions from gas turbines would be controlled with water injected combustors, so that it would be necessary to perform testing to confirm the rate of water injection needed for compliance across the range of turbine operating load. Although this is not the case for modern dry combustors, the provisions for the NSPS have not been revised by USEPA. For other pollutants, one intermediate point is adequate to evaluate variation between full load and minimum load.

48. The 180 days allowed for shakedown of the turbines, before emission testing must be performed, is too long considering the nature of a peaking facility. The time period should be 45 days.

The 180 shakedown period is needed to address the unforeseen events that frequently occur during shakedown of a complex system like a turbine generator, which are the reason that a shakedown period is reasonable and needed in the first place. For example, if a serious problem is identified with the electrical generator when a unit is first operated, further operation of the unit would be delayed until the problem with the generator could be corrected.

It should be noted that the provisions in the permit dealing with the shakedown period, as well as commencement of construction, use terms that are defined by both rule and policy under the federal New Source Performance Standards. In particular, the 180 day allowance for shakedown is a period of time, running for 180 consecutive calendar days from the day that a turbine first starts to operate, i.e., fires natural gas in the combustors. In addition, irrespective of the shakedown period, emission testing must be performed within 60 days after a turbine demonstrates that it can reliably operate at full load.

However, to address this subject, a provision has been added to the issued permit requiring Carlton to provide a preliminary report on emissions from the turbines, from data collected with diagnostic equipment during the shakedown period, if emission testing is not performed within 45 days after the turbines start gainful operation and serve to meet peak power demand.

49. The Illinois EPA should specify acceptable methods for any calculated values used to determine compliance with emission standards.

As it is a construction permit, the permit is appropriately developed in that it generally specifies that emission testing will be the basis of calculated emission values. Any refinements or revisions to these methods would be subject to review and approval by the Illinois EPA during the processing of the operating permit application for the facility, if it is built. Because the facility would have to obtain a Clean Air Act Permit Program (CAAPP) permit, a public comment period would be held prior to issuance of the operating permit.

50. The consultant that helped Carlton prepare the application should not be allowed to perform the emission testing required by the permit. If he did, there would be a conflict of interests.

Emission testing must be performed by an independent testing service. This restriction prohibits individuals who prepared a permit application from performing the emission testing required to verify compliance with applicable limits when the proposed source is built.

51. The permit proposes to limit the amount of natural gas that may be used by the proposed facility. I believe that a limit on operating hours would be more protective.

In its application, Carlton proposed to limit its fuel usage. Limits on fuel usage are an adequate means to facilitate compliance with the limits on annual emissions being placed on the facility, especially in light of the requirements being placed on the proposed facility for emission testing, emission monitoring and record keeping.

52. How were the annual emissions limits in the permit developed by the Illinois EPA?

The annual limits in the draft permit and in the issued permit were calculated by the Illinois EPA using the maximum hourly emission rates provided in the application for the turbines for operation at a temperature that is representative of the annual average temperature. For example, the limits for the larger turbines were calculated as if the turbines were operating year-round at 49° F. In this case, the emissions of NOx were the constraining pollutant, was used to calculate the usage of natural gas that would result in annual NOx emissions of 250 tons per year. This usage of natural gas was then used to calculate the emission limits for other pollutants.

This approach was taken because the short-term emission data for the annual average temperature is a fair representation of typical emissions as it would generally be greater than the emissions at the temperatures at which the facility would usually operate. As previously explained, the output and emissions of gas turbines vary with ambient temperature. The colder and denser the inlet air to a turbine, the more power that can be produced. Thus maximum emissions of a turbine on a 49° F day in April are greater than a 100° F in July.

53. Why do the limits on fuel usage set by the permit differ from the limits proposed by Carlton in its application?

The fuel usage limits in the permit were calculated by the Illinois EPA based on the emission data provided in the application for operation of the turbines at an average annual temperature, as explained above. This is a

simpler approach than the limitation proposed by Carlton, which was calculated by separately accounting for emissions and operation under different load and temperature conditions. (Refer to Comment 12.)

54. What are good air pollution control practices?

Good air pollution control practices is a term used to generally describe proper operation, maintenance and repair of emission units and control systems to minimize their emissions.

55. The proposed facility would not be considered a peaking facility under the federal Acid Rain program based on its permitted level of operation.

This is not correct. The particular provisions of the Acid Rain program, which is implemented through an operating program, are not relevant to the issuance of the construction permit for the proposed facility. In particular, the provisions of the Acid Rain program that are being addressed in this comment relate to whether a unit must be equipped with a continuous emission monitoring for NO_x under the Acid Rain program. The permit for the proposed facility requires continuous emission monitoring for NOx independent of the Acid rain program.

By way of further explanation, the federal Acid Rain program in 40 CFR 72.2 defines a unit as a peaking unit if it has an average capacity factor of no more than 10 percent over three years and no more than 20 percent in any one year. (A 10 percent annual capacity factor is equivalent to operating a unit at full load for 10 percent of the year, i.e., 876 hours.) If a unit that has been operating as a peaking unit increases operation so that it no longer qualifies as a peaking unit, 40 CFR 75.12 provides that an NO_x monitoring system must be installed on the unit by December 31 of the following calendar year.

The operating limitations in the permit for the proposed facility allow maximum annual operation of the turbines for about 1450 hours per year or a 16 percent annual capacity factor. This accommodates variability in the operation of the facility from year-to-year, based on the need for its power. However, as long as the three-year average capacity factor for the turbines is no greater than 10 percent, they would not be treated as peaking units under the Acid Rain program. Only if the turbines actually operated at this level for three years in a row, would they would no longer qualify as peaking units under the Acid Rain program.

56. Emission monitors should be checked on at least a quarterly basis.

Carlton must operate the continuous monitoring systems in accordance with specifications and protocols established by USEPA for continuous emission monitoring systems. One of the elements of the required protocols is checking the performance of a monitoring system on at least a daily basis with calibration or adjustment of the system as needed to maintain its accuracy. The permit further provides that the monitoring must be performed in accordance with the very stringent procedures under the federal Acid Rain program if the facility no longer qualifies as a peaking facility for this facility.

57. How accurate are continuous emission monitoring systems?

Statistically, based on 1999 data, continuous NO_x emission monitoring systems operated pursuant to the federal Acid Rain program presently have an average accuracy of about plus or minus 5 percent, based on the quality assurance tests that must be regularly performed on these systems. As a practical matter, continuous monitoring systems are the most accurate means available to track actual NO_x emissions from fuel combustion units like turbines on a day-by-day basis. The results from properly operated monitors are routinely accepted for determining compliance with applicable emission limits.

58. The draft permit inappropriately addresses emissions during startup because it fails to set limits for emissions during startup.

The permit appropriately addresses startup emissions. The permit includes specific provisions requiring Carlton to account for emissions during startup for purposes of demonstrating that it complies with annual limits on emission set by the permit. An additional provision has been placed in the issued permit reiterating Carlton responsibility to fully and appropriately account for all its emissions.

59. The "multiplier" factors being used to account for higher emissions during startup emissions of the proposed turbines are lower than used in the permits for other new peaking facilities.

The factors for startup for the proposed facility were developed based on the emission data for startup of the proposed turbines provided by Carlton in its application. It is appropriate to use this project-specific data to set startup factors for this facility as the emission data for these turbines during normal operation is also different from the data for the models of turbines being used by other new peaking facilities. The result is a lower startup multiplier for this facility.

60. The permit should limit the number of startups of the turbines per year.

It is not necessary or justified to constrain the operation of the proposed facility by limiting the number of startups, given the nature of startups, which are only 20 minutes in length, and the provisions that are being imposed to address startups. The permit includes ample provisions to address emissions accompanying startup, including limits on annual emissions of the facility and procedures to account for emissions during startup when determining compliance with these limits. As a general manner, Carlton is required to follow good air pollution control practice to minimize emissions from the turbines. The permit also has specific provisions requiring Carlton to take reasonable measures to minimize the number of startups and the emissions accompanying startups.

61. The annual emission limits in the permit are not federally enforceable.

The permit contains appropriate operating limitations and short-term emission limits and ample provisions for emission testing, continuous monitoring and record keeping to make the annual emission limits enforceable. The permit does not need to limit the number of startups or restrict operation under particular ambient conditions in order to make the annual emission limit enforceable.

62. An analysis of formaldehyde emissions of the proposed facility using a standard USEPA emission factor shows formaldehyde emissions at 13.23 and 10.96 tons per year for the three

and six turbine options, respectively. Accordingly, the proposed facility should be considered major for formaldehyde, with the potential to emit over 10 tons per year.

USEPA's emission factors indicate that formaldehyde emissions constitute about one-third of the VOM emissions. Accordingly, the annual limitation on VOM emissions from the facility assures that formaldehyde emissions will be less than 10 tons per year.

Analysis of the formaldehyde emissions of the proposed facility using the appropriate USEPA factors, also shows formaldehyde emission less than 10 tons per year. In particular, USEPA has two formaldehyde emissions factors for gas turbines. One factor is for operation at more than 80 percent load, which is the where turbines normally operate. The other factor, which is only included in supplementary material, addresses operation of a gas turbine at any load, which would address operation at less than 80 percent load. The analysis underlying this comment assumed that this second factor, which is significantly higher, should apply at all times. However, it is not realistic to expect that the turbines in the proposed facility would operated at reduced load all the time, especially if operating at the maximum annual level of operation due to very high demand for peaking power. Only if the turbines were operated at the permitted annual levels with reduced load for more than two-thirds of the time, would USEPA factors indicate that the annual formaldehyde emissions of the proposed facility would be greater than 10 tons.

63. Please explain the thinking behind having Carlton immediately notify the Illinois EPA if NO_x emissions exceed 160 tons. (Refer to Condition 13(a))

This condition requires the proposed facility alert the Illinois EPA if its emissions reach a level at which annual emissions could approach the threshold for a major source. This requirement was placed on the facility using the general authority given the Illinois EPA to place conditions on permits as necessary to accomplish the purposes of the Environmental Protection Act. The requirement was developed because the demand for peaking electricity at present is such that new peaking plants are operating well below major source thresholds, i.e., emissions of 250 tons per year of a pollutant. This could also be the case for the proposed facility when it begins to operate and for many years thereafter. At the same time, in any particular year, there is some uncertainty about the operation of any particular peaking facility as the market for their power depends on a number of factors (the weather and other factors that determine consumer demand for electricity; the ability of base-load power plants to provide less costly power; the status of the power transmission grid; etc.). If the circumstances become such that the proposed peaking facility's emissions are at higher than normal levels, i.e., 160 tons, based on operation during part of a year, this provision will allow the Illinois EPA to immediately investigate the cause for such higher than expected emissions and to take appropriate steps to help assure that annual emissions stay within permitted levels.

Because it is expected that the proposed facility would operate primarily in the three summer months (June, July and August), the trigger for this notification by Carlton has been set at a level somewhat less than two thirds of the major source threshold, i.e., 160 tons. In this way, if the facility's emissions in June and July are in excess of 160 tons, the Illinois EPA would be notified so to be able to address the emissions that would occur from the facility in August.

64. The proposed facility should be considered a participating source under the Emission

Reduction Market System (ERMS).

The Illinois EPA expects that the actual VOM emissions of the facility will be below 10 tons during the seasonal allotment period each year. This is below the applicability threshold of the ERMS, which is based on actual emissions. If the facility's actual VOM emissions turn out to be greater than the applicability threshold of the ERMS, based on the VOM emission rate measured during required emission testing, the facility would be subject to the ERMS notwithstanding the approach to ERMS taken in the permit.

65. The permit does not state how the VOM emissions of the proposed facility are to be determined for purposes of the Emission Reduction Market System (ERMS).

The procedures to be followed to determine actual VOM emissions for purposes of ERMS are no different than the procedures for determining actual VOM emissions for other limits, as addressed by the permit. Like other compliance procedures set by the permit, these procedures could be refined and developed based on actual operating experience when operating permits are issued for the facility.

66. What are the consequences if Carlton does not meet the emission limits set by the permit?

If there is a numerical violation of a permit, the Illinois EPA takes steps to assure that the problem is corrected. The Illinois EPA would set up a compliance schedule, exact appropriate fines for the non-compliance, and take steps to bring a company into compliance. To shut a facility down, there must be a threat to public health from continuing operation of the facility.

67. What would happen if the proposed facility were found to be a major source for NO_x or VOM?

Carlton would need to demonstrate that the proposed turbines comply with emission limits for NO_x and VOM that have been determined to represent Best Available Control Technology (BACT) and the Lowest Achievable Emission Rate (LAER), respectively. Carlton would also have to provide offsets from existing sources for the VOM emissions of the turbines. Further air quality modeling might also be required, if the permitted NOx emissions were to increase significantly.

68. The permit should require compliance at all times with all Pollution Control Board regulations, including the Board's regulations governing noise from stationary sources.

Nothing in the permit excuses the proposed facility from compliance with the Board's regulations, including its noise regulations. The conditions of the permit, as it is an air pollution control permit, highlight applicable emission standards than would apply to the proposed facility and impose further requirements related to the facility's emissions. As an air pollution control permit, the permit addresses issues related to emissions, as required by Title 35, Subtitle B: Air Pollution of the Illinois Administrative Code.

69. The permit should contain a reopener to address future rulemaking.

The permit does not need to have a reopener provision to allow the permit to be reopened when new rules are adopted. Under 35 IAC 201.167, when new state laws and rules are adopted, the Illinois EPA can reopen

construction permits to include provisions to address the new requirements. Moreover, if a newly adopted requirement applies to an existing source, the source must meet the requirement regardless of whether its permit is revised to address the new requirement.

Other Impacts

70. As the facility has proposed to use water from the City of Zion, which is chlorinated, what would be the effect of the chlorine in the water on people, livestock and the environment?

Residual chlorine present in water used for turbines, as would occur at the proposed facility, has not been identified as having any meaningfully effects. In this regard, drinking water is routinely used in a variety of ways that are accompanied with respiratory exposures, including bathing and showers, cooking, washing dishes, backyard pools, lawn sprinklers, car washes, etc.

71. How much water would be used by the proposed facility? What will be the source of water?

Carlton indicates that the proposed facility would use 50,000 gallons per day when it is operating with evaporative cooling. This is a relatively small amount of water and is expected to be supplied by the City of Zion.

72. Could there be groundwater contamination at the plant from any of the emissions?

No. The air emissions from the proposed facility will not contaminate groundwater.

73. If there is a spill or contamination at the plant what will occur at that point?

If there were an immediate threat to plant personnel or the public, local emergency personnel would respond and take or coordinate measures to protect against such threats. Following this initial response, actions would be taken to clean up the spill and prevent similar incidents in the future. The Illinois EPA's Office of Chemical Safety would be notified of the spill if it involved a hazardous material.

74. How much noise would the facility produce when it is operating?

Carlton has stated that it would design and build the proposed facility to comply with Illinois' Noise Standards, which includes separate daytime and nighttime standards to protect against nuisance noise from stationary sources. The Illinois EPA can provide general assistance to local governments and to the public to help them in verifying that the facility has been properly constructed to comply with noise standards.

General Comments

75. Power plants are allowed to operate without state, county, or municipal regulations for noise control, soil depletion, or water contamination.

The Illinois EPA administers permit programs that address the air emissions and wastewater discharges from power plants. Illinois also has regulations that address the noise from power plants. The Illinois EPA does not have the authority to consider other issues related to the siting of a proposed facility, (e.g. need for a proposed power plant, aesthetics, etc.).
Although, with deregulation of the electric generating industry, many different companies can build generating facilities, this does not mean that these companies would operate outside of the state's laws and regulations. All sources, power plants included, must meet state emission, wastewater discharge and noise regulations and must comply with other applicable state, federal and local requirements, including building and fire codes.

76. The application does not demonstrate that there is need for the electric power from the proposed facility.

Comment acknowledged. The Illinois EPA does not address the need for a proposed power plant as part of its review of the construction permit application for a proposed plant. In this respect, under deregulation, proposed power plants are treated no differently than other proposed sources.

77. We do not need two peaker plants in Zion. We do not have a shortage of electricity in Zion. Where will the power from the proposed facility go? The proposed facility could sell electricity outside of Illinois.

Comment acknowledged. The proposed facility would have the ability to sell electric power outside of Illinois, dependent upon adequate capacity being available on power transmission lines. However, this aspect of the proposed facility is outside the scope of Illinois EPA's construction permit process.

78. The federal New Source Performance Standards (NSPS) for gas turbines are outdated.

This facility is required to comply with emission limits that are much more stringent than required by the NSPS, that reflect improvements in NO_x control technology for turbines that have occurred since the NSPS was adopted. While the emission limits of the NSPS are outdated, due to these improvements, the NSPS is a useful benchmark to measure the improvements in emission control that have occurred.

79. The proposed facility should not be located at the site selected by Carlton because it is near homes. There are too many homes and people living near the site. Facilities of this type should be located in less populated rural areas.

Comment acknowledged. The Illinois EPA does not have a role in the siting process for new power plants. Currently there is no State mandated siting approval process for these types of facilities, as there is for new pollution control facilities such as landfills and wastewater treatment plants. Even the siting process for pollution control facilities leaves the decision on approval of siting to the local municipality where a proposed facility is to be built.

80. Why is this facility being located so close to homes?

There are many sources in Illinois and around the country, both power plants and other types of sources, that are close to homes. Local authorities are the governing bodies that determine zoning of industrial and residential areas. Environmental agencies regulate sources given their location to assure that they do not pose a threat to public health.

81. The proposed facility is located in the Waukegan Regional Airport's air space. What effect on air turbulence will the plumes from the proposed facility, and the adjacent Skygen facility, create?

These facilities will increase turbulence near the ground. However, the regulations governing aircraft require a minimum of 1000 feet clearance over obstacles in congested (populated) areas. The Federal Aviation Administration (FAA) and Illinois Department of Transportation (IDOT) regulate activity at or near airports to maintain the safety of aircraft and the public, including the Waukegan Airport, which is bout three miles away from the proposed facilities. The authority of the FAA and IDOT is independent of the environmental programs administered by the Illinois EPA.

82. Defer issuance of any air permit until all other sources contributing to our air quality in this area have been eliminated.

The Illinois EPA does not have the legal authority to deny or delay permits on this basis. In fact, under State law, the Illinois EPA is required to process construction permit applications within specific timeframes.

83. Carlton is a business; they are not coming into the community to help us with our power needs.

Comment acknowledged.

84. Carlton has not demonstrated that it can operate in compliance. How do we know that the proposed facility will be in compliance?

Carlton's application indicates that the proposed facility would be designed and equipped to comply with applicable air pollution control requirements, including maintaining its annual emissions below the levels at which the facility would be considered a major source. One of the reasons for issuing construction permits is to have a tool that outlines what regulations and standards a facility must meet to be in compliance. Actual compliance can only be verified with emission testing and monitoring if the proposed facility is built and operates, at which time emissions must be measured to verify compliance. If the facility does not stay in compliance, the Illinois EPA will take appropriate action to assure that Carlton brings the facility into compliance.

85. I am concerned about safety of the facility. Will the facility have features for fire protection?

The facility must be designed, built and operated in accordance with a variety of building and safety codes developed to protect the facility and its neighbors. Carlton has stated that a key feature of the fire protection system would be a large on-site water storage tank and emergency water pumps.

Modeling Procedures

86. Where would the points of maximum air quality impact of the proposed facility be?

The dispersion modeling shows that on an annual basis, the maximum impacts of the proposed facility are many kilometers to the north and northeast. The maximum short-term impacts are much closer to the facility, within a kilometer. Although short-term impacts are often to the north and northeast due to the prevailing wind direction, maximum impacts also occur in other directions and their direction could vary from year to year.

87. Do the stack heights used in the air quality modeling supersede the stack heights provided on application forms?

Yes. If the dispersion modeling was performed using stacks that were higher than the stacks described on the application forms, the stack heights used for modeling govern.

88. Dispersion modeling should be based on local conditions, not based on another area.

The dispersion modeling used detailed weather data collected at O'Hare Airport to represent the weather conditions experienced in the greater Chicago area. Although weather conditions in Zion may differ slightly from those at O'Hare on an hour-by-hour basis, the data is generally representative of the range of weather experienced in the Chicago area over the course of a number of years. It is also acceptable to use historical weather data, as it is again representative of the mix of weather in the greater Chicago area. In this regard, the air modeling is performed for five years of weather data (over 1800 individual days) to capture all possible weather conditions that and to identify maximum air quality impacts on the days with the worst weather conditions from the standpoint of air quality.

89. Were lake breeze effects considered in the modeling?

Yes. In general, lake breeze air masses do extend well inland from Lake Michigan and are accounted for in weather data collected at O'Hare.

90. Are lake breeze effects considered by the Illinois EPA in its ozone modeling?

Yes. Ozone modeling is performed by the Illinois EPA for specific days or episodes in which high levels of ozone were experienced, using actual meteorology during the episodes. As lake effect breezes occurred during an episode, they would specifically be addressed by the analysis.

91. What emission rates were used in modeling?

The emission rates from the proposed facility used in the modeling were worst-case emission rates from the proposed turbines. For example, for short-term modeling, the turbines were modeled with emissions as would

occur at the coldest temperature that facility would expect to operate. These emission rates are significantly higher than would be expected to occur during summer months when the turbines are typically expected to operating. As a result the modeling overstates the impacts of the proposed facility.

92. Emissions during startup could exceed the short-term emission rates used in modeling.

Because the modeled impacts were so small, the Illinois EPA did not require dispersion modeling to be performed for startup. For natural gas fired turbines, the concern for high short-term emissions focuses on emissions of carbon monoxide (CO), for which there is an air quality standard that applies on an hourly basis. Even if CO emissions and impacts were ten times higher during startup than during normal operation, the maximum air quality impacts would be less than USEPA's significant impact air quality level.

93. Does the dispersion modeling account for existing levels of pollution at the proposed site and surrounding area?

Air quality impact analyses account for the "background" level of pollution in an area in two ways. First, ambient air quality data from a monitoring station located in an area that is representative of the area that is being studied is used to generally account for the levels of pollution already in the area. Second, dispersion modeling can be performed for the significant sources that are already located in the area under study, to specifically address their impacts. In this case, dispersion modeling was also performed to address emissions from the existing coal-fired power plants in Lake and Racine Counties and the proposed Skygen facility, along with the emissions of the proposed facility. The results of this expanded modeling showed that air quality would continue to comply with ambient air quality standard.

94. Modeling for the proposed facility should have included the proposed Badger Generating power plant in Pleasant Prairie, Wisconsin.

The Illinois EPA did not request Carlton to include this proposed plant, which would also use turbines and only be fired with natural gas, in its dispersion modeling. The proposed Badger Generating plant is some distance from the proposed Carlton facility and should not affect the conclusions of Carlton's modeling analysis. This was confirmed by modeling performed by Skygen for its proposed facility, which was extended to include the proposed Badger generating plant.

95. Why weren't all nearby sources included in the modeling?

All nearby sources need not be included in the modeling to conclude that a proposed facility would not threaten air quality. Sources in the vicinity of a proposed facility are generally accounted for by the "background" air quality values used in the air quality analysis, which are taken from a representative monitoring station operated by the Illinois EPA. However, selected major sources already in an area and other major new facilities for which applications are pending or which are permitted but not yet operating, may be included in modeling for a proposed facility. This is routinely done when modeling for a proposed facility indicates significant air quality impacts. Even though this is not the case for the proposed, which shows insignificant impacts, selected sources in the immediate proximity of the proposed facility were included in the modeling to provide further corroboration that the proposed facility would not threaten air quality.

Administrative Procedures

96. The application should have been considered incomplete because Carlton did not provide all the information requested on the permit application forms. In many spaces, Carlton entered NA (not applicable) or TBD (to be determined). As a result the application did not meet the standards for a complete application and should have been deemed incomplete within 30 days of receipt, as allowed by applicable rules.

The Illinois EPA has a common set of application forms that is used for both construction permit applications and operating permit applications. When the forms are prepared for a construction permit application, not all information requested on the forms is relevant and does not have to be supplied.

97. The Illinois EPA should have considered Carlton's application to be incomplete because it does not include Form APC 203.

This permit application form, "Operation During Startup (Where Operating During Startup Exceeds Allowable Emissions)" is not applicable to the proposed emission units. This is because emissions during startup of the turbines would not exceed any applicable emission standards or limitations that apply to them under state rule. As stated in its title, this permit application form only needs to be submitted for a unit whose emissions may exceed applicable emission limits during startup.

98. The permitting of the proposed facility should be delayed because the Pollution Control Board may adopt changes to the requirements for peaking facilities as a result of its recent inquiry hearings on peaker plants.

The Illinois EPA does not have the authority to deny a permit because there may be new requirements adopted that would apply to the source.

99. What is the reason for the public comment period and hearing? I'm under the impression that whatever I say, a permit will be issued for the facility.

The Illinois EPA holds public comments periods to explain our role in permitting sources and to receive comments and answer questions about applications that are of interest to the public. A permit may be denied as a result of relevant public comments that lead the Illinois EPA to conclude that a facility would not meet applicable environmental regulations. More often, public comments lead to the enhancement of the conditions of the permit. This has been the case for the proposed facility.

The authority of the Illinois EPA, as established by the Environmental Protection Act, is generally limited to environmental matters. When acting on a particular permit application, the authority of the Illinois EPA is further limited to the scope of the particular application under review. Accordingly, the Illinois EPA is without legal

authority to base its decisions on permit applications on comments or concerns that address matters that are outside of its jurisdiction.

100. Back-to-back hearings, with the hearing for proposed Skygen facility on Monday night and Carlton on Tuesday night made it difficult for the public to prepare completely for the hearings. Also, the Carlton hearing, which was on Tuesday night, was on the same night as the regularly scheduled council meetings of Zion and several other nearby communities.

While there were disadvantages to back-to-back hearings, they were outweighed by the advantages, in the opinion of the Illinois EPA. In particular, the timings of the two hearings made the differences between the Skygen and Carlton proposals clearer, so as to allow the public to compare and contrast the proposals. At the same time, as the comments at one hearing were also incorporated into the record of the other hearing, it allowed individuals with common concerns about both plants to attend only one hearing, without fear that circumstances had changed due to an extended period of time between the hearing for the Skygen and Carlton facility.

Any conflict with local meetings was inadvertent. The Illinois EPA did not consider local meeting schedules when selecting the dates for the hearings.

101. Carlton's application was not available for inspection when I visited the Waukegan Public Library, which is where the notice said such material would be.

We regret that the application was not available when you visited the Waukegan library. The Illinois EPA, to the best of its ability, strives to make application material available to the public during comment periods so as to facilitate informed questions and comments from the public. When information cannot be readily obtained at the local repository, we would appreciate it if you would contact us immediately. We can then take action to correct the problem at the repository and to make the information available to you and other members of the public.

102. Why did the Illinois EPA extend the comment period?

The comment period was extended to allow certain individuals who had requested further information from the Illinois EPA to provide comments on the proposed facility that considered the information in the response provided by the Illinois EPA.

103. The procedure by which the Illinois EPA provided notice of the extension of the comment period was flawed.

The Illinois EPA provides notice of comment periods by both display advertisement in newspapers and by written notice to local officials and individuals who request to be notified of public comment periods. We also appreciate the efforts of interested individuals and groups, such as Zion Against Peaker Plants (ZAPP), to

inform potentially interested parties of public comment periods. In this case, we believe that individuals who were incorrectly omitted from the list for written notice were nevertheless informed of the public hearing and extension of the public comment period by other means, including telephone conversations directly with Illinois EPA personnel.

104. If there are significant revisions to the draft permit for the proposed facility, the Illinois EPA must hold a second hearing.

Applicable administrative procedures do not suggest that a second hearing should be held in the event that the Illinois EPA decides to issue a permit with conditions that are different than the conditions of the draft permit released for public review and comment. The Illinois EPA is required as part of its permit decision to consider and respond to relevant comments and information provided to it during the public comment period. Therefore, persons who believe that the conditions of the draft permit are inappropriate are under a general obligation to submit all reasonably available arguments and factual grounds supporting their position by the close of the comment period.

105. The Illinois EPA is rushing applications for peaking facilities through the permitting process. The application for the Carlton facility should not have been considered complete until May 17, 2000, when Carlton submitted new information for its second configuration,

The Illinois has not rushed the processing of this application. The permit for the proposed facility was issued approximately 11 months after the application was initially received on December 21, 1999. The permit was issued approximately 180 days after Carlton submitted the revised information in May changing its second option to six smaller General Electric turbines equipped with dry low-NO_x combustors, rather than three larger ABB turbines that would have used water injection to control NOx.

106. Carlton should not be allowed to supplement its application to address issues raised by public comments. The application should be denied outright.

Under state law, a permit applicant is entitled to respond to material that is outside the scope of its application before the Illinois EPA may use such material as a basis to deny the application. This is protective of a permit applicant's right to due process and extends to issues raised by the public in comments that are accompanied by supporting factual information or reflect opinions of the commenter.

107. Carlton is a developer. It is in negotiation with a number of unknown companies to actually build and operate the proposed facility.

The air pollution control permit program does not have procedures for the Illinois EPA to examine the underlying ownership or financial resources of the person who apply for permits. The air pollution control permit program also does not prohibit developers from submitting applications for proposed facilities for which financing, equipment procurement, and other ownership or operating arrangements are not yet completed. In

this regard, developers are not treated any differently than companies with manufacturing plants, which may submit applications for proposed projects prior to detailed facility design, financing or a decision by corporate management whether and how a particular project will be pursued. For many projects, these actions are not initiated until an air pollution control construction permit is received for a proposed project.

108. I request that the Illinois EPA include a copy of all its filings in the Illinois Pollution Control Board's proceeding for Illinois' NOx Trading Program (R01-9) in the record for the Carlton application.

If there are specific portions of this rulemaking that a commenter believes are relevant to the Carlton application, he or she needs to provide a copy of such material with their comments. It is not appropriate for the Illinois EPA to copy and transfer voluminous rulemaking filings in their entirety as requested for a number of reasons. Not the least of these is that to do so would not identify the specific elements of these filings that the commenter believes are relevant.

Moreover, the Illinois EPA is certainly cognizant of its filings in this Board proceeding. As has already been explained and as will be explained more fully later, Illinois' development of a NO_x trading program for electrical generating units, which program would apply to the proposed facility, is not a basis to deny the application for the proposed facility, it also does not show that the proposed facility would interfere with attainment of the ozone air quality standard in the greater Chicago area.

Illinois Environmental Policy

109. As the Greater Chicago Area is a severe ozone nonattainment area, why are we allowing more emissions to contribute to air pollution?

The ozone nonattainment area is caused by many existing sources, all of which share to some degree the responsibility for the elevated levels of ozone. Accordingly, the measures that must be taken to control emissions must be determined through rulemaking, not through decisions on individual permits. The State of Illinois is working to develop state rules that, together with applicable federal rules, will be adequate to bring the Chicago area into attainment. Like other existing and proposed sources in the Greater Chicago area, Carlton is entitled to a permit if its application demonstrates that its proposed facility would comply with applicable regulations governing emissions. These regulations establish the legal requirements for sources, and include any additional requirements for control of emissions established to address a new source's contribution to air quality in the nonattainment area.

110. On ozone action days, the Illinois EPA asks the public not to even mow the grass. What does the plant have to do on ozone action days? Does it shut down or cutback?

The ozone action day program was established to encourage extra reductions in emissions of ozone precursors on days when the weather conditions are such that there is a potential for ground level ozone to reach levels that are unhealthy. In fact, the measures that are recommended on ozone action alert days are specifically targeted at reducing emissions of volatile organic material (VOM). This is why individuals are asked to put off filling automobile
gas tanks or mowing the lawn.

The VOM emissions from the proposed facility would not be able to be readily reduced without cutting back on electrical output from the plant. In this respect, the hot days when the potential for ozone is greatest often coincide with the days when the demand for electricity is greatest, due to increased use of electricity for air conditioning.

111. This type of facility would not be built in an area such as Wilmette or Kenilworth. Does the Illinois EPA only permit facilities in poorer communities, so that richer areas can stay pristine?

The Illinois EPA does not select the sites of the proposed power plants for which it administers environmental permitting programs. The sites of proposed power plants, like the sites for other types of proposed facilities, are selected by the person proposing the facility based on many factors and criteria. The role of the Illinois EPA is to review the plans for the proposed facility at the site that has been selected to determine whether compliance with environmental requirements is shown.

112. Could the turbines continue to operate and exceed the annual limits in the permit, in the event of some catastrophic event that results in an extended outage of an existing power plant?

As a practical matter, extended operation of the proposed facility would certainly be one option in the event of a catastrophic loss of power from other power plants. (An example of such an event might be severe storms do that massive damage to all the transmission lines bringing power to the Chicago area from coal-fired power plants located in downstate Illinois.) As a legal matter, a catastrophic loss of power from other power plants would not be sufficient to excuse the proposed facility from compliance the limitations in its permit. Further legal action would be needed to address the basis for and resulting impacts of such extended operation, to determine the appropriate consequences for such noncompliance. A critical consideration would be whether other base load and peaking facilities, which could operate in compliance, would to be able to adequately make up for the loss of power due to the catastrophe.

113. In the event of such a catastrophe, would the Illinois EPA allow the proposed facility to operate as a temporary source under the federal rules for Prevention of Significant Deterioration (PSD) 40 CFR 52.21?

It is unlikely that the Illinois EPA would allow the proposed facility to operate as a temporary source under the federal PSD rules, since the facility would still be operating at the site after conditions returned to normal. The provisions of the PSD rules for temporary sources were developed for sources that would only be at a particular site for at most a few years. These provisions also do not excuse a major source from obtaining a PSD permit, which permit must include appropriate provisions establishing Best Available Control Technology (BACT) for the source during the time that it would be at the site.

114. How would issuance of this permit prevent the deterioration of air quality?

Permitting is an inherent element of the air pollution control program. In general, permits are a means to verify that sources comply with applicable rules. They are also a means to place conditions on sources, which can define the permitted levels of operation and impose testing, monitoring and record keeping requirements to address continuing compliance with applicable rules. The permit for the Carlton facility fulfills these roles, and confirms that the application for the proposed facility shows compliance with applicable rules established to protect and improve air quality.

115. Why hasn't the Illinois EPA adopted criteria for the design, operation and maintenance of turbines as authorized by 35 IAC 201.164? When will this be done?

The Illinois EPA, Bureau of Air, has not adopted design criteria for any category of emission units. While 35 IAC 201.164 allows the Illinois EPA to adopt such criteria, development of criteria that would effectively address the wide range of emission units and circumstances present in Illinois to meaningfully reduce emissions would be extremely difficult. This is certainly the case for sophisticated units like gas turbines. In practice, it is most effective for the Illinois EPA to require the operators of turbines, working with the manufacturers of their units, to develop operation and maintenance procedures for their specific facilities.

116. How can the new power plants that are being considered for Illinois not violate standards and Illinois' plans to reduce emissions of NO_x? Over 50 new power plants are in some stage of development!

While attainment planning in Illinois for ozone has included some growth in electrical generation when projecting future emissions of NO_x, it is possible that this growth may be insufficient to accommodate all the new power plants now being developed, even with the low levels of NO_x that these new power plants will achieve. However, because one component of the demonstration is the establishment an overall budget or cap on seasonal emissions of NO_x from power plants, the operators of power plants will have to implement necessary measures that reduce NO_x from power plants, in total, to comply with the budget. This would most likely result in additional reductions in emissions of NO_x from existing coal-fired power plants as needed to make more room for the new power plants.

117. Is there a limit to the number of and emissions from new power plants that can be permitted?

The Illinois EPA does not have a set amount of stationary source emissions, which is predetermined, above which further permits will not be issued for any more sources. The concern in protecting air quality is that the concentration of contaminants in the ambient air, the outdoor air that we breathe, be maintained at a level that is healthy. In that regard, there is not an amount of emissions, expressed in pounds or tons, above which permits cannot be issued. Rather, even if other requirements were met, a permit for a particular project would be denied if its direct effect on ambient air quality as evaluated by modeling would be unhealthy. This is not the case for the proposed facility nor does it generally appear to be the case for natural gas fired power plants.

At the same time, when Illinois' new budget program for emissions of NO_x from power plants becomes effective, power plants will have to hold allowance for their actual seasonal emissions of NO_x, which will keep overall emissions from power plants within the budget. However, this will act to limit the actual emissions of NO_x from power plants, not the permitted emissions.

118. What is the Illinois EPA doing to promote reduction of demand for electricity? Does the Illinois EPA support energy efficiency standards for new air conditioners? Has it recommended that the legislature or the Governor encourage the federal DOE to enact such requirements? Where is the leadership on environmental issues from the Illinois EPA?

The Illinois EPA addresses energy efficiency and conservation as part of its pollution prevention efforts. In addition, the State of Illinois has a number of specific energy efficiency programs that are managed by the Department of Commerce and Community Affairs.

In Illinois, the responsibility for energy policy and management is shared by a number of bodies. These include the legislature and various executive agencies under the governor's office, including the Department of Natural Resources, the Commerce Commission, the Department of Commerce and Community Affairs and the Illinois EPA. While the Illinois EPA is generally supportive of energy conservation programs, it has a secondary role in guiding Illinois' energy policy,

119. The Illinois EPA should ask USEPA to terminate Illinois' so-called "NO_x waiver" for the greater Chicago area because it allows new peaking plants to be developed without using the best control measures available for emissions for NO_x.

Illinois' NO_x waiver does not interfere with promulgation of the measures that are needed for the greater Chicago area to comply with the ozone air quality standard, such as adoption of the NO_x emission budget program for new and existing electric power plants in accordance with USEPA's "NO_x SIP Call." Illinois' NO_x waiver also has implications for categories of source other than new peaking plants, including existing sources. Accordingly any action on the waiver should occur in a context that fully considers all the consequences of such action along with the implications for attainment of the ozone air quality standard in the greater Chicago area.

120. The NO_x waiver should be terminated because it is out-dated, as shown by USEPA's subsequent adoption of the NO_x SIP Call, which requires most of the states in the eastern United States, including Illinois, to adopt rules to reduce NO_x emissions and operate within a seasonal budget for NO_x emissions.

The purpose of USEPA's NO_x SIP call is to reduce emissions of NO_x as related to transport of ozone and ozone precursors across the eastern United States. In this regard, Chicago will benefit from reductions in NO_x

emissions in up-wind areas, including downstate Illinois, Indiana and Ohio. However, the development for the NO_x SIP call did not address the local effects of reductions in NO_x emissions in a particular nonattainment area on ozone air quality in that same nonattainment area, as was addressed during the development and approval of the NO_x waiver.

121. Does it take legislation for the Illinois EPA to reevaluate how it functions or how it looks at proposed facilities such as this one?

The Illinois EPA continuously enhances its permitting activities. If an issue is brought up on the application for a particular source, other personnel at the Illinois EPA are informed so that they can address that issue in subsequent applications for which that issue would also apply. However, it would take an act of the legislature to change certain basic functions of the Illinois EPA. For example, the Illinois EPA does not have the authority under state law to impose a moratorium on the issuance of construction permits to a particular class of sources.

122. What is the legal reason for the Illinois EPA to not impose a moratorium on peaker power plants?

The Illinois EPA is mandated by state law to act on permits within 180 days of receipt of an application. The Illinois EPA does not have the authority under state law to impose a moratorium blocking issuance of permits to a particular class of applicants, just as the Illinois EPA does not have the authority to impose an emission limit on a source for which there is not an underlying legal basis under state or federal law or regulation.

123. When will the Illinois EPA look into rulemaking or legislation to address new peaking power plants?

At the request of the Governor's Office, the Illinois Pollution Control Board recently held inquiry hearings on peaker power plants to determine if additional laws or regulations are needed. The Board is the body charged with adopting environmental regulation and standards for the state of Illinois. The Board held three hearings to receive public input. For more information on the Board's investigation, please refer to the Board's Website. [www.ipcb.state.il.us].

FOR ADDITIONAL INFORMATION

Questions about the public comment period and permit decision should be directed to:

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Signed: *signed* **Date:** *December 5, 2000*

William Seltzer, Hearing Officer