

# PERMIT BOOK

STATE OF MISSOURI



## DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

### PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **05 2015 - 014**

Project Number: 2015-03-105  
Installation Number: 021-0004

Parent Company: Great Plains Energy

Parent Company Address: P.O. Box 418679, Kansas City, MO 64141

Installation Name: KCP&L GMO – Lake Road Station

Installation Address: 1413 Lower Lake Road, St. Joseph, MO 64504

Location Information: Buchanan County, S30, T57N, R35W

Application for Authority to Construct was made for:

Combustion of up to 3,611,111 gallons per year of fuel oil #2 in EP-06 Boiler #6. This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060  
*Construction Permits Required.*

Standard Conditions (on reverse) are applicable to this permit.

Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

**MAY 26 2015**

EFFECTIVE DATE

  
DIRECTOR OR DESIGNEE  
DEPARTMENT OF NATURAL RESOURCES

## STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. The permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Department's Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources' Kansas City Regional Office within 15 days after the actual start up of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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Permit No.	
Project No.	2015-03-105

### SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

*The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060(12)(A)10. "Conditions required by permitting authority."*

KCP&L GMO – Lake Road Station  
Buchanan County, S30, T57N, R35W

1. Operational Limitations
  - A. KCP&L GMO – Lake Road Station shall limit fuel oil #2 combustion in EP-06 Boiler #6 to 3,611,111 gallons per consecutive 12-month period.
  - B. KCP&L GMO – Lake Road Station shall not combust fuel oil #2 containing sulfur in excess of 0.05 percent by weight.
  - C. KCP&L GMO – Lake Road Station shall maintain records of the amount of fuel combusted during each operating day. Attachment A or an equivalent form approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Condition 1.A.
  - D. KCP&L GMO – Lake Road Station shall maintain fuel receipts indicating the sulfur content of the fuel oil to demonstrate compliance with Special Condition 1.B.
2. NO<sub>x</sub> Control  
KCP&L GMO – Lake Road Station shall employ overfire air (OFA) to control NO<sub>x</sub> emissions from EP-06 Boiler #6.
3. Record Keeping and Reporting Requirements
  - A. KCP&L GMO – Lake Road Station shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.
  - B. KCP&L GMO – Lake Road Station shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit show an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE  
SECTION (5) REVIEW

Project Number: 2015-03-105  
Installation ID Number: 021-0004  
Permit Number:

KCP&L GMO – Lake Road Station  
1413 Lower Lake Road  
St. Joseph, MO 64504

Complete Date  
of Application: April 15, 2015

Parent Company:  
Great Plains Energy  
P.O. Box 418679  
Kansas City, MO 64141

Buchanan County, S30, T57N, R35W

REVIEW SUMMARY

- KCP&L GMO has applied for authority to combust up to 3,611,111 gallons per year of fuel oil #2 in EP-06 Boiler #6.
- HAP emissions are expected from the proposed equipment. The combustion of fuel oil #2 does result in the emission of HAPs. Potential emissions of each individual HAP are below Missouri's SMALs.
- 40 CFR Part 60, Subpart Da – *Standards of Performance for Electric Utility Steam Generating Units* is not applicable to EP-06 Boiler #6. The combustion of fuel oil #2 does not increase the amount of any air pollutant (to which a standard applies, i.e. PM, NO<sub>x</sub>, or SO<sub>2</sub>) emitted into the atmosphere or result in the emission of any air pollutant (to which a standard applies) into the atmosphere that was previously not emitted; therefore, the switch does not meet the definition of modification in §60.2.
- 40 CFR Part 60, Subpart Kb – *Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984* is not applicable to the fuel oil storage tank, EU-0180. EU-0180 is an existing tank used to store fuel oil #2 that is not being physically modified by this project. The tank was originally installed in 1972 and has always contained fuel oil #2. Additionally, fuel oil #2 has a maximum true vapor pressure of less than 3.5 kPa.
- 40 CFR Part 63, Subpart UUUUU – *National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units*. After this project, EP-06 Boiler #6 will be capable of combusting coal, natural gas, or fuel oil #2. Depending upon the amounts of each fuel combusted, EP-06 Boiler #6 may or may not be subject to this regulation. If the combustion rates of coal and fuel oil #2 are less than 10 percent of the average annual heat input during any three calendar year or less than 15 percent of the annual heat input during any calendar year, the

boiler will meet an exemption at §63.9983(c). If the boiler meets the exemption at §63.9983(c), then the boiler will be subject to 40 CFR Part 63, Subpart DDDDD.

- 40 CFR Part 63, Subpart DDDDD – *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters* will be applicable to EP-06 Boiler #6 if the boiler meets the exemption at §63.9983(c). §63.7490(e) states that an existing EGU that meets the applicability requirements of this subpart after the effective date due to a change (e.g., fuel switch) is considered to be an existing source under this subpart. §63.7545(h) requires submittal of a notice within 30 days of the fuel switch. §63.7495(f) states that existing EGUs subject to this subpart must be in compliance with the applicable existing source provisions on the effective date the unit becomes subject to this subpart (i.e. the date of the fuel switch).
- EP-06 Boiler #6 currently operates an ESP to demonstrate compliance with 10 CSR 10-6.405 while combusting coal; however, the ESP is not needed to demonstrate compliance with 10 CSR 10-6.405 while combusting natural gas or fuel oil #2. The installation has always used overfire air to control NO<sub>x</sub> emissions; however, Special Condition 2 ensures federal enforceability.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*. Potential emissions of all pollutants are conditioned below de minimis levels by the fuel oil combustion limit in Special Condition 1.A.
- This installation is located in Buchanan County an attainment area for all criteria pollutants.
- This installation is on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2 Item #21 *Fossil-fuel boilers totaling more than 250 MMBtu/hr heat input*. The installation's major source level is 100 tons per year and fugitive emissions count towards major source applicability.
- Ambient air quality modeling was not performed since potential emissions of the application are below the de minimis levels and Missouri's SMALs.
- Emissions testing is not required.
- A Part 70 Operating Permit application for a significant modification is required for this installation within one year of permit issuance.
- Approval of this permit is recommended with special conditions.

## INSTALLATION DESCRIPTION

KCP&L GMO – Lake Road Station is located in St. Joseph, Missouri. The installation consists of seven boilers, one gas turbine stack, one waste heat boiler, and two jet engines (combustion turbines). The company’s principal product is electric power production. The facility is an existing major source for both construction and operating permits. The installation currently operates under Part 70 Operating Permit OP2007-005A which remains effective until the installation’s renewal, Project 2011-07-078, is issued.

The following New Source Review permits have been issued to KCP&L GMO – Lake Road Station by the Air Pollution Control Program:

**Table 1: Permit History**

Permit Number	Description
0389-003	Installation of a peaking turbine
0689-002	Installation of a peaking turbine
0190-009	Installation of a 21 MW oil-fired turbine
0196-011	Installation of a fly-ash removal system
062006-001	Installation of a 358 MMBtu/hr dual-fired boiler (natural gas and fuel oil #2)
092011-003	Expired temporary permit

## PROJECT DESCRIPTION

KCP&L GMO has applied for authority to combust up to 3,611,111 gallons per year of fuel oil #2 in EP-06 Boiler #6. Natural gas and coal are already permitted fuels that EP-06 Boiler #6 is capable of accommodating. EP-06 Boiler #6 has never been capable of accommodating fuel oil #2; therefore, project emissions are based on the transport, storage, and combustion of fuel oil #2.

Fuel oil #2 will be delivered to the installation on a 0.1 mile unpaved haul road. The fuel oil #2 will be stored in an existing 1,470,000 gallon fixed roof tank, EU-0180. A combustion limitation of 3,611,111 gallons per year of fuel oil #2 combustion in Special Condition 1.A ensures that project NO<sub>x</sub> emissions do not exceed the de minimis level of 40.0 tons per year. The combustion limitation also bottlenecks the annual usage rate of the paved oil haul road and working losses from EU-0180.

This project is a modification of EP-06 Boiler #6. As a modification, project emissions from modified sources could be determined as the projected actual emission rate minus the baseline actual emission rate; however, as the potential emission rate of the project is below de minimis levels, it was determined that calculation of the baseline actual emission rate was unnecessary. If baseline actual emissions had been included in the calculation of project emissions, a reduction in overall emissions from EP-06 Boiler #6 would likely have occurred.

## EMISSIONS/CONTROLS EVALUATION

Potential emissions from the unpaved oil haul road were calculated using equation 1a from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 13.2.2 “Unpaved Haul Roads” (November 2006), a silt content of 8.4 percent, a mean vehicle weight of 28 tons, and 105 days per year with at least 0.01” of precipitation.

Breathing losses from the fixed roof fuel oil storage tank were not evaluated as it is an existing source. Working losses from the fuel oil storage tank were evaluated using EPA software TANKS 4.0.9d.

Potential emissions from the combustion of fuel oil #2 were calculated using emission factors obtained from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 1.3 “Fuel Oil Combustion” (May 2010), a maximum fuel sulfur content of 0.05% by weight (as limited by Special Condition 1.B), and 10% control of NO<sub>x</sub> by overfire air.

The following table provides an emissions summary for this project. Existing actual emissions were taken from the installation’s 2014 EIQ. Potential emissions of the application represent the potential of transporting, storing, and combusting 3,611,111 gallons per year of fuel oil #2.

**Table 2: Emissions Summary (tons per year)**

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2014 EIQ)	Potential Emissions of the Application
PM	25.0	Major	N/A	4.01
PM <sub>10</sub>	15.0	Major	236.69	4.27
PM <sub>2.5</sub>	10.0	Major	79.38	2.81
SO <sub>x</sub>	40.0	Major	1,112.11	13.33
NO <sub>x</sub>	40.0	Major	1,733.92	39.00
VOC	40.0	Major	17.09	0.65
CO	100.0	Major	105.69	9.03
HAPs	25.0	Major	7.72	0.13
Formaldehyde	10.0, SMAL = 2	N/D	N/D	0.11
Polycyclic Organic Matter	10.0, SMAL = 0.01	N/D	N/D	0.006
Selenium Compounds	10.0, SMAL = 0.1	N/D	N/D	0.004
Lead Compounds	10.0, SMAL = 0.01	N/D	N/D	0.002
Manganese Compounds	10.0, SMAL = 0.8	N/D	N/D	0.001
Arsenic Compounds	10.0, SMAL = 0.005	N/D	0.01	0.001
Beryllium Compounds	10.0, SMAL = 0.008	N/D	N/D	0.001
Chromium Compounds	10.0, SMAL = 5	N/D	0.02	0.001
Cadmium Compounds	10.0, SMAL = 0.01	N/D	N/D	0.001
Nickel Compounds	10.0, SMAL = 1	N/D	0.02	0.001
Mercury Compounds	10.0, SMAL = 0.01	N/D	N/D	0.001

N/A = Not Applicable; N/D = Not Determined

## PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*. Potential emissions of all pollutants are conditioned below de minimis levels by the fuel oil combustion limit in Special Condition 1.A.

## APPLICABLE REQUIREMENTS

KCP&L GMO – Lake Road Station shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards for the emission sources covered by this project, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

### GENERAL REQUIREMENTS

- 10 CSR 10-6.065 *Operating Permits*
- 10 CSR 10-6.110 *Submission of Emission Data, Emission Fees and Process Information*
- 10 CSR 10-6.165 *Restriction of Emission of Odors*
- 10 CSR 10-6.170 *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*
- 10 CSR 10-6.220 *Restriction of Emission of Visible Air Contaminants*

### SPECIFIC REQUIREMENTS

- 40 CFR Part 63, Subpart UUUUU – *National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units* may be applicable. The installation may limit coal and fuel oil #2 combustion in EP-06 Boiler #6 such that the exemption at §63.9983(c) applies.
- 10 CSR 10-6.075 *Maximum Achievable Control Technology Regulations*
  - 40 CFR Part 63, Subpart DDDDD – *National Emission Standards for Hazardous Air Pollutant for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters* may be applicable. If the exemption to 40 CFR Part 63, Subpart UUUUU at §63.9983(c) applies, then EP-06 Boiler #6 will be subject to this regulation.

- 10 CSR 10-6.260 *Restriction of Emission of Sulfur Compounds*
  - EP-06 Boiler #6 is exempt from this regulation while combusting natural gas. While combusting fuel oil #2, the boiler will have the potential to emit 83.99 lb/hr SO<sub>2</sub> which is less than the 1,400 lb/hr SO<sub>2</sub> limit in 10 CSR 10-6.260 Table I. While combusting coal, the boiler is subject to the 1,400 lb/hr SO<sub>2</sub> limit and uses a CEMS to demonstrate compliance.
  
- 10 CSR 10-6.405 *Restriction of Particulate Matter Emissions From Fuel Burning Equipment Used For Indirect Heating*
  - EP-06 Boiler #6 is deemed in compliance with this regulation without the aid of a control device while combusting natural gas or fuel oil #2 (with less than 1.2% sulfur) per 10 CSR 10-6.405(1)(C). While combusting coal, EP-06 Boiler #6 is required to operate an ESP according to the CAM plan contained in their operating permit.

#### STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*, I recommend this permit be granted with special conditions.

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Alana Hess  
New Source Review Unit

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Date

#### PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated March 25, 2015, received April 3, 2015, designating Great Plains Energy as the owner and operator of the installation.



## APPENDIX A

### Abbreviations and Acronyms

<b>%</b> .....	percent	<b>m/s</b> .....	meters per second
<b>°F</b> .....	degrees Fahrenheit	<b>Mgal</b> .....	1,000 gallons
<b>acfm</b> .....	actual cubic feet per minute	<b>MW</b> .....	megawatt
<b>BACT</b> .....	Best Available Control Technology	<b>MHDR</b> .....	maximum hourly design rate
<b>BMPs</b> .....	Best Management Practices	<b>MMBtu</b> ....	Million British thermal units
<b>Btu</b> .....	British thermal unit	<b>MMCF</b> .....	million cubic feet
<b>CAM</b> .....	Compliance Assurance Monitoring	<b>MSDS</b> .....	Material Safety Data Sheet
<b>CAS</b> .....	Chemical Abstracts Service	<b>NAAQS</b> ...	National Ambient Air Quality Standards
<b>CEMS</b> .....	Continuous Emission Monitor System	<b>NESHAPs</b>	National Emissions Standards for Hazardous Air Pollutants
<b>CFR</b> .....	Code of Federal Regulations	<b>NO<sub>x</sub></b> .....	nitrogen oxides
<b>CO</b> .....	carbon monoxide	<b>NSPS</b> .....	New Source Performance Standards
<b>CO<sub>2</sub></b> .....	carbon dioxide	<b>NSR</b> .....	New Source Review
<b>CO<sub>2e</sub></b> .....	carbon dioxide equivalent	<b>PM</b> .....	particulate matter
<b>COMS</b> .....	Continuous Opacity Monitoring System	<b>PM<sub>2.5</sub></b> .....	particulate matter less than 2.5 microns in aerodynamic diameter
<b>CSR</b> .....	Code of State Regulations	<b>PM<sub>10</sub></b> .....	particulate matter less than 10 microns in aerodynamic diameter
<b>dscf</b> .....	dry standard cubic feet	<b>ppm</b> .....	parts per million
<b>EQ</b> .....	Emission Inventory Questionnaire	<b>PSD</b> .....	Prevention of Significant Deterioration
<b>EP</b> .....	Emission Point	<b>PTE</b> .....	potential to emit
<b>EPA</b> .....	Environmental Protection Agency	<b>RACT</b> .....	Reasonable Available Control Technology
<b>EU</b> .....	Emission Unit	<b>RAL</b> .....	Risk Assessment Level
<b>fps</b> .....	feet per second	<b>SCC</b> .....	Source Classification Code
<b>ft</b> .....	feet	<b>scfm</b> .....	standard cubic feet per minute
<b>GACT</b> .....	Generally Available Control Technology	<b>SDS</b> .....	Safety Data Sheet
<b>GHG</b> .....	Greenhouse Gas	<b>SIC</b> .....	Standard Industrial Classification
<b>gpm</b> .....	gallons per minute	<b>SIP</b> .....	State Implementation Plan
<b>gr</b> .....	grains	<b>SMAL</b> .....	Screening Model Action Levels
<b>GWP</b> .....	Global Warming Potential	<b>SO<sub>x</sub></b> .....	sulfur oxides
<b>HAP</b> .....	Hazardous Air Pollutant	<b>SO<sub>2</sub></b> .....	sulfur dioxide
<b>hr</b> .....	hour	<b>tph</b> .....	tons per hour
<b>hp</b> .....	horsepower	<b>tpy</b> .....	tons per year
<b>lb</b> .....	pound	<b>VMT</b> .....	vehicle miles traveled
<b>lb/hr</b> .....	pounds per hour	<b>VOC</b> .....	Volatile Organic Compound
<b>MACT</b> .....	Maximum Achievable Control Technology		
<b>µg/m<sup>3</sup></b> .....	micrograms per cubic meter		

Mr. Kevin Noblet  
VP of Generation  
KCP&L GMO – Lake Road Station  
P.O. Box 418679  
Kansas City, MO 64141

RE: New Source Review Permit - Project Number: 2015-03-105

Dear Mr. Noblet:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application, and submittal of a significant modification to your operating permit is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to §§621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, whose contact information is: Administrative Hearing Commission, Truman State Office Building, P.O. Box 1557, Jefferson City, MO 65102, website: [www.oa.mo.gov/ahc](http://www.oa.mo.gov/ahc).

If you have any questions regarding this permit, please do not hesitate to contact Alana Hess, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp  
New Source Review Unit Chief

SH:ahl

Enclosures

c: Kansas City Regional Office  
PAMS File: 2015-03-105  
Permit Number: