

Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

Project Summary for a
Construction Permit Application from
Akin Energy LLC, for an
Electric Power Generating Facility near
Macedonia, Illinois

Source Identification No.: 065804AAA
Application No.: 14020004
Date Received: February 6, 2014

Schedule

Public Comment Period Begins: November 20, 2014
Public Comment Period Closes: December 20, 2014

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I. INTRODUCTION

Akin Energy, LLC, (Akin), has applied for a construction permit for a power generating facility near Macedonia, in Hamilton County. The facility would use reciprocating engines to generate electricity. Natural gas would be the main fuel for the facility. The proposed facility is referred to by Akin as the Hamilton County Facility.

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed the application and made a preliminary determination that the application for the proposed project meets applicable requirements. Accordingly, the Illinois EPA has prepared a draft of the construction permit that it would propose to issue for the proposed project. Before issuing any construction permit, the Illinois EPA is holding a public comment period to provide the public with the opportunity to comment on the application, including the evaluation of air quality impacts that have been conducted for this project, and on the draft construction permit.

II. PROJECT DESCRIPTION

The principal emission units at the proposed facility would be 14 natural gas-fired reciprocating internal combustion engines that will power generators to produce electricity (natural gas engines). The nominal electrical output of the facility would be either 130 MW or 140 MW, depending on the model of engine that is selected.

The proposed natural gas engines will be modern, spark ignition, turbo-charged, lean-burn engines. The engines will operate intermittently to follow their load requirements, with downtime for maintenance. These engines will be equipped with selective catalytic reduction to reduce emissions of nitrogen oxides, as well as an oxidation catalyst, to reduce emissions of carbon monoxide. The engines will be housed in a building and each engine will vent through its own stack.

The facility will also have two "low-load" engine diesel generators. These low-load units will provide electricity when the demand is below the level at which the main engines can be operated.

In addition to the natural gas and diesel engine generators, two natural gas fuel heaters, an emergency diesel generator engine, and an emergency diesel fire water pump engine will be used to support the facility. The fuel heaters will be used to ensure that the temperature of natural gas fired in the main engines is warm enough to prevent condensation of moisture in the fuel system. The emergency generator will be used to meet the facility's need for emergency power during power outages. The fire pump will be part of the fire protection system at the facility.

III. PROJECT EMISSIONS

The potential emissions of the proposed facility are listed below. Potential emissions are calculated based on continuous operation of all 14 gas-fired engines and limited operation of other emission units at

the facility, as would be provided by the draft permit. Actual emissions will be less as the facility will usually not operate at its capacity and will operate with a reasonable margin of compliance.

Potential Emissions of the Hamilton County Facility*

<u>Pollutant</u>	Potential Emissions (Tons Per Year)
Particulate Matter (PM)	98.6
Particulate Matter PM ₁₀ /PM _{2.5}	98.6
Nitrogen Oxides (NOx)	140.8
Carbon Monoxide (CO)	231.9
Volatile Organic Material (VOM)	191.0
Sulfur Dioxide (SO ₂)	9.7

*Based on the model of engine with the higher emission rate for a pollutant

IV. APPLICABLE EMISSION STANDARDS

Akin's application shows that the proposed facility will comply with applicable federal and state emission standards, including applicable federal emission standards adopted by the USEPA (40 CFR Parts 60 and 63) and the emission standards of the State of Illinois (35 Ill. Adm. Code: Subtitle B, Subchapter c).

The facility's natural gas-fired engines must comply with the applicable requirements of the federal New Source Performance Standards (NSPS) for Stationary Spark Ignition Internal Combustion Engines, 40 CFR 60 Subpart JJJJ. The other engines must comply with the NSPS for Stationary Compression Ignition Internal Combustion Engines, 40 CFR 60 Subpart IIII.

In addition, the engines at the facility must comply with the applicable requirements of the federal National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines, 40 CFR 63 Subpart ZZZZ. For this purpose, the application is based on the potential emissions of hazardous air pollutants (HAP) of the facility being such that the facility is an area source for emissions of HAP. The permit would require that testing on these engines be conducted to confirm that the facility is an area source for HAP. The permit would also require other measures to verify on an ongoing basis that the facility is not a major source of HAPs.¹

V. APPLICABLE REGULATORY PROGRAMS

Prevention of Significant Deterioration (PSD)

¹ If the facility is in fact found to be a major source for HAP, based on the emission testing that would be required by the permit or by other relevant information, the Permittee would have to comply with applicable requirements of the Engine NESHAP for engines that are located at a major source for HAP. The fuel heaters would also be subject to the NESHAP for Industrial, Commercial, and Institutional Boilers at Major Sources, 40 CFR 63 Subpart DDDDD.

This proposed facility is a minor source for purposes of the federal rules for Prevention of Significant Deterioration of Air Quality (PSD), 40 CFR 52.21. This is because the potential emissions of pollutants from the facility will be less than 250 tons per year for each applicable NSR pollutant². In addition, while emissions of greenhouse gases (GHG) will be greater than 75,000 tons per year, because emissions of pollutants other than GHG will not trigger PSD, PSD will not apply to GHG. Accordingly, the substantive requirements of the PSD rules are not applicable to this project.

Trading Programs for SO₂ and NO_x

The proposed gas-fired engines will be exempt new units for purposes of Title IV of the Clean Air Act (Acid Deposition), and the regulations promulgated thereunder because (1) they will not use coal or a coal-derived fuel and (2) the fuel will have a sulfur content no greater than 0.05 percent, on an annual average.

Likewise, the engines will not be subject to the NO_x Trading Program for Illinois' version of the Clean Air Trading Rule, 35 IAC Part 225, Subparts C, D and E, because the nameplate capacity of each generator will not exceed 25 MW and the engines do not qualify as cogeneration units.

Clean Air Act Permit Program (CAAPP)

The proposed facility will 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 it would have permitted emissions for pollutants that are greater than 100 tons per year, making it a major source under the CAAPP program.

VI. AIR QUALITY IMPACTS

With its application, Akin submitted an air quality impact analysis for NO_x, CO, PM_{2.5}, and PM₁₀. The analysis shows that the proposed facility would not significantly affect ambient air quality in the vicinity of the facility.

The projected air quality impacts for 1- and 8- hour CO, annual NO₂ and annual PM₁₀ emissions from the facility do not exceed the PSD modeling significance levels at any location. The PM₁₀ maximum modeled concentration plus the background concentration of 34.7 µg/m³ resulted in a value of 90.9 µg/m³ which is well under the NAAQS of 150 µg/m³ for the 24-hour average. For PM_{2.5} (24-hour and annual averaging periods) and NO₂ (1-hour averaging period), the maximum modeled concentrations with background values resulted in values exceeding their respective National Ambient Air Quality Standard (NAAQS). However the facility's impact was shown to not be significant at any of the exceedances for

² The facility 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.

any pollutant/averaging period and therefore was not contributing to the modeled exceedances. Therefore, the facility was shown to not exceed or contribute to an exceedance of these NAAQS.

VII. DRAFT PERMIT

The Illinois EPA has prepared a draft of the construction permit that it would propose to issue for this facility. The conditions of the permit set forth the emission limits and the air pollution control requirements that the facility must meet. These requirements include the applicable emission standards that apply to the various units at the facility. 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 facility.

In addition to annual limits on emissions, the permit includes short-term emission limits and operational limits, as needed to provide practical enforceability of the annual emission limits.

The permit would also establish appropriate compliance procedures for the project, including requirements for emission testing, required work practices, operational monitoring (e.g., fuel usage), recordkeeping, and reporting. These measures are imposed to assure that the operation and emissions of the facility are appropriately tracked to confirm compliance with the various limits and requirements established for individual units.

VIII. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that the application for the proposed facility meets applicable state and federal air pollution control requirements, subject to the conditions in the draft permit. The Illinois EPA is therefore proposing to issue a construction permit for the facility.

Comments are requested on this proposed action by the Illinois EPA and the conditions of the draft permit.