

217/782-2113

CONSTRUCTION PERMIT - PSD - REVISED

PERMITTEE

Elwood Energy LLC
Attention: Mr. Ronald D. Usher, General Manager
c/o Dominion Energy, Inc.
P.O. Box 26532
Richmond, VA 23261

Application No: 98060001
Applicants Designation: ELECGEN
Subject: Electric Generation Facility
Date Issued: October 17, 2000
Location: 21100 Noel Road, Elwood

I.D. No.: 197808AAG
Date Received: April 2, 1999

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of 14 gas turbines and ancillary operations, as described in the above referenced application and summarized in Attachment A. This Permit is granted based upon and subject to the findings and special conditions which follow:

In conjunction with this permit, approval is given with respect to the Prevention of Significant Deterioration of Air Quality Regulations (PSD) to construct the above referenced project, in that the Illinois Environmental Protection Agency (Agency) finds that the application fulfills all applicable requirements of 40 CFR 52.21. This approval is issued pursuant to the Clean Air Act, as amended, 42 U.S.C. 7401 et. seq., the Federal regulations promulgated thereunder at 40 CFR 52.21 for Prevention of Significant Deterioration of Air Quality (PSD), and a Delegation of Authority agreement between the United States Environmental Protection Agency and the Illinois EPA for the administration of the PSD Program. This approval becomes effective in accordance with the provisions of 40 CFR 124.15 and may be appealed in accordance with the provisions of 40 CFR 124.19. This approval is also based upon and subject to the following findings and conditions which follow:

Findings

1. Elwood Energy LLC (Peoples) has requested a permit for a electric generation facility that would include up to 10 "combined cycle" gas turbines equipped with heat recovery steam generators and 4 "simple cycle" gas turbines. The facility would normally be fired on natural gas and have the ability to generate up to about 3,100 MW of electricity.

2. The project would be located at Peoples existing synthetic natural gas plant in Jackson township in Will county. The area is currently designated nonattainment for ozone and attainment for all other criteria pollutants.
3.
 - i. The proposed project has the potential to emit major amounts of Nitrogen Oxides (NO_x), Carbon Monoxide (CO), and Particulate Matter (PM) shown in Attachment B. The project is therefore subject to PSD review for NO_x, CO, and PM.
 - ii. The proposed project is accompanied by decreases in Volatile Organic Material (VOM) emissions from the existing plant, so that there is not a net increase in VOM emissions with the new project, as outlined in Attachment C. Therefore, the project is not a major modification subject to nonattainment review for VOM. The project also is not subject to PSD review for VOM and conditions of this permit as they relate to emissions of VOM are not considered part of the PSD approval.
 - iii. The proposed project would emit Sulfur Dioxide (SO₂) in an amount that is not significant. Therefore, the project is not subject to PSD for SO₂ and conditions of this permit as they relate to emissions of SO₂ are not considered part of the PSD approval.
4. After reviewing the materials submitted by Peoples, the Illinois EPA has determined that the project will (i) comply with applicable Board emission standards (ii) comply with applicable federal emission standards and (iii) utilize Best Available Control Technology (BACT) on emissions of NO_x, CO, and PM.
5. The gas turbines are affected units under the Acid Rain Deposition Control Program pursuant to Title IV of the Clean Air Act and are subject to certain control requirements and emissions monitoring requirements pursuant to 40 CFR Parts 72, 73 and 75. As affected units under the Acid Rain Program, Peoples must also obtain an Acid Rain Permit before commencing operation.
6. The air quality analysis submitted by Peoples and reviewed by the Illinois EPA shows that the proposed project will not cause violations of the ambient air quality standard for NO_x, CO, and PM. The air quality analysis also shows compliance with the allowable NO_x and PM increment. There is no PSD increment established for CO.
7. The Illinois EPA has determined that the proposed project complies with all applicable Illinois Air Pollution Board Regulations and the federal Prevention of Significant Deterioration of Air Quality Regulations (PSD), 40 CFR 52.21.
8. A copy of the application and the Illinois EPA's formal review of the application and a draft of this revised permit were placed in a location in the vicinity of the project, and the public was given notice and an

opportunity to examine this material and to submit comments and to request a public hearing on this matter.

The Illinois EPA is issuing approval to construct the proposed project subject to the following special conditions and consistent with the specifications and data included in the application. Any departure from the conditions of this approval or terms expressed in the application would need to receive prior written authorization by Illinois EPA.

Conditions

1. Standard conditions for issuance of construction permits, attached hereto and incorporated herein by reference, shall apply to this project, unless superseded by the following special conditions.
- 2a.
 - i. The combined cycle turbines shall each be equipped, operated, and maintained with a selective catalytic reduction (SCR) system and low NO_x combustors to reduce emissions of NO_x.
 - ii. The emissions of NO_x from each combined cycle turbine shall not exceed 4.5 ppmv @ 15% O₂ on an hourly average, except during startup, malfunction or shutdown and firing of emergency fuel as addressed by Condition 6.
- b. The combined cycle turbines shall be maintained and operated with good combustion practice to reduce emissions of CO and PM.
- 3a.
 - i. The simple cycle turbines shall each be equipped, operated, and maintained with low NO_x combustors.
 - ii. The simple cycle turbines shall only be operated for electrical generation during peak demand periods. Combined operation of the turbine units shall not exceed more than 6,000 hours per year.
 - iii. The emissions of NO_x from each simple cycle turbine shall not exceed 0.061 lb/million Btu heat input on an hourly average except during startup or shutdown, and firing of emergency fuel, as addressed by Condition 6 (This limit is equivalent to a nominal NO_x emission rate of 15 ppmv @ 15% O₂).
- b. The simple cycle turbines shall be maintained and operated with good combustion practice to reduce emissions of CO and PM.
- 4a. The fuel heaters shall be equipped with low-NO_x burners designed to emit no more than 0.1 lb NO_x/million Btu heat input on an hourly average.
- b. The fuel heaters shall be maintained and operated with good combustion practice to reduce emissions of CO and PM.
- 5a. The cooling towers shall each be equipped, operated, and maintained with cellular type or comparable design drift eliminators to minimize loss of water droplets from the cooling tower.

- b. Good operating practices shall be followed for the cooling tower to minimize build up of solids in the cooling water. If cooling tower water blowdown is not treated for removal of solids prior to discharge, other than incidental removal accompanying treatment for other contaminants, operation pursuant to an NPDES permit shall constitute good operating practices, as the NPDES will indirectly address solids in cooling waters. If cooling tower water blowdown is treated for removal of solids (a change from the current plans for the facility), the Permittee shall apply for and obtain a revised PSD permit that contains a limit on the solids level in the blowdown water prior to treatment that constitutes BACT.
- 6a. The gas turbines shall be operated in a manner consistent with good air pollution control practice to minimize emissions of NO_x during startup, malfunction, and shutdown and during firing of emergency fuel including:
 - i. Operation in accordance with the manufactures written instructions or other written instructions developed by the Permittee;
 - ii. Review of operating parameters of a gas turbine during startup, malfunction, and breakdown, or shutdown as necessary to make adjustments to reduce or eliminate excess emissions.
 - iii. Operation of the SCR system, if present, as soon as and as long as turbine operating conditions are amenable to its effective use.
- b. Upon malfunction of the SCR system of a combined cycle gas turbine that will result in NO_x emissions in excess of 4.5 ppmv limit (Condition 2(a)(ii)):
 - i. The Permittee shall as soon as practicable repair the affected system or remove the gas turbine unit from service so that excess emissions cease.
 - ii. Consistent with the above, the Permittee shall begin shutdown of the gas turbine within 60 minutes, unless the malfunction is expected to be repaired in 90 minutes or such shutdown would threaten the stability of the regional electrical power system. In such case, shutdown of the gas turbine shall be undertaken when it is apparent that repair will not be accomplished within 90 minutes or shutdown would not endanger the regional power system. In no case shall shutdown of a gas turbine be delayed solely for the economic benefit of the Permittee.
- c.
 - i. The Permittee shall use good operating practices to minimize emissions during use of emergency fuel, including use of the SCR system on combined cycle turbines.
 - ii. If the Permittee demonstrates that it can comply with NO_x limitations of Condition 2 (a)(ii) or 3 (a)(ii), as appropriate, while burning a emergency fuel in a gas turbine, pursuant to

testing or monitoring in accordance with Conditions 13 or 14, such fuel shall no longer be considered a emergency fuel and limitations on usage of emergency fuel shall no longer apply to such fuel after the Permittee notifies the Illinois EPA that such fuel is no longer considered an emergency fuel.

Conditions 2, 3, 4, 5, and 6 represents the application of the Best Available Control Technology as required by Section 165 of the Clean Air Act.

- 7a. The gas turbines are subject to the New Source Performance Standard (NSPS) for Stationary Gas Turbines, 40 CFR 60, Subpart A and GG. The Illinois EPA is administrating NSPS in Illinois on behalf of the United States EPA under a delegation agreement.
 - b. The NO_x emissions from each gas turbine shall not exceed the limit established by the NSPS, pursuant to 40 CFR 60.332 (a)(1).
 - c. The emission from each gas turbine shall not contain SO₂ in excess of 0.015 percent by volume at 15 % O₂ and on a dry basis or the gas turbine shall not burn any fuel which contains sulfur in excess of 0.8 percent by weight, pursuant to 40 CFR 60.333 (a) and (b).
 - d. At all times, the Permittee shall maintain and operate the gas turbines in a manner consistent with good air pollution control practice for minimizing emissions, pursuant to the NSPS, 40 CFR 60.11(d).
8. The emission of smoke or other particulate matter from a gas turbine or fuel heater shall not have an opacity greater than 30 percent, pursuant to 35 IAC 212.123(a), except as allowed by 35 IAC 201.149, 212.123(b) or 212.124.
- 9a. The only fuels fired in the facility shall be natural gas, ethane or other gaseous fuels.
 - b. The simple cycle turbines shall only be operated for electrical generation during peak demand periods. For the purposes of this permit, this means operation when electrical demand from consumers is greatest (typically daylight and evening hours on hot summer days) and when other base load generating capacity is not sufficient for demand (typically due to scheduled unit outages for maintenance, unscheduled unit outages, and interruption in the power distribution systems. It also includes operation of a unit related to such operation for purposes of verifying unit availability. This mode of operation is distinguished from base load operation, in which a unit operates 24 hours per day, for days or weeks at a time, year around, with periodic outages for maintenance or repair.
 - c. i. Emergency fuels, i.e., fuels other than natural gas and other fuels identified pursuant to Condition 6(c), shall only be burned when insufficient natural gas is available or for the purposes of evaluating or verifying operation, or emissions testing.

- ii. Emergency fuels shall not be fired in each individual turbine more than 300 hours per calendar year.
 - iii. If emergency fuel is burned in a gas turbine for more than 100 hours per calendar year, the Permittee shall perform representative testing of emissions with such fuel in accordance with Condition 14, unless such testing is waived by the Illinois EPA.
- 10a. Emissions from each combined cycle turbine shall not exceed the limits in Table 1.
- b. Emissions from each simple cycle turbine shall not exceed the limits in Table 2.
 - c. Emissions of NO_x from the fuel heaters, in total, shall not exceed 1.55 lb/hr and 6.8 tons/yr.
 - d. Emissions of PM from the cooling towers, in total, shall not exceed 80.0 tons/yr.
- 11a. This permit is issued based on there not being a net increase in VOM emissions accompanying the new project so that it does not constitute a major modification subject to nonattainment NSR (35 IAC Part 203). This is because the existing plant's VOM emissions have decreased by an amount that is at least equal to the permitted VOM emissions of the new project.
- b.
 - i. VOM emissions from the existing plant shall not exceed the limits in Table 4. These limits reflect limitations proposed by the Permittee in the permit application to assure that this project is accompanied by a compensating decrease in actual emissions from the existing plant. These limits become effective upon initial startup of a new turbine. Compliance with these limits shall be determined using standard methodology to determine VOM emissions, e.g., USEPA emission factors for leaking components and USEPA equations for tanks, as may be further specified and elaborated upon in future federally enforceable permits for the source.
 - ii. These limits do not in any way alter the Permittee's obligation to obtain appropriate permits for changes to the existing plant related to further transition in the use of the plant, which permits will have to reflect compliance with applicable provisions of nonattainment NSR (35 IAC Part 203) and PSD (40 CFR 52.21). In particular, the Permittee shall apply for and obtain a Construction Permit prior to undertaking physical changes at the existing plant to resume operation of the two CRG process trains, which permits may specify procedures for determination of VOM emissions that reflect the actual usage being made of the CRG trains.

- 12a. Under this permit, each gas turbine may be operated for a period of up to 180 days from initial startup to allow for equipment shakedown and emissions testing as required. This period may be extended by the Illinois EPA upon request of the Permittee if additional time is needed to complete startup or perform emission testing.
- b. Upon successful completion of emission testing demonstrating compliance with applicable limitations, the Permittee may continue to operate the facility as allowed by Section 39.5 (5) of the Environmental Protection Act.

- 13a. Within 60 days after operating a gas turbine at the greatest load at which it will normally be operated but not later than 180 days after its initial startup, the Permittee shall perform emissions tests of gas turbines as follows. These tests shall be used as the initial compliance tests to demonstrate compliance with the limits and conditions set in this permit. Emissions shall be measured by an approved testing service during conditions which are representative of maximum emissions (full load) for NO_x, CO, PM, VOM, and opacity and also at the minimum load, and two intermediate load levels for NO_x.

- b. The following USEPA methods and procedures shall be used for testing of emissions, unless another USEPA method is approved or specified by the Illinois EPA. For each turbine, measurement of NO_x and SO₂ emissions shall be conducted and data collected in accordance with the test methods and procedures specified in 40 CFR 60.335.

Location of Sample Points	USEPA Method 1
Gas Flow and Velocity	USEPA Method 2
Flue Gas Weight	USEPA Method 3 or 3A
Moisture	USEPA Method 4
Particulate Matter	USEPA Method 5
Nitrogen Oxides	USEPA Method 20
Opacity	USEPA Method 9
Carbon Monoxide	USEPA Method 10
Volatile Organic Material	USEPA Method 18, or 25, 25A if outlet VOM concentration is < 50 ppmv as C Non CH ₄
PM10	USEPA Method 201 or 201A (40 CFR 51, Appendix M)

The Permittee may report all PM emissions measured by USEPA Method 5 as PM₁₀, including back half condensable particulate. If the Permittee reports USEPA Method 5 PM emissions as PM₁₀, testing using USEPA method 201 or 201A need not be performed.

- c. At least 60 days prior to the actual date of testing, a written test plan shall be submitted to the Illinois EPA for review. This plan shall describe the specific procedures for testing and shall include as a minimum:
 - i. The person(s) who will be performing sampling and analysis and their experience with similar tests.

- ii. The specific conditions under which testing shall be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which the operating parameters for the gas turbine will be tracked and recorded.
 - iii. The specific determinations of emissions that are intended to be made, including sampling and monitoring locations. As part of this plan, the Permittee may set forth a strategy for performing emission testing of selected turbines provided that all turbines are fitted for testing; the identity of the engines to be tested is determined immediately before testing, by the Illinois EPA or otherwise randomly; and continuous emission monitoring of NO_x is present on all turbines.
 - iv. The test method(s) which will be used, with the specific analysis method, if the method can be used with different analysis methods.
- d. The Illinois EPA shall be notified prior to these tests to enable it to observe these tests. Notification for the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with its ability to observe testing.
- e. Three copies of the Final Reports for these tests shall be forwarded to the Illinois EPA, Compliance Section in Springfield within 30 days after the test results are compiled and finalized, in advance of the operating permit application if necessary. The Final Report from testing shall contain a minimum:
- i. A summary of results;
 - ii. General information;
 - iii. Description of test method(s), including a description of sampling points, sampling train, analysis equipment, and test schedule;
 - iv. Detailed description of test conditions, including:
 - A. Fuel consumption (standard ft³) ;
 - B. Firing rate (million Btu/hr);
 - C. Turbine/Generator output rate (MW); and
 - D. Steam production and steam Turbine/Generator output (MW), if applicable.

- v. Data and calculations, including copies of all raw data sheets and records of laboratory analysis, sample calculations, and data on equipment calibration.
- f. Submittals and notification with respect to emissions testing shall also be made to the Illinois EPA at the following address in addition to the addresses specified in Condition 21(a):
 - Illinois Environmental Protection Agency
 - Emission Monitoring and Testing Unit
 - P. O. Box 19276
 - Springfield, IL 62794-9276
- 14a. The Permittee shall install, operate, and maintain a Continuous Emissions Monitoring (CEM) system to measure emissions of NO_x from each gas turbine to demonstrate compliance with the limitations of this permit.
- b.
 - i. The procedures under 40 CFR 60.13 and 75.12 shall be followed for the installation, evaluation, and operation these CEM systems.
 - ii. At least 30 days prior to initial startup of a gas turbine, the Permittee shall submit to the Agency for review and comments a detailed plan describing the configuration and operation of the NO_x CEM system(s). The plan shall also state whether the Permittee is installing a SO₂ CEM system (40 CFR 75.11) rather than sulfur analysis and flow monitoring equipment in accordance with 40 CFR 75.11(e).
- c. These CEMs shall be operational and collecting data in accordance with the provisions of the Acid Rain Program.
- 15. The Permittee shall sample and analyze for sulfur and nitrogen content of the fuels being fired in the gas turbines in accordance with 40 CFR 60.334(b) unless the Permittee has a custom schedule approved by the Illinois EPA, for the determination of these values based on the design and operation of the source and the characteristics of the fuel supply, this sampling and analysis shall occur on a monthly basis for natural gas and daily for other fuels fired.
- 16. The Permittee shall install, operate, and maintain monitors on each gas turbine to measure and record fuel consumption and maintain records for each period when a fuel other than natural gas was fired.
- 17a. The Permittee shall maintain a file of the following items:
 - i. The heat content each of the fuel fired in the gas turbines (Btu/standard ft³);
 - ii. The sulfur and nitrogen content of each fuel;
- b. The Permittee shall maintain the following daily records

- i. The quantity and type of fuel consumed for each gas turbine (standard ft³);
 - ii. Steam production for all HRSG units;
 - iii. Operating hours for each simple cycle turbine.
- c. The Permittee shall keep inspection, maintenance, and repair logs with dates and nature of such activities for the following:
- i. Each combined cycle turbine;
 - ii. Each SCR system;
 - iii. The SCR reagent storage system;
 - iv. Each simple cycle turbine;
 - v. Each fuel heater;
 - vi. Cooling tower drift eliminators;
- d. The Permittee shall maintain records related to use of emergency fuel as follows:
- i. Operating hours for each turbine with emergency fuel;
 - ii. Reason for use of emergency fuel;
- e. The Permittee shall maintain the following records related to startup, malfunction and breakdown, and shutdown of each gas turbine:
- i. The time and date of startup, malfunction or breakdown and shutdown of a gas turbine, and confirmation that standard practices were followed;
 - ii. Each incident when operation of a gas turbine continued during malfunction or breakdown with excess emissions, including the following information:
 - A. Date and duration of malfunction or breakdown;
 - B. A description of the malfunction or breakdown;
 - C. The reason continued operation was necessary, including supporting documentation;
 - D. The corrective actions used to reduce the quantity of emissions and the duration of the incident;

- f. The Permittee shall keep the following records with regards to emissions:
 - i. NO_x emissions from each gas turbine recorded hourly, quarterly, and annual (in lb/mmBtu) by combining the NO_x concentration (in ppm) and diluent concentration (in percent O₂ or CO₂) measurements according to the procedures in 40 CFR 75 Appendix F;
 - ii. Monthly emissions of NO_x, CO, SO₂, VOM, and PM from each gas turbine and fuel heater (ton/month). NO_x emissions shall be based on data from the CEM. All other emissions shall be calculated based on fuel consumption data and emission test data;
 - iii. Annual plant emissions of NO_x, CO, SO₂, VOM, and PM, based on monthly emission totals;
- g. The Permittee shall maintain the following records for the existing plant, unless superseded by applicable provisions of a construction permit for new or modified units in the existing plant.
 - i. Record of the following information, which shall be kept current.
 - A. Maximum hourly emissions from each process vent, or group of process vents, with supporting documentation and calculations.
 - B. Maximum hourly emissions from process units during each type of purge event, with supporting documentation and calculations.
 - C. A description for each storage tank, including size, dimension, type of roof and seals, type and number of fittings and other tank parameters necessary to calculate VOM emissions by USEPA Procedures, e.g., Tanks III.
 - D. Identity, vapor pressure and molecular weight of Volatile Organic Liquid (VOL) stored at the plant.
 - E. Number of components with potential VOM emission leaks, by type of component and service.
 - ii. Records of the following information, which shall be kept at least monthly.
 - A. Throughput of VOL, by type, for each storage tank.
 - B. Molecular weight and vapor pressure for the material processed by the condensate strippers.
 - C. Operating hours for each process vent or group of related process vents.

- D. Usage of fuel, by type, for each category of fuel combustion unit.
 - E. Results of the leak detection and repair program for components, e.g., number of leaking components identified, by type.
 - F. Number of purges of process units, by unit and type of purge.
- iii. Records of monthly VOM emissions from the existing plant, with supporting calculations, which shall be kept at least quarterly.
- A. Condensate strippers
 - B. Process vents (other than condensate strippers)
 - C. Storage tanks
 - D. Fuel combustion units
 - E. Leaking components and flare
 - F. Total VOM emissions
18. All records required by this permit shall be retained on site for a period of at least 3 years and shall be made available for inspection and copying by the Illinois EPA upon request.
- 19a. i. A. For each gas turbine, the Permittee shall fulfill applicable notification requirements of the NSPS, 40 CFR 60.7(a), including notifications for date of commencement of construction, anticipated date of initial startup and actual date of initial startup.
- B. With the notification of commencement of construction, the Permittee shall describe the actions that were and will be taken that constitute commencement of construction.
- ii. The Permittee shall submit semi-annual progress reports to the Illinois EPA while construction is underway, which reports shall describe for each turbine for which construction has been commenced, the accomplishments in the previous six months and the schedule of activities for the next six months.
- iii. The Permittee shall promptly notify the Illinois EPA if construction of a particular gas turbine, once commenced, is discontinued or interrupted for a period of 18 months.
- b. In the event of continued operation of a gas turbine with excess NO_x emissions during a malfunction of the SCR system, is expected to occur for more than 90 minutes, as addressed by Condition 6(b) the Permittee

shall promptly notify the Illinois EPA's regional office of the malfunction and the reason for continued operation.

- c. If the emergency fuel is used in a gas turbine for more than 100 hours in a calendar year, the Permittee shall notify the Illinois EPA within 30 days
 - d. The Permittee shall provide the Illinois EPA with notice at least 30 days prior to initiating treatment, other than incidental treatment, of discharged cooling tower water for removal of solids. This notice shall include a description of the treatment process, the reason for its implementation, and the expected effect on the solids content of cooling tower water.
- 20a. If there is an exceedance of the requirements of Condition 2 through 11 of this permit, the Permittee shall submit a report to the Illinois EPA's Compliance Section in Springfield, Illinois within 30 days after the exceedance. The report shall include a description of the exceedance, a copy of relevant records, and a description of the exceedance or violation and efforts to reduce emissions and future occurrences.
- b. In conjunction with the Annual Emission Report required by 35 IAC Part 254, the Permittee shall provide:
 - i. The hours of operation for each simple cycle gas turbine;
 - ii. The hours of operation with emergency fuel for each gas turbine;
 - c. The Permittee shall comply with applicable reporting requirements under the Acid Rain Program, with a single copy of such report sent to Illinois EPA, Division of Air Pollution Control, Compliance Section.
- 21a. Any required reports and notifications concerning equipment operation, emissions testing, or a monitoring system shall be sent to the Agency at the following address unless otherwise indicated:

Illinois Environmental Protection Agency (40-CASM)
Division of Air Pollution Control, Compliance Section
P.O. Box 19276
Springfield, Illinois 62794-9276
Telephone: 217/782-5811 Fax: 217/782-6348

- b. A copy of all reports and notifications, as required above, except the Annual Emission Report required by 35 Ill. Adm. Code 254, shall also be sent to the Agency at the following address:

Illinois Environmental Protection Agency
Division of Air Pollution Control
9511 West Harrison
Des Plaines, Illinois 60016
Telephone: 847/294-4000

22a. This permit shall become invalid as follows, pursuant to 40 CFR 52.21 (r)(2). This condition supersedes Standard Condition 1.

i. This Permit shall become invalid as applied to a particular simple cycle gas turbine and its associated facilities if construction of such turbine is not commenced by June 21, 2000 (within 18 months after this Permit initially became effective), if construction of such turbine is discontinued for a period of 18 months or more, or if construction of such turbine is not completed within a reasonable period of time.

ii. This Permit shall become invalid as applied to a particular combined cycle gas turbine 1, 2, 3, or 4 and its associated facilities if construction of such turbine is not commenced by February 28, 2001, if construction of such turbine is discontinued for a period of 18 months or more, or if construction of such turbine is not completed within a reasonable period of time.

iii. This Permit shall become invalid as applied to a particular combined cycle gas turbine 5, 6, 7, 8, 9, or 10 and its associated facilities if construction of such turbine is not commenced by February 28, 2002, if construction of such turbine is discontinued for a period of 18 months or more, or if construction of such turbine is not completed within a reasonable period of time.

b. For purposes of the above provisions, the definitions of "construction" and "commence" at 40 CFR 52.21 (b)(8) and (9) shall apply, which require that a source must enter into a binding agreement for on-site construction or begin actual on-site construction. (Also see the definition of "begin actual construction," 40 CFR 52.21 (b)(11))

23. This Permit for the above referenced project does not relieve the Permittee of the responsibility to comply with all Local, State and Federal Regulations which are part of the applicable Illinois State Implementation Plan, as well as all other applicable Federal, State, and Local requirements.

It should be noted that this permit has been revised to adjust the SO₂ emissions limits for combined and simple cycle units to accommodate variation in the sulfur content of fuel without any change in total allowed emissions from the project and to show no net increase in VOM emissions from the source due to the contemporaneous decrease in existing plant emissions.

If you have any questions concerning this permit, please contact Christopher Romaine at 217/782-2113.

Original signed by Donald E. Sutton

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:CPR

CC: Region 1
George Rieger, Elwood Energy LLC

Attachment A

Significant Emission Units

<u>Unit ID</u>	<u>Description</u>	<u>Number</u>	<u>Rated Heat Input¹ (mmBtu/hr)</u>	<u>Rated Electrical Output¹ (MWe)</u>	<u>Control</u>
CCCT 1 - 10	Combined cycle gas turbine	10	1,763	250 ²	Selective catalytic reduction and Low NO _x combustors
SCCT 1 - 4	Simple cycle gas turbine	4	1,763	170	Low NO _x combustors
	Fuel Heaters	14	3	--	Low NO _x burners
	Cooling towers	5	--	--	Drift eliminators

1. Ratings are per unit.

2. Includes output from steam electric generator turbine.

Attachment B

Project Emissions (ton/yr)

<u>Pollutant</u>	<u>Potential Emissions</u>
CO	2,259.0
NO _x	1,572.5
PM/PM ₁₀	923.4
SO ₂	35.88
VOM	57.7

Project emissions reflect the sum of the allowed emissions of individual emission units as addressed by Tables 1, 2 and 3.

Attachment C

Change in VOM Emissions (ton/yr)

<u>Pollutant</u>	<u>Current Actual</u>	<u>Source Decreases</u>	<u>Project Increase</u>	<u>Net Change</u>
VOM	91.6	-57.7	57.7	0

Current actual emissions are based on the average emissions data for 1993 and 1994 for the existing plant. This source has been in a transition period since 1994.

Elwood Energy LLC

Table 1

Emission Limits for Combined Cycle Turbines

<u>Pollutant</u>	<u>lb/mmBtu¹</u>	<u>lb/hr²</u>	<u>ton/mo</u>	<u>ton/yr</u>
NO _x	0.0184	32.4	12.1	127.5 ³
CO	0.031	54	20.1	210.24 ³
PM/PM ₁₀	0.0102	18	6.7	78.84
VOM	0.00068	1.2	0.45	5.3
SO ₂	0.00062	1.1	0.41	3.25 ⁴

Emission limits are per unit

1. Limit set based on vendor/manufacture data and information provided in the permit application
2. Limit set based on modeling data and information provided in the permit application
3. Limit set based on information provided in the permit application that considers average hourly emissions from the turbine during the course of a year. In particular, the turbines have lower capacity during warmer weather (higher air temperature) with accompanying lower NO_x and CO emission rates.
4. Limit set considering average sulfur content of fuel during the course of a year. In particular, the average sulfur content of fuel over the course of a year is expected to be less than that underlying the short-term emission limits, which reflects the default SO₂ emission rate set by USEPA for the federal Acid Rain program (refer to 40 CFR Part 75, Appendix D, Section 2.3.2)

Table 2

Emission Limits for Simple Cycle Turbines

<u>Pollutant</u>	<u>lb/mmBtu¹</u>	<u>lb/hr²</u>	<u>ton/mo</u>	<u>ton/yr³</u>
NO _x	0.061	108.0	40.2	72.7 ⁴
CO	0.031	54.4	20.24	35.7 ⁴
PM/PM ₁₀	0.0102	18.02	6.7	13.52
VOM	0.00068	1.2	0.45	0.90
SO ₂	0.00062 ⁵	1.1 ⁵	0.413	0.825

Emission limits are per unit

1. Limit set based on vendor/manufacture data and information provided in the permit application
2. Limit set based on modeling data and information provided in the permit application
3. Limit set based on 1,500 operating hours per year
4. Limit set based on information provided in the application concerning average emissions of a turbine. In particular, the turbines have lower

capacity when operated during warmer weather (higher inlet air temperatures) with accompanying lower NO_x and CO emission rates.

5. This limit does not apply if a fuel other than natural gas is burned in a turbine as allowed by Condition 6(c), under which circumstances SO₂ emissions shall not exceed 0.0046 lb/mmBtu and 8.1 lb/hr.

Table 3

Emission Limits for New Project (ton/yr)

<u>Unit</u>	<u>NO_x</u> <u>(ton/yr)</u>	<u>CO</u> <u>(ton/yr)</u>	<u>PM</u> <u>(ton/yr)</u>	<u>VOM</u> <u>(ton/yr)</u>	<u>SO₂</u> <u>(ton/yr)</u>
Combined cycle turbines	1275.0	2102.4	788.4	52.6	32.5
Simple cycle turbines	290.7	142.8	54.1	3.6	3.3
Gas fired heaters	6.8	13.8	0.9	1.5	0.08
Cooling towers	--	--	<u>80.0</u>	--	--
Totals:	1572.5	2259	923.4	57.7	35.88

Table 4

VOM Emission Limits for the Existing Plant

<u>Emission Unit</u>	<u>ton/month</u>	<u>ton/year</u>
Process vents	--	0.6
Storage tanks	--	5.0
Component leaks ("fugitive sources") and flare	--	5.4
Existing fuel combustion units	--	3.6
Process condensate strippers	2.8	<u>19.3</u>
Total:		33.9