217/785-1705

CONSTRUCTION PERMIT -- REVISED
NSPS and NESHAP SOURCE

PERMITTEE

Board of Trustees of Eastern Illinois University
Attn: Chad T. Weber, Facilities Planning and Management
600 Lincoln Avenue
Charleston, Illinois 61920

Application No.: 09070002 I.D. No.: 029010AAK
Applicant's Designation: Date Received: October 3, 2012
Subject: Renewable Energy Center
Date Issued: April 11, 2014
Location: 600 Lincoln Avenue, Charleston, Coles County

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of Renewable Energy Center including two biomass gasifier-boiler systems each controlled by multi-tube cyclone and a common electrostatic precipitator (ESP) control (affected gasifier-boiler units), two natural gas/oil fired backup boilers (affected standby boilers), biomass storage and handling system controlled by baghouse (affected units) and ancillary equipment, as described in the above referenced application. This Permit is subject to standard conditions attached hereto and the following special conditions:

1.0 General Provisions

1.1 Description

This permit is for a construction of a new Renewable Energy Center (REC), which will replace existing steam plant for heating and cooling campus building at Eastern Illinois University (EIU). The new facility will have two biomass gasifier-boiler systems. These systems will be designed to use virgin wood chip biomass fuel. The gasifiers will also be capable of using other biomass such as switchgrass, miscanthus, wheat straws, corn stover (leaves, stalks, and cobs), dried grain pellets, and other agri-fuels. Other emission units at the new facility would include two natural gas/oil fired backup boilers, and biomass storage and handling system.

1.2 Applicability of Prevention of Significant Deterioration (PSD)

a. This permit is issued based on this project not constituting a major modification subject to 40 CFR 52.21, Prevention of Significant Deterioration (PSD). The Permittee has addressed the applicability of PSD demonstrating that this project will

not result in a significant increase in emissions of PSD pollutants, subject to the limitations and requirements in this permit. For emissions of nitrogen oxides (NO_x), this is because the project will be accompanied by decreases in emissions from the existing steam plant, which will be replaced by the Renewable Energy Center (See Attachment 1). For other pollutants, the permit does not rely on accompanying decreases in emission from the shutdown of the existing steam plant, as the emissions of the new facility are not projected to be significant.

b. Following the shakedown of the new Renewable Energy Center, the Permittee shall permanently cease operation of the boilers in its existing steam plant. If the shakedown of the REC takes longer than 180 days, the Permittee shall coordinate operation of the steam plant and REC so that combined annual emissions of NO_x do not exceed 97.3 tons, total.

1.3 Emissions Limits for the Proposed Facility

a. Emissions of the proposed facility shall not exceed the following limits. For this purpose, the limits for emissions PM_{10} and $PM_{2.5}$ and other limits for emissions of PM_{10} and $PM_{2.5}$ set by this permit only address emissions of filterable particulate matter.

NO_x	CO	VOM	PM/PM_{10}	$PM_{2.5}$	SO_2
97.3	78.3	4.8	9.8	7.2	26.3

b. This permit is issued based on this project not being a major project for emissions of hazardous air pollutants (HAPs), i.e., the emissions of individual HAPs will each be less than 10 tons per year and the total emissions of HAPs will be less than 25 tons per year. As a result, the provisions of 40 CFR 63 Subpart B and Section 112(g) of the Clean Air Act do not apply to this project.

1.4 Compliance with Annual Limits

Unless otherwise specified in a particular provision, compliance with annual limitations established by this permit shall be determined from a running total of 12 months of data, i.e., from the sum of the data for the current month plus the preceding 11 months (12 month total).

1.5 Good Air Pollution Control Practices

The Permittee shall operate and maintain the emission units at the affected plant, including associated air pollution control equipment, in a manner consistent with good air pollution control practice, as follows:

a. At all times, including periods of startup, shutdown, malfunction or breakdown, operate as practicable to minimize emissions.

b. Conduct routine inspections and perform appropriate maintenance and repairs to facilitate proper functioning of equipment and minimize or prevent malfunctions and breakdowns.

c. Install, calibrate and maintain required monitoring devices and instrumentation in accordance with good monitoring practices, following the manufacturer's recommended operating and maintenance procedures or such other procedures as otherwise necessary to assure reliable operation of such devices.

1.6 Initial Notification Requirements

The Permittee shall furnish the Illinois EPA with written notification as follows with respect to commencement of construction and operation of the affected gasifier-boiler units and the affected standby boilers:

a. The date construction of each affected combustion unit commenced postmarked no later than 30 days after such date, pursuant to 40 CFR 60.7(a)(1).

b. The actual date of initial startup of each affected combustion unit, postmarked within 15 days after such date, pursuant to 40 CFR 60.7(a)(3) and 60.48c(a), which shall be accompanied by the following information:

i. The design heat input capacity of the affected unit and identification of the fuels to be combusted in the unit, pursuant to 40 CFR 60.48c(a)(1).

ii. The annual capacity factor at which the Permittee anticipates operating the affected unit based on fuel fired, pursuant to 40 CFR 60.48c(a)(3).

1.7 Records Retention Requirement

All records required by this permit shall be retained on site for a period of at least five years and shall be readily available for inspection and copying by the Illinois EPA upon request. Any record retained in an electronic format (e.g., computer) shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Illinois EPA request for records during the course of a source inspection.

1.8 Two copies of all required notifications shall be sent to:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

Telephone: 217/782-5811 Fax: 217/782-6348

and one copy of all required notifications shall be sent to the Illinois EPA's regional office at the following address, unless otherwise indicated:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Regional Field Office
2009 Mall Street
Collinsville, Illinois 62234

Telephone: 618/346-5120 Fax: 618/346-5155

1.9 Authorization for Operation

a. Under this permit, the affected gasifier-boiler units may be operated for a period that ends 180 days after the units first fired solid fuel to allow for equipment shakedown and required emissions testing. This period may be extended by the Illinois EPA upon request of the Permittee if additional time is needed to complete shakedown or perform emission testing.

b. Upon successful completion of emission testing of the affected gasifier-boiler units, the Permittee may continue to operate the units and other affected units addressed by this construction permit until action is taken to address the units in a revision to or renewal of an operating permit for the source.

c. This condition supersedes Standard Condition 6.

2.0 Biomass Gasifier-Boilers

2.1 Description

The two gasifier-boiler systems (affected gasifier-boiler units) are the principal subject of this permit. The first part of the system, the gasifier, will process biomass fuel or feedstock to produce a hot fuel gas. This fuel gas will be mixed with additional air and combustion will be carried to completion in a separate combustion chamber. The hot combustion gases will pass to a boiler in which the thermal energy of the hot gases will be recovered as steam. The capacity of the two units, which have been designated B-3 and B-4 by the source, are similar, at 57.3 and 54.2 mmBtu/hour, respectively.

Particulate emissions from each affected gasifier-boiler unit will be controlled by multi-tube cyclones followed by a common electrostatic precipitator (ESP) control.

2.2-1 Applicable Federal New Source Performance Standard (NSPS)

a. Each affected gasifier-boiler unit is an affected facility under the federal New Source Performance Standard (NSPS) for Small Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60, Subpart Dc. As an affected facility, the Permittee must comply with applicable requirements of the NSPS, 40 CFR 60 Subpart Dc, and related requirements of 40 CFR 60, Subpart A, General Provisions, for the boiler. The Illinois EPA is administering NSPS in Illinois on behalf of the United States EPA under a delegation agreement.

b. Pursuant to the NSPS, 40 CFR 60.43c(c), opacity from each affected gasifier-boiler unit shall not exceed 20 percent, as measured on a six minute average, except for one six minute period per hour of not more than 27 percent. As provided by 40 CFR 60.43c(d), this limit applies at all times except during periods of startup, shutdown, or malfunction, as defined at 40 CFR 60.2. However, exceedances during such periods shall be reported as deviations.

c. Pursuant to the NSPS, 40 CFR 60.43c(e), the Permittee shall not cause or allow emissions of PM from each affected gasifier-boiler unit in excess of 0.030 lb/mmBtu heat input.

d. Pursuant to the NSPS, 40 CFR 60.11(d), at all times the Permittee shall, to the extent practicable, maintain and operate the affected gasifier-boiler units in a manner consistent with good air pollution control practices for minimizing emissions.

2.2-2 Applicable State Emission Standards

a. Pursuant to 35 IAC, Chapter B, Subchapter c, emissions from each affected gasifier-boiler unit shall not exceed the following standards, which apply on an hourly basis:

Pollutant	Standard	Limit
PM	35 IAC 212.204	0.1 lb/mmBtu
SO_2	35 IAC 214.122(a)	1.8 lb/mmBtu
CO	35 IAC 216.121	200 ppm, @ 50% excess air

b. Pursuant to 35 IAC 212.123(a), the opacity of the exhaust from each affected gasifier-boiler unit shall not exceed 30 percent, except as provided in 35 IAC 212.123(b).

c. Subject to the following terms and conditions, the Permittee is authorized to continue operation of the affected gasifier-boiler

units in violation of the applicable state emission standards in Conditions 2.2-2(a) and (b) during startup, pursuant to 35 IAC 201.149, 201.161 and 201.262.

i. The Permittee shall conduct startup of the affected gasifier-boiler units in accordance with the manufacturer's written instructions or other written instructions prepared by the Permittee and maintained on site that are specifically developed to minimize excess emissions from startups and that include, at a minimum, the following measures:

A. Review of the operational condition of the affected gasifier-boiler units prior to initiating startup of the affected gasifier-boiler units.

B. Manage the load of the affected gasifier-boiler units until all control systems are functioning normally.

C. Review of the operational parameters of the affected gasifier-boiler units during each startup as necessary to make appropriate adjustments to the startup to reduce or eliminate excess emissions.

ii. The Permittee shall fulfill applicable recordkeeping requirements of Condition 2.8(e).

iii. Exceedances of applicable emissions standards or limitations during periods of startup shall be considered deviations for purposes of notification and reporting, even if exceedance of the standard or limitation is otherwise provided for by applicable rule or this permit.

iv. As provided by 35 IAC 201.265, an authorization in a permit for excess emissions during startup does not shield a Permittee from enforcement for any violation of applicable emission standard(s) that occurs during startup and only constitutes a prima facie defense to such an enforcement action provided that the Permittee has fully complied with all terms and conditions connected with such authorization.

Note: These provisions are subject to review and revision when an operating permit for the source is revised to address the affected gasifier-boiler units and each time the operating Permit is subsequently renewed.

d. Subject to the following terms and conditions, the Permittee is authorized to continue operation of the affected gasifier-boiler units in violation of the applicable state emission standards in Conditions 2.2-2(a) and (b) in the event of a malfunction or breakdown, pursuant to 35 IAC 201.149, 201.161 and 201.262.

i. This authorization only allows such continued operation as necessary to provide essential service or to prevent injury to personnel or severe damage to equipment and does not extend to continued operation solely for the economic benefit of the Permittee.

ii. Upon occurrence of excess emissions due to malfunction or breakdown, the Permittee shall as soon as practicable reduce load of the affected gasifier-boiler unit(s), repair the affected gasifier-boiler unit(s), remove the affected gasifier-boiler unit(s) from service or undertake other action so that excess emissions cease.

iii. The Permittee shall fulfill applicable recordkeeping and reporting requirements of Conditions 2.8(f) and 2.9-1(d). For these purposes, time shall be measured from the start of a particular incident. The absence of excess emissions for a short period shall not be considered to end the incident if excess emissions resume. In such circumstances, the incident shall be considered to continue until corrective actions are taken so that excess emissions cease or the Permittee takes the affected gasifier-boiler unit out of service.

iv. Following notification to the Illinois EPA of a malfunction or breakdown with excess emissions, the Permittee shall comply with all reasonable directives of the Illinois EPA with respect to such incident, pursuant to 35 IAC 201.263.

v. Exceedances of applicable emissions standards or limitations during the event of malfunction or breakdown shall be considered deviations for purposes of notification and reporting, even if exceedance of the standard or limitation is otherwise provided for by applicable rule or this permit.

vi. This authorization does not relieve the Permittee from the continuing obligation to minimize excess emissions during malfunction or breakdown. As provided by 35 IAC 201.265, an authorization in a permit for continued operation with excess emissions during malfunction or breakdown does not shield the Permittee from enforcement for any such violation and only constitutes a prima facie defense to such an enforcement action provided that the Permittee has fully complied with all terms and conditions connected with such authorization.

Note: These provisions are subject to review and revision when an operating permit for the source is revised to

address the affected gasifier-boiler units and each time the operating Permit is subsequently renewed.

2.2-3 Applicable Federal National Emission Standards for Hazardous Air Pollutant (NESHAP)

This permit is issued based on the affected gasifier-boiler units subject to standards or requirements pursuant to 40 CFR 63 Subpart JJJJJJ, commonly known as the Area Source Boiler NESHAP. Pursuant to 40 CFR 63.11194(b), the affected source consisting of the affected gasifier-boiler units is an existing source as construction of each affected gasifier-boiler unit begun before June 4, 2010. The Permittee shall comply with the applicable requirements of this Area Source Boiler NESHAP for the gasifier boilers.

2.3 Requirements for the Fuel Supply to the Affected Gasifier-Boiler Units

a. Biomass fuels shall be the only solid fuels fired in the affected gasifier-boiler units. For this purpose, biomass means virgin wood/bark chips from forestry, lumber production and tree trimming operations, and other biomass such as switchgrass, miscanthus, wheat straws, corn stover (leaves, stalks, and cobs), dried grain pellets, and other agri-fuels, which may be fired in the affected gasifier-boiler units following notice to the Illinois EPA. Biomass fuels do not include waste, e.g., vegetative material that has been discarded.

b. This Permit does not authorize acceptance of fuel by the Permittee that would qualify as acceptance of waste under the provisions of the Environmental Protection Act or acceptance of hazardous waste under the provisions of the Federal Resource Conservation, the Recovery Act, Environmental Protection Act, or 35 IAC Part 721.

c. This Permit does not authorize processing of fuel feedstocks at the plant to produce fuel, e.g., processing of mixed construction and demolition debris to select clean wood. This does not prohibit final preparation of fuel for use as typically occurs with use of solid fuel, e.g., by final size adjustment and additional magnetic screening for tramp metal in the fuel.

d. The Permittee shall only accept shipments of biomass in which the biomass is clean, that is, the biomass as unloaded at the plant is free of foreign matter and any contaminants that would adversely impact the environment when the Permittee uses the biomass as fuel.

e. The Permittee shall carry out the acceptance of biomass in a manner that ensures that accepted biomass satisfies all applicable criteria for such material.

f. The Permittee shall implement appropriate practices given the nature of particular biomass materials to store and otherwise manage accepted biomass so that it does not degrade or is otherwise damaged such that it can no longer be used as fuel.

2.4 Operational Limitations

a. The nominal rated heat input capacity of affected gasifier-boiler units B-3 and B-4 shall not exceed 57.3 and 54.2 mmBtu/hour, respectively, on a higher heating value basis.

b. The usage of biomass fuel by the affected gasifier-boiler units shall not exceed 58,500 tons per year, total.

c. i. After the shakedown period for this project is complete, as addressed by Condition 1.9(a), the operation of the affected gasifier-boiler units in "unit operating hours" on an annual basis (rolling 12 months of operation) shall not exceed the following limits, whichever is more stringent:

A. 9,550

B. 10,865 – 0.35 x "unit operating hours" of the affected standby boilers

ii. As an alternative to Condition 2.4(c)(i), the Permittee may install, operate and maintain a continuous emissions monitoring system (CEMS) for the NO_x and CO emissions of the affected gasifier-boiler units in accordance with Condition 2.7-1(b)(i) or (ii). For this purpose, this alternative shall take effect on the first day of the month following notification from the Permittee that it has elected to conduct and will be beginning such monitoring, on which day such monitoring shall be required. If the Permittee elects to no longer rely on this alternative, the limits in Condition 2.4(c)(i) shall become effective on the first day of the month following notification from the Permittee of this decision, on which day such monitoring shall no longer be required. While the Permittee is required to conduct monitoring in accordance with this alternative, compliance with the NO_x and CO emission limits in Condition 2.5(a) shall be determined on a 24-hour average (daily basis).

iii. As an alternative to Condition 2.4(c)(i), the Permittee may install, operate and maintain continuous operational monitoring systems on the affected gasifier-boiler units in accordance with Condition 2.7-2 to collect data that is used to determine emissions of the units on an hour-by-hour basis. If the Permittee elects to no longer rely on this alternative, the limits in Condition 2.4(c)(i) shall

become effective on the first day of the month following notification from the Permittee of this decision, on which day such monitoring shall no longer be required.

d. Only one affected standby boiler shall be operated if one or both of the affected gasifier-boiler units are being operated. For this purpose, a unit shall not be considered to be operating if shutdown of the unit is underway.

2.5 Emission Limits

a. i. Short-term emissions from each affected gasifier-boiler unit shall not exceed the following limits. These limits shall apply as 3-hour block averages except as provided by Condition 2.4(c)(ii).

Pollutant	Limits (lbs/hr)	
	Unit B-3	Unit B-4
NO_x	18.3	17.3
CO[a]	12.9	12.2
SO_2	5.7	5.4
PM/PM_{10}[a]	1.7	1.6
$PM_{2.5}$[a]	1.5	1.4
VOM[a]	1.0	0.9

[a] These limits do not apply during startup, shutdown and malfunction/breakdown.

ii. If the Permittee is conducting operational monitoring for the affected gasifier-boiler units (see Conditions 2.4(c)(iii) and 2.7-1(b)(ii)), short-term emissions from each affected gasifier-boiler unit shall also not exceed the following limits. These limits shall apply as 3-hour block averages.

Pollutant	Limits (lbs/mmBtu)	
	Unit B-3	Unit B-4
NO_X	0.320	0.320
CO[a]	0.225	0.225
SO_2	0.100	0.100
PM/PM_{10}[a]	0.030	0.030
$PM_{2.5}$[a]	0.026	0.026
VOM[a]	0.017	0.017

[a] These limits do not apply during startup, shutdown and malfunction/breakdown.

b. Annual emissions from the affected gasifier-boiler units combined shall not exceed the following limits. These limits address all emissions from the affected gasifier-boiler units,

including emissions during startup, shutdown and malfunction/breakdown.

Pollutant	Emissions (Total) (Tons/Year)
NO_x	85.0
CO	76.0
SO_2	26.3
PM/PM_{10}	7.9
$PM_{2.5}$	7.0
VOM	4.7
Hydrochloric Acid (HCl)	5.0
Formaldehyde	0.6
Total HAPs	7.9

2.6 Testing Requirements

a. i. The Permittee shall conduct initial performance tests for the affected gasifier-boiler units:

A. To determine emissions pursuant to NSPS, 40 CFR 60.45c(a) and (b). This test shall be conducted while biomass is being used in the affected units. The Permittee shall follow appropriate procedures of the NSPS for this test, including notification and reporting for the tests in accordance with 40 CFR 60.8.

B. Within 60 days after achieving the maximum rate at which each affected unit will be operated, but not later than 180 days after initial startup to measure emissions of pollutants for which limits are set by Condition 2.5(a) and emissions of other hazardous air pollutants as specified by the Illinois EPA during review of the test plan.

Note: For emission testing required by the NSPS, an extension of this timing for testing can only be provided by USEPA.

ii. In addition to the emission testing required above, the Permittee shall have testing performed for affected gasifier-boiler unit(s) as specified by the Illinois EPA within 45 days of a written request by the Illinois EPA or such later date agreed to by the Illinois EPA. If units are normally using biomass fuels other than wood chips, this testing shall be conducted while units are using a representative mix of fuels, as approved by the Illinois EPA.

b. This testing shall be conducted at the Permittee expense by an approved testing service while the affected units are operating

in the maximum load range and other representative operating conditions. The following methods and procedures shall be used for testing of emissions of the boiler, unless another established method is approved by the Illinois EPA.

	Method
Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3 or 3A
Moisture Content	Method 4
Nitrogen Oxides	Method 7, 7E or 19
Opacity	Method 9
Carbon Monoxide	Method 10
Sulfur Dioxide	Method 6C and 19
PM (Filterable)[1]	Methods 5, 201 and 201A
PM (Condensable)[1]	Method 202
Volatile Organic Material[2]	Method 18, 25, 25A or 320
Hydrogen Chloride	Method 19 and 26
Formaldehyde	Method 320

[1] The Permittee may report all PM emissions measured by USEPA method 5 as PM_{10} and $PM_{2.5}$, in which case separate testing using USEPA Method 201 or 201A need not be performed.

[2] Permittee may exclude methane, ethane and other exempt compounds from the results of any VOM test provided that the test protocol to quantify and correct for such compounds is included in the test plan approved by the Illinois EPA.

c. At least 60 days prior to the actual date of initial performance 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 affected gasifier-boiler unit will be tracked and recorded.

iii. The specific determinations of emissions that are intended to be made, including sampling and monitoring locations; the test method(s) that will be used, with the specific analysis method, if the method can be used with different analysis methods.

iv. If the Permittee proposes to conduct emission test while both units are operating, rather than separate testing of each unit, justification for such “combined testing”.

d. The Illinois EPA shall be notified prior to these tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of five (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 the Illinois EPA’s ability to observe the testing.

e. Three copies of the final reports for emission tests shall be forwarded to the Illinois EPA, Compliance Section within 30 days after the test results are compiled and finalized and no later than 60 days after the final day of emission testing. The final report from testing shall contain the following as a minimum:

i. A summary of results.

ii. General information.

iii. Description of test method(s), including description of sampling points, sampling train, analysis equipment, and test schedule.

iv. Detailed description of test conditions, including:

A. Description of fuel fired.

B. Fuel consumption.

C. Firing rate (mmBtu/hour).

v. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration.

2.7-1 Opacity and Emission Monitoring Requirements

a. i. Pursuant to the NSPS, 40 CFR 60.47c(a), the Permittee shall install, calibrate, maintain, and operate a Continuous Opacity Monitoring System (COMS) for the affected gasifier-boiler units, measuring the opacity of the emissions discharged to the atmosphere and record the output of the system.

ii. Pursuant to the NSPS, 40 CFR 60.47c(b), all COMS shall be operated in accordance with the applicable procedures

under Performance Specification 1 (40 CFR 60, Appendix B). The span value of the opacity COMS shall be between 60 and 80 percent.

b. i. If the Permittee elects to continuously monitor NO_x and CO emissions pursuant to Condition 2.4(c)(ii):

A. The Permittee shall install, operate, and maintain a Continuous Emissions Monitoring System (CEMS) on the affected gasifier-boiler units to measure emissions of NO_x and CO in either pounds per hour or pounds per million Btu heat input. This CEMS shall be installed on the combined stack of the units. The relevant procedures under 40 CFR 60.13 shall be followed for the installation, evaluation, and operation of this CEMS. This CEMS shall be designed and operated to meet Performance Specification 2 of 40 CFR 60, Appendix B.

B. The Permittee shall keep records of data measured by this CEMS. The Permittee shall also keep records of the operation of the CEMS, including performance of calibrations and maintenance activities and periods when the CEMS was operating improperly or out of service.

C. The Permittee shall submit quarterly reports to the Illinois EPA for this CEMS in accordance with the relevant provisions of 40 CFR 60.8(c) or (d).

D. At least 60 days before beginning installation of this CEMS, the Permittee shall submit a monitoring plan to the Illinois EPA for review and comment. This plan shall include a diagram of the stack and ductwork for the affected gasifier-boiler units demonstrating that the location of the sampling point for the planned CEMS would meet applicable requirements and the identity of the proposed monitoring units, with their design specifications.

ii. A. After operating NO_x and CO CEMS on affected gasifier-boiler units for 90 days, as an alternative to continuing to operate these CEMS, the Permittee may conduct monitoring for the NO_x and CO emissions of the units in accordance with a parametric monitoring plan as follows, which plan shall address compliance with the limits for NO_x and CO emissions set by Condition 2.5.

B. 1. Except as provided below, a parametric monitoring plan shall be subject to prior approval by the Illinois EPA in a construction

permit or the operating permit for the facility and operation of NO_x CEMS for the affected gasifier-boiler units shall not be discontinued until the plan is initially approved by the Illinois EPA.

2. Parametric monitoring in accordance with a Predictive Emissions Monitoring System (PEMS) that meets USEPA Performance Specification 16, in 40 CFR Part 60 Appendix B, is pre-approved for the affected units provided that a final parametric monitoring plan and a report demonstrating fulfillment of Performance Specification 16 are submitted to the Illinois EPA within 90 days of initial operation and operation of NO_x CEMS on the units is not be discontinued until successful completion of all the required certification testing and evaluations under Performance Specification 16 (including three single load RATA tests and bias F-test, and correlation tests on the RATA data), provided that the report for such testing and evaluation is submitted to the Illinois EPA within 30 days of the date that the testing is completed.

3. After approval of a parametric monitoring plan by the Illinois EPA, the Permittee shall submit any proposed revision to the plan to the Illinois EPA at least 30 days in advance of relying on the revised plan, to provide with opportunity for the Illinois EPA review and comment on proposed revisions. Any significant revisions to the monitoring plan shall be subject to prior approval by the Illinois EPA.

C. When conducting NO_x and CO monitoring for the affected units with an approved parametric monitoring plan, the Permittee shall:

1. Operate and maintain monitors for operating parameters of the unit as specified in the plan, as needed to determine NO_x and CO emissions from the units and verify compliance with applicable standards and emission limits for NO_x and CO. These monitoring systems shall be operated during all periods of operation of the unit except for monitoring system breakdowns and repairs, consistent with 40 CFR 60.48b(c).

2. Fulfill applicable recordkeeping and reporting requirements of the NSPS and this permit for NO_x and CO emissions using emission data generated in accordance with the plan.

3. Report deviations from the plan and the above requirements to the Illinois EPA as deviations from permit requirements.

D. These provisions for parametric monitoring for NO_x and CO emissions do not excuse the Permittee from the obligation to promptly conduct tests for NO_x and CO emissions for an affected unit upon written request by the Illinois EPA.

2.7-2 Operational Monitoring Requirements

a. If the Permittee elects to conduct continuous operational monitoring for the affected gasifier-boiler units pursuant to Condition 2.4(c)(iii), the Permittee shall install, operate and maintain continuous operational monitoring systems on the affected gasifier-boiler units for steam flow, furnace combustion zone temperature, flue gas temperature and oxygen content to determine the fuel heat input to these units on an hourly basis and the operational status (i.e., normal, startup, shutdown, offline or other) of these units, which data shall be used to determine emissions of the units on an hour-by-hour basis.

b. This operational monitoring shall be conducted in accordance with a monitoring plan that is submitted to the Illinois EPA for review and comment, which plan shall:

i. Describe how steam flow, flue gas temperature and oxygen content will be monitored.

ii. Identify any operating parameter(s) in addition to those in Condition 2.7-2(a) that will be monitored for each unit and describe how they will be monitored.

iii. Describe the procedure that will be used to calculate heat input to the unit from monitored data, with supporting documentation for this procedure.

iv. Describe the procedure that will be used to determine the operational status of the unit from monitored data, with supporting documentation for this procedure.

2.8 Recordkeeping Requirements

a. The Permittee shall maintain a file of the following items:

i. A record of the maximum design heat input capacity of each affected gasifier-boiler unit, mmBtu/hour, with supporting documentation.

ii. Heat content of the fuels (Btu/lb or Btu/ft^3) being fired, with supporting documentation.

iii. The Permittee's established operating, maintenance and monitoring procedures for the affected boiler.

b. An operating log or other records for the affected gasifier-boiler units that, at a minimum, shall include the following information:

i. Information for each startup and shutdown, including date, time and duration, as required by 40 CFR 60.7(b).

ii. Information for any incident in which the operation of the boiler continued during malfunction or breakdown, including: date, time, and duration; a description of the incident; whether emissions exceeded or may have exceeded any applicable standard; a description of the corrective actions taken to reduce emissions and the duration of the incident; and a description of the preventative actions taken, as addressed by 40 CFR 60.7(b).

iii. Information documenting that operation of the affected gasifier-boiler unit complied with the operational restrictions of this permit.

iv. Information identifying any deviation from the fuel restriction in Condition 2.3.

v. Information on the availability of each affected gasifier-boiler unit. If the availability of an affected gasifier-boiler unit is less than 64 percent on a 12 month rolling period average, the Permittee shall keep record of detailed explanation of the reasons for less than 64 percent availability and a discussion of action that are planned to improve availability of the unit.

c. The Permittee shall maintain the following operating records for each affected gasifier-boiler unit:

i. Total operating hours.

ii. Daily records of total fuel usage by class (solid, liquid or gas). If operational monitoring is not conducted pursuant to Condition 2.7-2, the daily fuel flow to the individual gasifier-boilers may be calculated based on the proportion of steam produced from each unit.

d. The Permittee shall maintain following records related to fuel supply for the affected gasifier-boiler units:

i. The Permittee shall maintain a file containing the identity and address of each independent company or other entity other than the Permittee that supplies and delivers biomass to the Renewable Energy Center facility, accompanied by the type(s) of biomass supplied and a description of the origin of material, if the party does not produce the material itself.

ii. The Permittee shall maintain records for the amount of biomass accepted (tons).

iii. The Permittee shall maintain records of biomass shipments presented to the plant that are rejected (identification of shipment, amount and type of material, and reason for rejection).

e. Records for Startups:

The Permittee shall maintain records for each startup of the affected gasifier-boiler units. These records shall contain the date and duration of each startup, and note any deviations from normal startup procedures established by the Permittee.

f. Records for continued Operation during Malfunctions or Breakdowns:

The Permittee shall maintain records for each occurrence when operation of the affected gasifier-boiler unit(s) continued during a malfunction or breakdown that acted to increase emissions or affect emission compliance, including the following information:

i. Date and duration of malfunction or breakdown.

ii. A description of the malfunction or breakdown.

iii. The corrective actions used to reduce the quantity of emissions and the duration of the occurrence.

iv. If excess emissions occurred:

A. An explanation why continued operation of the affected boiler was necessary.

B. The preventive measures planned or taken to prevent similar malfunctions or breakdowns or reduce their frequency and severity.

C. An estimate of the magnitude of excess emissions during the occurrence.

g. The Permittee shall keep inspection, maintenance, and repair logs with dates and the nature of such activities for each affected gasifier-boiler unit.

h. i. The Permittee shall keep records for the amount of each fuel used on a monthly basis in the affected gasifier-boiler unit pursuant to 40 CFR 60.48c(g)(3).

ii. The Permittee shall keep records of the usage of biomass fuel, in tons/year.

j. The Permittee shall maintain the following records related to emissions of the affected gasifier-boiler units:

i. Other data, not addressed above, used or relied upon by the Permittee to determine emissions.

ii. A file containing calculations for the maximum hourly emission rates for each unit (lbs/hour and lbs/mmBtu), with supporting calculations.

iii. Monthly and annual emissions of NO_x, CO, PM/PM_{10}, $PM_{2.5}$, VOM, SO_2, and HAP emissions (tons/month and tons/year) with supporting data or calculations.

k. If the Permittee is conducting operational monitoring pursuant to Conditions 2.4(c)(iii) and 2.7-2, the Permittee shall also maintain the following records related to the emissions of the affected gasifier-boiler units:

i. Maximum emission factors for CO, PM/PM_{10}, $PM_{2.5}$ and VOM, in lbs/mmBtu, for startup, shutdown and malfunction/ breakdown, with supporting documentation.

ii. Hour-by-hour emissions.

2.9-1 Reporting and Notification Requirements

a. If there is any deviation of the requirements of this permit for the affected gasifier-boiler units, as determined by the records required by this permit or by other means, the Permittee shall promptly report to the Illinois EPA as specified below until such time the affected gasifier-boiler units are addressed by an operating permit.

i. Deviations from Conditions 2.2 through 2.5 shall be reported with the reports required by the NSPS.

ii. Other deviations shall be reported within 30 days and include a description of the incident, a discussion of the probable cause of such deviation, a description of the corrective actions taken, and a description of the preventative measures taken.

iii. A. Pursuant to 35 IAC 201.263, the Permittee shall immediately report to the Illinois EPA, Regional Office, by telephone or fax upon continued operation of an affected gasifier-boiler unit during a malfunction or breakdown of the unit or associated control equipment when such continued operation would cause an exceedance or violation of the applicable state emission standard.

B. The Permittee shall submit a written follow-up report to the Illinois EPA within five business days providing a detailed explanation of the event and explanation why continued operation of the affected gasifier-boiler unit was necessary, the length of time during which operation continued under such conditions, the measures by the Permittee to minimize and correct deficiencies with chronology, and when the repairs were completed or the unit was taken out of service.

b. The Permittee shall notify the Illinois EPA before using biomass fuel in the affected gasifier-boiler units other than virgin wood/bark chips from forestry, lumber production and tree trimming operations as specified below. These notifications shall include a description of the biomass fuel, the source of the fuel and the amount of such fuel intended to be used.

i. For research and trial use of a fuel, the notification shall be submitted at least 10 days in advance of use of the fuel.

ii. For routine use of a fuel, the notification shall be submitted at least 30 days in advance of use of the fuel.

2.9-2 Reporting and Notification Requirements During Shakedown

a. The Permittee shall provide the Illinois EPA 30 days advance notification prior to initial start-up of the affected gasifier-boiler units.

b. The Permittee shall provide the Illinois EPA with prompt notification of any event(s) that disrupts the orderly shakedown of the affected gasifier-boiler units.

c. The Permittee shall provide the Illinois EPA with periodic progress reports on a calendar quarter basis, commencing with

the first quarter in which the affected gasifier-boiler units initially commenced operation and terminating in the final quarter that shakedown was completed. These reports shall include the following:

i. Overall operating level (heat input and maximum biomass usage).

ii. Activities accomplished/significant events.

iii. Current schedule for emission testing.

iv. A summary of any emission measurements conducted.

v. Outreach activities planned/provided for local communities or interested parties.

d. The Permittee shall provide the Illinois EPA notice as to when it considered shakedown of the affected boiler was complete.

3.0 Natural Gas/Oil-Fired Boilers

3.1. Description

As a part of new Renewable Energy Center, EIU will install two natural gas/oil fired boilers (B-1 and B-2) that are planned to be used primarily as back-up for the biomass gasifier-boiler units (the affected standby boilers). Boiler B-1 will be a new boiler. Boiler B-2 will be relocated from the existing steam plant, where it was recently installed as new Boiler #4 pursuant to Construction Permit 09040010. Affected standby boilers will replace existing gas/oil-fired Boiler #4 and #5 at the existing steam plant.

3.2-1 Applicable Federal New Source Performance Standard (NSPS) Emission Standards

a. Each affected standby boiler is an affected facility under the NSPS for Small Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60, Subparts Dc. As an affected facility, the Permittee must comply with applicable requirements of the NSPS, 40 CFR 60 Subpart Dc, and related requirements of 40 CFR 60, Subpart A, General Provisions, for the boiler. The Illinois EPA is administering NSPS in Illinois on behalf of the United States EPA under a delegation agreement.

b. Pursuant to the NSPS, 40 CFR 60.42c(d), the Permittee shall not cause or allow emissions of SO_2 from each affected standby boiler in excess of 0.5 lb/mmBtu or the sulfur content of the fuel oil burned in the affected boiler shall be less than 0.5 percent by weight.

Note: The SO_2 emissions from the affected standby boilers are subject to more stringent standard pursuant to 35 IAC 214.122.

c. Pursuant to the NSPS, 40 CFR 60.43c(c), opacity from each affected standby boiler shall not exceed 20 percent, as measured on a six minute average, except for one six minute period per hour of not more than 27 percent. As provided by 40 CFR 60.43c(d), this limit applies at all times except during periods of startup, shutdown, or malfunction, as defined at 40 CFR 60.2. However, exceedances during such periods shall be reported as deviations.

d. Pursuant to the NSPS, 40 CFR 60.11(d), at all times the Permittee shall, to the extent practicable, maintain and operate each affected standby boiler in a manner consistent with good air pollution control practices for minimizing emissions.

3.2-2 Applicable Federal National Emission Standards for Hazardous Air Pollutant (NESHAP)

This permit is issued based on the affected standby boilers subject to standards or requirements pursuant to 40 CFR 63 Subpart JJJJJJ, commonly known as the Area Source Boiler NESHAP. Pursuant to 40 CFR 63.11194(b), the affected source consisting of the affected standby boilers is an existing source as construction of each affected standby boiler begun before June 4, 2010. The Permittee shall comply with the applicable requirements of this Area Source Boiler NESHAP for the affected standby boilers.

3.3 Applicable State Emission Standards

a. Pursuant to 35 IAC, Chapter B, Subchapter c, emissions from the affected standby boiler shall not exceed the following standards, which apply on an hourly basis:

Pollutant	Standard	Limit
PM	35 IAC 212.206	0.10 lb/mmBtu*
SO_2	35 IAC 214.122(b)(2)	0.3 lb/mmBtu*
CO	35 IAC 216.121	200 ppm, @ 50% excess air

* Limit is applicable to emissions attributable to burning of oil.

b. Pursuant to 35 IAC 212.123(a), the opacity of the exhaust from each affected standby boiler shall not exceed 30 percent, except as provided in 35 IAC 212.123(b).

3.4 Continuous Monitoring Exemptions

a. This permit is issued based on the Permittee using fuel supplier certifications, as described under 40 CFR 60.48c(f)(1), to demonstrate compliance with the standard in Condition 3.2(b) for

sulfur content of fuel, rather than continuous emissions monitoring for SO_2, as allowed by the NSPS, 40 CFR 60.46c(e).

b. This permit is issued based on the Permittee not being required to operate a continuous opacity monitor for the affected standby boilers pursuant to the NSPS. This is because the distillate fuel oil burned in the boiler will have a sulfur content less than 0.5 percent by weight and other fuels will have a potential SO_2 emission rate of no more than 0.06 lb/mmBtu, and the boiler will not use post-combustion technology to reduce SO_2 or PM emissions, as provided by the NSPS, 40 CFR 60.47c(c).

3.5 Operational Limitations

a. Natural gas and distillate oil (including biodiesel) shall be the only fuels fired in the affected standby boilers.

b. The nominal rated heat input capacity of each affected standby boiler shall not exceed 62 mmBtu/hour.

c. The usage of distillate fuel oil by the affected standby boiler shall not exceed 152,800 gallons per year.

d. Only one affected standby boiler shall be operated if one or both of the affected gasifier-boiler units are being operated. For this purpose, a unit shall not be considered to be operating if shutdown of the unit is underway. (See also Condition 2.4(d).)

3.6 Emission Limits

a. Short-term emissions from each affected standby boiler shall not exceed the following limits. These limits shall apply as 3-hour block averages.

	Natural Gas		Distillate Oil	
Pollutant	(Lbs/Hour)	(Lbs/mmBtu)	(Lbs/Hour)	(Lbs/mmBtu)
NO_x	6.2	0.100	7.7	0.125
CO	6.2	0.100	9.2	0.150
$PM/PM_{10}/PM_{2.5}$	0.5	0.008	0.9/0.5/0.4	0.014/0.008/ 0.006
VOM	0.3	0.005	0.9	0.015
SO_2	0.1	0.001	3.1	0.050
Individual HAP	0.15	0.0025	0.45	0.0075
Total HAP	0.3	0.005	0.9	0.015

b. Annual emissions from the affected standby boilers shall not exceed the following limits, total.

Pollutant	Total Emissions (Tons/year)	
	After Project Shakedown Period	During Project Shakedown Period
NO_x	25.5	56.0
CO	25.7	57.0
$PM/PM_{10}/PM_{2.5}$	2.0	5.0
VOM	1.4	3.0
SO_2	0.7	4.0
Individual HAP	0.6	1.5
Total HAP	1.2	3.0

Note: Combined emissions from operation of the affected standby boilers and the gasifier-boiler systems are limited by Conditions 1.3(a) and (b).

3.7 Testing Requirements

a. The Permittee shall conduct initial performance test to determine compliance with the opacity standard of 40 CFR 60.43c(c) (see Condition 3.2(c)) pursuant to NSPS, 40 CFR 60.45c(a). This test shall be conducted while distillate oil is being fired in the affected standby boilers. The Permittee shall follow appropriate procedures of the NSPS for this test, including notification and reporting for the tests in accordance with 40 CFR 60.8.

b. The NO_x, CO, VOM, PM, and HAP emissions and opacity of the affected standby boilers shall be measured by an independent testing service approved by the Illinois EPA, as follows, within 90 days after a written request from the Illinois EPA for such pollutants and/or opacity, as specified by the request.

i. At least 60 days prior to the actual date of initial performance 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:

A. The person(s) who will be performing sampling and analysis and their experience with similar tests.

B. 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 affected standby boilers will be tracked and recorded.

C. The specific determinations of emissions that are intended to be made, including sampling and monitoring locations; the test method(s) that will be

used, with the specific analysis method, if the method can be used with different analysis methods.

ii. The Illinois EPA shall be notified prior to these tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of five (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 the Illinois EPA's ability to observe the testing.

iii. Three copies of the final reports for emission tests shall be forwarded to the Illinois EPA, Compliance Section within 30 days after the test results are compiled and finalized and no later than 60 days after the final day of emission testing. The final report from testing shall contain the following as a minimum:

A. A summary of results.

B. General information.

C. Description of test method(s), including description of sampling points, sampling train, analysis equipment, and test schedule.

D. Detailed description of test conditions, including:

I. Type of fuel fired.

II. Fuel consumption.

III. Firing rate (mmBtu/hour).

E. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration.

3.8 Operational Monitoring

a. The Permittee shall monitor fuel consumption (gallons per hour or scf per hour) to determine heat input to the affected standby boilers, in mmBtu on an hour-by-hour basis.

3.9 Recordkeeping Requirements

a. The Permittee shall maintain a file of the following items:

i. A record of the maximum design heat input capacity of each affected standby boiler, mmBtu/hour, with supporting documentation.

ii. Heat content of the fuels (Btu/ft^3 or Btu/gallon) being fired, with supporting documentation.

iii. Records for all opacity measurements made in accordance with USEPA Method 9 for the affected standby boilers that it conducts or that are conducted on its behest by individuals who are qualified to make such observations. For each occasion on which such measurements are made, these records shall include the formal report for the measurements if conducted pursuant to Condition 3.7(a) or (b), or otherwise the identity of the observer, a description of the measurements that were made, the operating condition of the boiler, the observed opacity, and copies of the raw data sheets for the measurements.

b. An operating log or other records for the affected standby boilers that, at a minimum, shall include the following information:

i. Information for each startup and shutdown, including date, time and duration, as required by 40 CFR 60.7(b).

ii. Information for any incident in which the operation of the boiler continued during malfunction or breakdown, including: date, time, and duration; a description of the incident; whether emissions exceeded or may have exceeded any applicable standard; a description of the corrective actions taken to reduce emissions and the duration of the incident; and a description of the preventative actions taken, as addressed by 40 CFR 60.7(b).

iii. Information documenting that operation of the affected standby boilers complied with the operational restrictions of this permit.

iv. Information identifying any deviation from the fuel restriction in Condition 3.5.

c. The Permittee shall keep inspection, maintenance, and repair logs with dates and the nature of such activities for the affected standby boilers.

d. Pursuant to the NSPS, 40 CFR 60.48c, the Permittee shall keep records of the following information related to the oil supply and SO_2 emissions of the affected standby boilers:

i. Records of distillate oil supplier certification used to demonstrate compliance with SO_2 standard in Condition 3.2(b), including the information described under 40 CFR 60.48c(f)(1).

ii. Records for each shipment of distillate oil received for the affected standby boilers, including date, supplier, type of oil, quantity (in gallons), sulfur content in lbs/mmBtu (or data on maximum sulfur content and minimum heat content as guaranteed by the supplier, and the calculated sulfur content in lbs/mmBtu), and whether the SO_2 emission rate from the burning of such fuel would meet the SO_2 emission limit in Condition 3.3(a).

iii. A. Records for any period of time when the distillate oil fired in the affected standby boilers had a sulfur content that resulted in SO_2 emissions that exceeded the SO_2 emission limit in Condition 3.3(a) or 3.4(b), if applicable, and whether the hourly emission rate during such period exceeded the SO_2 limit of Condition 3.6(a), with explanation.

B. For the above incidents, a detailed explanation of the cause(s) of noncompliance with the emission standards and detailed description of corrective actions taken.

e. i. The Permittee shall keep records for the amount of each fuel used on a monthly basis in the affected standby boilers pursuant to 40 CFR 60.48c(g).

ii. The Permittee shall keep records of total fuel usage, in million scf equivalent per year, to show compliance with total fuel usage limit of Condition 3.5(c)(i).

f. The Permittee shall maintain the following records related to emissions from the affected standby boilers:

i. Other data, not addressed above, used or relied upon by the Permittee to determine emissions.

ii. A file containing calculations for the maximum hourly emission rates (lbs/hour), with supporting calculations.

iii. Monthly and annual emissions of NO_x, CO, $PM/PM_{10}/PM_{2.5}$, VOM, SO_2, and HAP emissions (tons/month and tons/year) with supporting data or calculations.

3.10 Deviation Reporting Requirements

If there is any deviation of the requirements of this permit, as determined by the records required by this permit or by other means, the Permittee shall promptly report to the Illinois EPA as specified below until such time the affected standby boilers are addressed by an operating permit.

a. Deviations from Conditions 3.2 through 3.6 shall be reported with the reports required by the NSPS.

b. Other deviations shall be reported within 30 days and include a description of the incident, a discussion of the probable cause of such deviation, a description of the corrective actions taken, and a description of the preventative measures taken.

4.0 Biomass Storage and Handling

4.1 Description

The affected units for the purpose of these unit-specific conditions are the facilities for handling biomass fuels, including receiving, transfer, screening and grinding, and storage operations. Operation of wood screening and grinding will be controlled by a baghouse.

Emissions of PM from affected units must be controlled by appropriate measures given the nature of the material. In particular, units handling dry materials must be enclosed and aspirated to control equipment. For receiving and storage of fuel, for which total enclosure is not practicable, measures must be used to very effectively reduce the generation of emissions.

4.2 Applicable Federal Emission Standards

None

4.3 Applicable State Emission Standards

a. The emission of smoke or other PM from the affected units shall not have an opacity greater than 30 percent, except as allowed by 35 IAC 212.124. Compliance with this limit shall be determined by 6-minute averages of opacity measurements in accordance with USEPA Reference Method 9. [35 IAC 212.109 and 212.123(a)]

b. With respect to emissions of fugitive PM, affected units shall comply with 35 IAC 212.301, which provides that emissions of fugitive PM shall not be visible from any process, including any material handling or storage activity, when looking generally toward the zenith at a point beyond the property line of the source, except when the wind speed exceeds 25 miles per hour, as provided by 35 IAC 212.314.

c. The emissions of PM from the affected units other than storage piles for biomass fuels and associated operations excluded by 35 IAC 212.323 (see Condition 4.4) shall comply with the applicable limit pursuant to 35 IAC 212.321, which rule limits emissions based on the process weight rate of emission units and allows a minimum emission rate of 0.55 lb/hour for any individual unit.

4.4 Non-Applicability of Regulations of Possible Concern

This permit is issued based on the storage piles for biomass fuel and associated operations not being subject to 35 IAC 212.321 pursuant to 35 IAC 212.323, which provides that 35 IAC 212.321 shall not apply to emission units, such as stock piles, to which, because of the disperse nature of such emission units, such rules cannot reasonably be applied.

4.5 Operating Requirements

a. PM emissions from handling of biomass fuel shall be controlled by application of water or other dust suppressants so as to minimize fugitive emissions to the extent practicable. For this purpose, there shall either:

i. Be no visible emissions from the affected unit, as determined in accordance with USEPA Method 22, or

ii. A nominal control efficiency of 80 percent shall be achieved from the uncontrolled emission rate, as follows, as determined using appropriate USEPA emission factors for particulate emissions from handling of material dry, in the absence of any control of emissions, and engineering analysis and calculations for the control measures that are actually present.

b. PM emissions from an affected unit handling a wet material shall be controlled by maintaining the material with adequate moisture to prevent visible emissions directly from such unit during the handling, storage or load out of the material. For this purpose, wet material is a material that has sufficient moisture during normal operation to minimize the potential for direct emissions.

4.6 Emission Limitations

Annual emissions of PM/PM_{10} from the affected units shall not exceed 1.2 ton/year. Compliance with this limit shall be calculated from the material handled and other operating information for the affected units, and appropriate emission factors.

4.7-1 Emissions Testing

a. Upon written request by the Illinois EPA, the Permittee shall have emissions testing for particulate matter conducted at its expense by an approved testing service, which testing shall be completed within 90 calendar days of the request or on the date agreed upon by the Illinois EPA, whichever is later. Unless otherwise specified by this permit or a request from the Illinois EPA for the performance of emission testing, emission testing shall be conducted while affected unit(s) are operating at maximum rate(s) and during other representative operating conditions of the unit(s) and associated control system(s).

b. i. USEPA test methods and procedures shall be used for measurement of emissions, including the following methods, unless other methods are specified in unit-specific condition of this permit or are approved by the Illinois EPA as part of the approval of a test plan. Refer to 40 CFR 60, Appendix A and 40 CFR 51, Appendix M for USEPA test methods.

PM (Filterable)	Method 5
PM (Condensable)	Methods 5 or 202

Notes:

Unless otherwise specified, PM tests shall include measurements of condensable particulate, as collected in the back half of the Method 5 sampling train or by separate measurements using USEPA Method 202 (40 CFR Part 51, Appendix M). For emission units for which the average stack gas temperature is less than 250°F, testing may be conducted at actual stack gas temperature without heating of the probe or filter holders.

ii. During measurements of PM or PM_{10} emissions, observations of opacity shall also be conducted in accordance with USEPA Method 9.

4.7-2 Opacity Observations

a. Upon written request by the Illinois EPA, the Permittee shall conduct opacity observations for specific affected operation(s) or unit(s) within 45 calendar days of the request or on the date agreed upon by the Illinois EPA, whichever is later.

b. Opacity of emissions shall be determined during representative weather and operating conditions by a qualified observer in accordance with USEPA Test Method 9, as further specified below.

c. The duration of opacity observations for each test shall be at least 30 minutes (five 6-minute averages) unless the average

opacities for the first 12 minutes of observations (two six-minute averages) are both no more than half of the most stringent requirement applying to opacity.

4.8 Inspections

a. i. The Permittee shall conduct inspections of affected units on at least a monthly basis with personnel who are not directly responsible for the day-to-day operation of these units, for the specific purpose of verifying that the measures identified in the operating program and other measures required to control emissions from affected units are being properly implemented.

ii. These inspections shall include observation for the presence of visible emissions, performed in accordance with USEPA Method 22, from buildings in which affected units are located and from units from which the Permittee has elected to demonstrate no visible emissions.

b. The Permittee shall perform detailed inspections of the dust collection equipment for the affected units while the units are out of service, with an initial inspection performed before any maintenance and repair activities are conducted during the period the unit is out of service and a follow-up inspection performed after any such activities are completed. These inspections shall be conducted at least every 15 months.

4.9 Recordkeeping

a. The Permittee shall maintain file(s), which shall be kept current, that contain:

i. The maximum operating capacity of each affected unit or group of related units (tons/hour).

ii. A. For the baghouse and other filter devices associated with affected units, design specifications for each device (type of unit, maximum design exhaust flow (acfm and scfm), filter area, type of filter cleaning, performance guarantee for particulate exhaust loading in gr/scf, etc.), the manufacturer's recommended operating and maintenance procedures for the device, and design specification for the filter material in each device (type of material, surface treatment(s) applied to material, weight, performance guarantee, warranty provisions, etc.).

B. For the baghouse, the normal range of pressure drop across the device and the minimum and maximum safe pressure drop for the device, with supporting documentation.

iii. For affected units that are not controlled by baghouse or other filter-type devices, a detailed description of the work practices used to control emissions of PM pursuant to Condition 4.5(b). These control measures are referred to as the "established control measures" in this subsection of this permit.

iv. The designated PM and PM_{10} emission rate, in pounds/hour and tons/year, from affected units, either individually or grouped by related units, with supporting calculations and documentation, including detailed documentation for the level of emissions control achieved through the work practices that are used to control PM emissions. The sum of these annual emission rates shall not exceed the limit in Condition 4.6.

b. The Permittee shall keep records for the amount of bulk materials received by or loaded out from the plant by category or type of material (tons/month).

c. i. The Permittee shall keep inspection and maintenance log(s) or other records for the control measures associated with the affected units, including buildings and enclosures, dust suppression systems and control devices.

ii. These records shall include the following information for the inspections required by Condition 4.8(a):

A. Date and time the inspection was performed and name(s) of inspection personnel.

B. The observed condition of the control measures for each affected unit, including the presence of any visible emissions.

C. A description of any maintenance or repair associated with established control measures that are recommended as a result of the inspection and a review of outstanding recommendations for maintenance or repair from previous inspection(s), i.e., whether recommended action has been taken, is yet to be performed or no longer appears to be required.

D. A summary of the observed implementation or status of actual control measures, as compared to the established control measures.

iii. These records shall include the following information for the inspections required by Condition 4.8(b):

A. Date and time the inspection was performed and name(s) of inspection personnel.

B. The observed condition of the dust collection equipment.

C. A summary of the maintenance and repair that is to be or was conducted on the equipment.

D. A description of any maintenance or repair that is recommended as a result of the inspection and a review of outstanding recommendations for maintenance or repair from previous inspection(s), i.e., whether recommended action has been taken, is yet to be performed or no longer appears to be required.

E. A summary of the observed condition of the equipment as related to its ability to reliably and effectively control emissions.

d. The Permittee shall maintain records of the following for each incident when any affected unit operated without the control measures required by Condition 4.5(b):

i. The date of the incident and identification of the unit(s) that were involved.

ii. A description of the incident, including: the established control measures that were not present or implemented; the established control measures that were present, if any; and other control measures or mitigation measures that were implemented, if any.

iii. The time at and means by which the incident was identified, e.g., scheduled inspection or observation by operating personnel.

iv. The corrective action(s) taken and the length of time after the incident was identified that the unit(s) continued to operate before established control measures were in place or the operations were shutdown (to resume operation only after established control measures were in place) and, if this time was more than one hour, an explanation why this time was not shorter, including a detailed description of any mitigation measures that were implemented during the incident.

v. The estimated total duration of the incident, i.e., the total length of time that the unit(s) ran without established control measures and the estimated amount of material processed during the incident.

vi. A discussion of the probable cause of the incident and any preventative measures taken.

vii. An estimate of any additional emissions of PM or PM_{10} (pounds) above the emissions associated with normal operation that resulted from the incident, if any, with supporting calculations.

viii. A discussion whether any applicable emission standard, as listed in Condition 4.3, or any applicable emission rate, as identified in the records pursuant to Condition 4.9(a), may have been violated during the incident, with an estimate of the amount of any excess PM emissions (lbs) and supporting explanation.

e. The Permittee shall maintain the following records for the emissions of the affected units:

i. A file containing the standard emission factors used by the Permittee to determine PM/PM_{10} emissions from the units, with supporting documentation.

ii. Records of PM and PM_{10} emissions based on operating data for the unit(s) and appropriate emission factors, with supporting documentation and calculations.

4.10 Deviation Reporting

If there is any deviation of the requirements of this permit, as determined by the records required by this permit or by other means, the Permittee shall promptly report to the Illinois EPA as specified below until such time the affected standby boilers are addressed by an operating permit.

a. Deviations from Conditions 4.3, 4.5 and 4.6 shall be reported with the reports required by Condition 2.9-1(a)(i) or 3.10(a) of this permit.

b. Other deviations shall be reported within 30 days and include a description of the incident, a discussion of the probable cause of such deviation, a description of the corrective actions taken, and a description of the preventative measures taken.

5.0 Fly Ash Handling

5.1 Description

The affected units are all fly ash handling, transfer and storage units. Ash collected from the affected gasifier-boiler units will be stored at the facility pending shipment off-site.

5.2 Applicable Federal Emission Standards

None

5.3 Applicable State Emission Standards

a. The emission of smoke or other PM from the affected units shall not have an opacity greater than 30 percent, except as allowed by 35 IAC 212.124. Compliance with this limit shall be determined by 6-minute averages of opacity measurements in accordance with USEPA Reference Method 9. [35 IAC 212.109 and 212.123(a)]

b. With respect to emissions of fugitive PM, affected units shall comply with 35 IAC 212.301, which provides that emissions of fugitive PM shall not be visible from any process, including any material handling or storage activity, when looking generally toward the zenith at a point beyond the property line of the source, except when the wind speed exceeds 25 miles per hour, as provided by 35 IAC 212.314.

c. The emissions of PM from the affected units shall comply with the applicable limit pursuant to 35 IAC 212.321, which rule limits emissions based on the process weight rate of emission units and allows a minimum emission rate of 0.55 lb/hour for any individual unit.

5.4 Operating Requirements

There shall be no visible emissions, as determined in accordance with USEPA Method 22, from the affected units.

5.5 Emission Limitations

Annual emissions of PM/PM_{10} from the affected units shall not exceed 0.3 ton/year. Compliance with this limit shall be calculated from the material handled and other, operating information for the affected units, and appropriate emission factors.

5.6 Inspections

a. i. The Permittee shall conduct inspections of affected units on at least a monthly basis with personnel who are not directly responsible for the day-to-day operation of these units, for the specific purpose of verifying measures required to control emissions from affected units are being properly implemented.

ii. These inspections shall include observation for the presence of visible emissions, performed in accordance with USEPA Method 22, from buildings in which affected

units are located and from units from which the Permittee has elected to demonstrate no visible emissions.

5.7 Recordkeeping

a. The Permittee shall keep records for the amount of bulk materials loaded out from the plant by category or type of material (tons/month).

b. i. The Permittee shall keep inspection and maintenance log(s) or other records for the control measures associated with the affected units, including buildings and enclosures, dust suppression systems and control devices, if any.

ii. These records shall include the following information for the inspections required by Condition 5.6(a):

A. Date and time the inspection was performed and name(s) of inspection personnel.

B. The observed condition of the control measures for each affected unit, including the presence of any visible emissions.

C. A description of any maintenance or repair associated with established control measures that are recommended as a result of the inspection and a review of outstanding recommendations for maintenance or repair from previous inspection(s), i.e., whether recommended action has been taken, is yet to be performed or no longer appears to be required.

D. A summary of the observed implementation or status of actual control measures, as compared to the established control measures.

c. The Permittee shall maintain the following records for the emissions of the affected units:

i. A file containing the standard emission factors used by the Permittee to determine PM emissions from the units, with supporting documentation.

ii. Records of PM and PM_{10} emissions based on operating data for the unit(s) and appropriate emission factors, with supporting documentation and calculations.

5.8 Deviation Reporting

If there is any deviation of the requirements of this permit, as determined by the records required by this permit or by other means, the Permittee shall promptly report to the Illinois EPA as specified

below until such time the affected standby boilers are addressed by an operating permit.

a. Deviations from Conditions 5.3 through 5.5 shall be reported with the reports required by Condition 2.9-1(a)(i) or 3.10(a) of this permit.

b. Other deviations shall be reported within 30 days and include a description of the incident, a discussion of the probable cause of such deviation, a description of the corrective actions taken, and a description of the preventative measures taken.

6.0 Roadways and Other Open Areas

6.1 Description of Emission Units

The affected units for the purpose of these unit-specific conditions are roadways, parking areas, and other open areas associated with the operation of the Renewable Energy Center facility, which may be sources of fugitive particulate matter due to vehicle traffic or windblown dust. These emissions are controlled by paving and implementation of work practices to prevent the generation and emissions of particulate matter.

6.2 Control Measures

a. Good air pollution control practices shall be implemented to minimize dust emissions from affected units. After construction of the plant is complete, these practices shall provide for treatment (flushing, vacuuming, dust suppressant application, etc.) of roadways and areas that are routinely subject to vehicle traffic as necessary to prevent nuisance dust.

b. The handling of material collected from any affected unit associated with the plant by sweeping or vacuuming trucks shall be enclosed or shall utilize spraying, pelletizing, screw conveying or other equivalent methods to control PM emissions.

6.3 Applicable State Emission Standards

All affected units shall comply with 35 IAC 212.301, which provides that emissions of fugitive particulate matter shall not be visible from any process, including material handling or storage activity, when looking generally toward the zenith at a point beyond the property line of the source, except when the wind speed is greater than 25 miles per hour, as provided by 35 IAC 212.314.

6.4 Non-Applicability of Regulations of Concern

The emissions from affected units are not used to determine PSD applicability because they are considered fugitive emissions and the

source is not in one of the source categories listed in 40 CFR 52.21(b)(1)(iii).

6.5 Operational and Production Limits and Work Practices

Upon request of the Illinois EPA, the Permittee shall carry out control of fugitive particulate matter emissions from affected units in accordance with a written operating program describing the measures being implemented in accordance with Condition 6.2 to control emissions at each unit with the potential to generate significant quantities of such emissions, which program shall be kept current.

a. The written operating program shall include:

i. Good air pollution control practices shall be implemented to minimize dust emissions from affected units. These practices shall provide for pavement on all regularly traveled roads and treatment (flushing, vacuuming, dust suppressant application, etc.) of paved and unpaved roadways and areas that are routinely subject to vehicle traffic for very effective and effective control of dust, respectively (nominal 90 percent control for paved roads and areas and 85 percent control for unpaved roads and areas).

ii. For this purpose, roads that serve the office building, employee parking areas or are used on a daily basis by operating and maintenance personnel for the source in the course of their typical duties shall all be considered to be subject to regular travel and are required to be paved. Regularly traveled roads shall be considered to be subject to routine vehicle traffic except as they are used primarily for periodic maintenance and are currently inactive or as traffic has been temporarily blocked off. Other roads shall be considered to be routinely traveled if activities are occurring such that they are experiencing significant vehicle traffic.

b. Upon request of the Illinois EPA, the Permittee shall submit copies of the written operating program to the Illinois EPA for review.

c. A revised operating program shall be submitted to the Illinois EPA for review within 90 days of a request from the Illinois EPA for revision to address observed deficiencies in control of fugitive particulate matter emissions.

6.6 Emission Limitations

The emissions of PM from affected units, as PM_{10}, shall not exceed 0.3 ton/year. Compliance with these limits shall be determined by appropriate emission factors and engineering calculations.

6.7 Opacity Observations

None

6.8 Inspection Requirements

The Permittee shall conduct inspections of affected units on at least a monthly basis with personnel not directly responsible for the day-to-day implementation of the fugitive dust control program, for the specific purpose of verifying that the measures identified in the operating program and other measures required to control emissions from affected units are being properly implemented.

6.9 Records

a. The Permittee shall keep a file that contains:

i. The operating factors, if any, used to determine the amount of activity associated with the affected units or the PM emissions from the affected units, with supporting documentation.

ii. The designated PM emission rate, in ton/year, from each category of affected units (e.g., traffic associated with receiving of wood), with supporting calculations and documentation. The sum of these rates shall not exceed the annual limit on emissions in Condition 6.6.

b. The Permittee shall maintain records documenting implementation of the operating program required by Condition 6.5, including:

i. Records for each treatment of an affected unit or units:

A. The identity of the affected unit(s), the date and time, and the identification of the truck(s) or treatment equipment used.

B. For application of dust suppressant by truck: target application rate or truck speed during application, total quantity of water or chemical used and, for application of a chemical or chemical solution, the identity of the chemical and concentration, if applicable.

C. For sweeping or cleaning: Identity of equipment used and identification of any deficiencies in the condition of equipment.

D. For other type of treatment: A description of the action that was taken.

ii. Records for each incident when control measures were not implemented and each incident when additional control measures were implemented due to particular activities, including description, date, a statement of explanation, and expected duration of such circumstances.

c. The Permittee shall record any period during which an affected unit was not properly controlled as required by this permit, which records shall include at least the following information: the date, time and estimated duration of the event; a description of the event; the applicable requirement(s) that were not met; the manner in which the event was identified, if not readily apparent; the probable cause for deviation, if known, including a description of any equipment malfunction/breakdown associated with the event; information on the magnitude of the deviation, including actual emissions or performance in terms of the applicable standard if measured or readily estimated; confirmation that standard procedures were followed or a description of any event-specific corrective actions taken; and a description of any preventative measures taken to prevent future occurrences, if appropriate; and an estimate of the additional PM emissions that resulted, if any, with supporting calculations.

d. The Permittee shall maintain records for the PM emissions of the affected units to verify compliance with the limits in Condition 6.6, based on operating data for the affected units and other activities at the plant (the above records for the affected units include data for implementation of the operating program, and appropriate USEPA emission estimation methodology and emission factors, with supporting calculations).

6.10 Reporting Requirements

a. The Permittee shall submit quarterly reports to the Illinois EPA for affected units stating the following: the dates any necessary control measures were not implemented; a listing of those control measures; the reasons that the control measures were not implemented; and any corrective actions taken. This information includes, but is not limited to, those dates when controls were not implemented based on a belief that implementation of such control measures would have been unreasonable given prevailing weather conditions.

b. The Permittee shall notify the Illinois EPA of deviations from applicable requirements for affected units. These notifications shall include the information specified by Condition 6.9(c) and be submitted with the reports required by Condition 6.10(a).

Please note that this permit has been revised at the request of the Permittee to: 1) Adjust the permitted capacities of the affected gasifier-boiler units; 2) Adjust various permit limits for emissions of NO_x and other pollutants to address the results of initial operational and emission testing of the units; and 3) Make other related changes to the provisions of the permit.

If you have any questions on this permit, please call Christopher Romaine or Manish Patel at 217/785-1705.

Raymond E. Pilapil Date Signed: _____
Acting Manager, Permit Section
Division of Air Pollution Control

REP:MNP:psj

cc: FOS - Region 3, Illinois EPA
CAAPP Permit File, Illinois EPA

Attachment 1

Summary of Changes in Nitrogen Oxides (NO_x) Emissions

Table 1: Past Actual Emissions from the Existing Energy Plant (2007–2008)

Emission Units	Past Actual NO_x Emissions (Tons/Year)
	2-year average (2007-08)
Existing Boiler No. 4 (Natural Gas and Oil Fired)	3.7
Boiler No. 5 (Natural Gas and Oil Fired)	2.6
Carmen – Boiler (Natural Gas Fired)	2.5
Boiler No. 2 & 3 (Coal Fired)	49.1
Total	57.9

Table 2: Net Change in NO_x Emissions from the Project (ton/year)

Activity	Emissions
Proposed Project	
Permitted Emissions of Renewable Energy Center	97.3
Past Actual of Existing Steam Plant[a]	57.9
Project Net Change	39.4
Other Contemporaneous Projects	
None[b]	0
Net Change	**39.4**
PSD Significant Increase Threshold	40.0
Subject to PSD Review	No

[a] Based on 2-year average of actual emissions from 2007 and 2008.

[b] The only "contemporaneous project" is the construction of a new gas/oil fired backup boiler at the existing steam plant. This unit is being relocated to the new facility and is addressed as part of the proposed project.

Attachment 2

Table 1: Potential Emissions of the Renewable Energy Center – Tons/Year

Emission Unit(s)	NO_x	CO	VOM	PM/PM_{10}[a]	$PM_{2.5}$[a]	SO_2
Biomass Gasifier-Boiler Units and Standby Boilers	96.7	77.6	4.7	8.1	7.1	26.3
Biomass Storage & Handling	----	----	----	1.2	0.1	----
Ash Storage and Handling	----	----	----	0.3	0.1	----
Backup Diesel Generator[b]	0.6	0.2	0.1	0.1	0.1	0.1
Subtotal	97.3	77.8	4.8	9.7	7.4	26.4
Roadways[c]	----	----	----	0.3	----	----
Total	97.3	77.8	4.8	10.0	7.4	26.4

[a] Filterable PM

[b] Potential emissions of this engine generator are based on operation for 500 hours per year, consistent with the USEPA practice for permitting of "emergency generating units". In the application, the Permittee indicates that it currently intends to operate the engine generator for no more than 100 hours per year for maintenance checks and readiness testing so that the engine would also qualify as an emergency engine under the NSPS and NESHAP, 40 CFR Part 60 Subpart IIII and Part 63 Subpart ZZZZ.

[c] Fugitive emissions

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