

Illinois Environmental Protection Agency
Bureau of Air, Permit Section
1021 N. Grand Avenue East
Springfield, Illinois 62794-9276

Project Summary for a
Construction Permit Application
from Ethanex Energy
for a Biomass-Fired Boiler Facility:
at the Ethanol Plant
near Waltonville, Illinois

Site Identification No.: 081808AAB
Application No.: 07070041
Date Received: July 18, 2007

Schedule

Public Comment Period Begins: March 27, 2008
Public Comment Period Closes: April 26, 2008

Illinois EPA Contacts

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I. INTRODUCTION

Ethanex Energy has proposed to construct a biomass-fired boiler and associated facilities, adjacent to its proposed ethanol production plant near Waltonville, to supply steam to that plant. The proposed boiler plant would be known as the Jefferson Energy Center. At the same time, Ethanex has requested that the permit for the adjoining ethanol plant, Waltonville Ethanol LLC, be reissued with changes to address the presence of a biomass-fired boiler. The boiler project and the ethanol plant project each require permits from the Illinois EPA because of their emissions. This project summary addresses these two activities but focuses mostly on the construction of the new biomass-fired boiler, as the permitted ethanol plant would be similar to other new ethanol plants proposed in Illinois, with the additional feature.

The Illinois EPA has reviewed Ethanex Energy's applications and made a preliminary determination that the applications meet applicable requirements. Accordingly, the Illinois EPA has prepared drafts of the new and revised construction permits that it would propose to issue for the proposed boiler facility and ethanol plant. However, before issuing these permits, the Illinois EPA is holding a public comment period to receive comments on the proposed issuance of the permits and the terms and conditions of the draft permits.

II. Project Description

The proposed biomass-fired boiler would provide steam to the new ethanol plant as an alternative to the gas-fired boilers originally permitted for the plant¹. With the construction of the Jefferson Energy Center, the natural gas-fired boilers would generally serve in a back-up role normally operating only during outages of the biomass boiler. The Jefferson Energy Center project is considered part of the ethanol plant since the proposed biomass boiler will be dedicated to supplying the ethanol plant's steam needs.

The proposed boiler would be of fluidized bed design, with a maximum nominal heat input capacity of no more than 485 million Btu per hour. To control emissions, the boiler will utilize low-NOx burners, overfire air, a selective non-catalytic reduction system (SNCR), and a baghouse. The boiler would be designed to fire corn bran, germ-cake and syrup supplied from the ethanol plant, and commercial wood fuel.

This project also includes fuel and bulk material storage, processing and handling facilities for the boiler. Control of particulate matter (PM) will be by work practices and by baghouses. Fugitive dust and particulate matter emissions are generated by vehicle traffic and wind blown dust on roadways, parking lots and other open areas at the plant. These emissions would be minimized with a fugitive dust control program as well as pavement of new roadway areas for the boiler plant.

Waltonville Ethanol, LLC was issued a construction permit for a new plant to produce ethanol by fermentation of starch-rich "grit" prepared at the plant by separation or fractionation of whole corn. In this process corn is separated into grit, which will be used for ethanol production at the plant, and two byproduct streams germ and bran. The germ would be sent offsite for

¹The original construction permit for the ethanol plant, Permit 06090086, was issued on April 10, 2007.

recovering of oil. The bran could be used either as a component in the feed, as fuel, or solid "as is" at other plants.

The ethanol plant construction permit is being revised to coordinate operation of the ethanol plant with the bio-mass boiler plant, as well as other changes. The revised permit enables the new bio-mass boiler to serve as a primary steam source with natural gas fired boilers that are part of the ethanol plant serving in a secondary capacity. The revised permit also allows the new bio-mass boiler to serve as the primary control device for the feed dryers and certain other units at the ethanol plant, with the regenerative thermal oxidizer (RTO) that is part of the ethanol plant serving in a secondary capacity. In addition, the revised permit provides for an increase in the VOM emissions from the operation controlled by the RTO, a reduction in permitted operation and emissions of the two backup engines, and minimizing the VOM emissions from ethanol loadout operation by railcars by use of dedicated cars.

III. FUEL SUPPLY

Ethanex has indicated that its wood suppliers would be required to provide clean wood fuel to the plant. Items such as treated and painted wood, foreign materials, and wood debris from construction & demolition would not be part of the fuel stream. No mixed wood material streams are allowed to be processed as fuel at the plant, and in no way is any wood to be provided from wood waste transfer stations. The plant will not be a pollution control facility and will not require local siting approval pursuant to Section 39.2 of the Illinois Environmental Protection Act.

IV. PROJECT EMISSIONS

The potential or permitted annual emissions of the boiler plant, as would be allowed by the draft permit for the plant, are summarized below. Actual emissions will be less than the permitted emissions to the extent that the proposed boiler plant would operate at less than its maximum capacity and control equipment normally operates to achieve emission rates that are lower than the applicable standards and limitations.

Permitted Annual Emissions of the Project (Tons/Year)

	<u>PM</u>	<u>PM₁₀</u>	<u>SO₂</u>	<u>NO_x</u>	<u>VOM</u>	<u>CO</u>	<u>Indiv.</u> <u>HAP</u>	<u>Aggr.</u> <u>HAP</u>
Jefferson Energy Center	187.3	185.1	85.4	223.4	83.2	201.5	1.8	7.8

Notes: Particulate matter (PM) including condensable particulate.

The combined emissions of the boiler plant and the ethanol plant are:

Permitted Annual Emissions of the Source (Tons/Year)

<u>Source</u>	<u>PM</u>	<u>PM₁₀</u>	<u>SO₂</u>	<u>NO_x</u>	<u>VOM</u>	<u>CO</u>	<u>Indiv.</u> <u>HAP</u>	<u>Aggr.</u> <u>HAP</u>
Ethanol Plant	55.1	45.6	26.6	14.3	72.6	18.4	7.7	13.1
Jefferson Energy Center	<u>187.3</u>	<u>185.1</u>	<u>85.4</u>	<u>223.4</u>	<u>83.2</u>	<u>201.5</u>	<u>1.8</u>	<u>7.8</u>

Totals 242.5 230.7 112.0 237.7 155.8 219.9 9.5 20.9

V. APPLICABLE EMISSION STANDARDS

The application shows that the proposed project will readily comply with applicable state and federal emission standards, including the emission standards and regulations of the State of Illinois (35 Ill. Adm. Code: Subtitle B) and applicable federal emission standards adopted by the United States EPA (40 CFR Parts 60).

The new boiler would be subject to federal New Source Performance Standards (NSPS), at 40 CFR Part 60. The boiler (i.e., steam generator) would be subject to the NSPS for commercial-industrial-institutional steam generating units, 40 CFR 60, Subpart Db. The NSPS sets emission limits for nitrogen oxides, sulfur dioxide, and particulate matter, as well as opacity, from the boiler.

Potential emissions of hazardous air pollutant (HAP) from the source, i.e., the combination of the ethanol plant and the proposed boiler facility are less than 25 tons per year in the aggregate and less than 10 tons per year for any single HAP. As a consequence, no National Emission Standards for Hazardous Air Pollutants are applicable to this source.

IV. OTHER REGULATIONS OF CONCERN

Prevention of Significant Deterioration (PSD)

This proposed project will not be a major project for purposes of the federal rules for Prevention of Significant Deterioration of Air Quality (PSD), 40 CFR 52.21, because the potential emissions of the source will be less than 250 tons per year for each NSR pollutant.

The ethanol plant is not in one of the 28 listed categories of source for which the major source threshold is the potential to emit 100 tons per year or more. This is consequence of recent changes to the PSD rules by USEPA, in which the ethanol plants reclassified as not being "chemical process plants". The Jefferson Energy Center also is not in one of the 28 listed categories of sources for which the major source threshold is 100 tons/year. This is because the primary fuel fired in the boiler, i.e., wood and other forms of biomass*, is not a fossil fuel.

*Natural gas, a fossil fuel, will be used during startup, however, the firing rate of the boiler during startup using this fuel will be less than 95.0 mmBtu/hr, well below the applicability level of 250 mmBtu/hr.

Trading Programs for SO₂ and NO_x

The proposed boiler plant will not be an affected source for purposes of Title IV of the Clean Air Act (Acid Deposition), and the regulations promulgated thereunder because the biomass boiler will only generate steam for industrial use and will not produce over 25 MW of electricity that can be sent to the grid.

Likewise, the boiler plant will not be subject to the NO_x Trading Program for Illinois' version of the Clean Air Interstate Rule (which will take the place of the NO_x Trading Program).

Clean Air Act Permit Program (CAAPP)

This plant would be considered a major source under Illinois' Clean Air Act Permit Program (CAAPP) pursuant to Title V of the Clean Air Act. This is because at least one pollutant will have permitted emissions in excess of 100 tons per year, making it a major source under the CAAPP program.

VII. DRAFT PERMIT

The Illinois EPA has prepared a draft of the new and revised construction permit that it would propose to issue for this project. The conditions of the permit for the boiler plant set forth the specifications for the wood fuel used at the facility, the revised source-wide emissions of the combined boiler facility and ethanol plant, and the air pollution control requirements that the project must meet. These requirements include the applicable emission standards that apply to the project. They also include the measures that must be used and the emission limits that must be met for emissions of different regulated pollutants from the project.

The permit also establishes enforceable limitations on the amount of emissions for which the project is permitted. Limitations are set for the pollutants for which the project is not rendered as major. In addition, to limit annual emissions, the permit includes short-term emission limitations and operational limitations, as needed to provide practical enforceability of the annual emission limitations. As previously noted, actual emissions associated with the project would be less than the permitted emissions to the extent that the facility operates at less than capacity and control equipment normally operates to achieve emission rates that are lower than the applicable standards and limitations.

The permit also establishes appropriate compliance procedures for the ongoing operation of emission units, including requirements for emission testing, required work practices, operational monitoring, recordkeeping, and reporting. These measures are imposed to assure that the operation and emissions of the source are appropriately tracked to confirm compliance with the various limitations and requirements established for individual emission units.

VIII. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that the draft permits would meet all applicable state and federal air pollution control requirements, subject to the conditions in the draft permit. Comments are requested on this proposed action by the Illinois EPA and the conditions of the draft permit.