

Missouri Department of dnr.mo.gov

# NATURAL RESOURCES

Michael L. Parson, Governor

Carol S. Comer, Director

MAR 04 2019

Ms. Kisha Hines  
Consulting Engineer  
Ameren Missouri Labadie Energy Center  
P.O. Box 66149, MC 602  
St. Louis, MO 63166

RE: New Source Review Permit - Project Number: 2018-11-021

Dear Ms. Hines:

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 with your amended 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.

This permit may include requirements with which you may not be familiar. If you would like the department to meet with you to discuss how to understand and satisfy the requirements contained in this permit, an appointment referred to as a Compliance Assistance Visit (CAV) can be set up with you. To request a CAV, please contact your local regional office or fill out an online request. The regional office contact information can be found at the following website: <http://dnr.mo.gov/regions/>. The online CAV request can be found at <http://dnr.mo.gov/cav/compliance.htm>.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty 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, United States Post Office Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: [www.oa.mo.gov/ahc](http://www.oa.mo.gov/ahc).



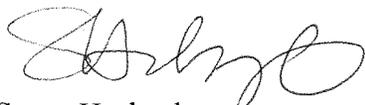
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Ms. Kisha Hines  
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If you have any questions regarding this permit, please contact Ryan Schott, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM



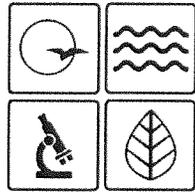
Susan Heckenkamp  
New Source Review Unit Chief

SH:rsj

Enclosures

c: St. Louis Regional Office  
PAMS File: 2018-11-021

Permit Number: 032019-002



**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: 032019-002

Project Number: 2018-11-021  
Installation Number: 071-0003

Parent Company: Ameren Corporation

Parent Company Address: 1901 Chouteau Avenue, St. Louis, MO 63166

Installation Name: Ameren Missouri Labadie Energy Center

Installation Address: 226 Labadie Power Plant Road, Labadie, MO 63055

Location Information: Franklin County (S19, T44N, R2E)

Application for Authority to Construct was made for:

The modification of the Unit 4 economizer ash handling process. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

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

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

\_\_\_\_\_  
Director or Designee  
Department of Natural Resources

MAR 04 2019

\_\_\_\_\_  
Effective Date

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. Permittee should notify the Enforcement and Compliance Section of 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 Enforcement and Compliance Section of the Department's Air Pollution Control Program of the anticipated date of startup of this (these) air contaminant source(s). The information must be made available within 30 days of actual startup. Also, you must notify the Department's regional office responsible for the area within which you are located within 15 days after the actual startup of this (these) air contaminant source(s).

A copy of the permit application and this permit and permit review shall be kept at the installation address and shall be made available to Department's 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 source(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 using the contact information below.

Contact Information:  
Missouri Department of Natural Resources  
Air Pollution Control Program  
P.O. Box 176  
Jefferson City, MO 65102-0176  
(573) 751-4817

The regional office information can be found at the following website:  
<http://dnr.mo.gov/regions/>

**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 to 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 paragraph (12)(A)10. "Conditions required by permitting authority."*

Ameren Missouri Labadie Energy Center  
Franklin County (S19, T44N, R2E)

1. **Moisture Content Testing Requirement**
  - A. Ameren Missouri Labadie Energy Center shall verify through testing that the moisture content of the mixture of dry economizer ash and wet bottom ash on the Unit 4 dry flight conveyor is greater than or equal to 4.8% by weight.
  - B. Testing shall be conducted according to the method prescribed by the American Society for Testing Materials (ASTM) D-2216, C-566, or another method approved by the Director.
  - C. The initial test shall be conducted no later than 45 days after the start of operation. A second test shall be performed the calendar year following the initial test during the months of July or August.
  - D. The test samples shall be taken from a portion of ash that contains a mixture of both economizer ash and bottom ash either on the Unit 4 submerged flight conveyor or from the bunker after it comes off the conveyor.
  - E. The written analytical report shall include the raw data and moisture content of each sample, the test date, and the original signature of the individual performing the test. The report shall be filed on-site or at the Ameren Corporation main office within 30 days of completion of the required test.
  - F. If the moisture content of either of the two tests is less than the moisture content in Special Condition 1.A, another test may be performed with 15 days of the noncompliant test. If the results of that test are also less than the limit, Ameren Missouri Labadie Energy Center shall control the moisture content using a water spray system, according to the following requirements:
    - 1) Ameren Missouri Labadie Energy Center shall install and operate a water spray system at the drop point from the dry flight conveyor to the submerged flight conveyor.
    - 2) The water spray system shall be operated at all times when Unit 4 economizer ash is being handled.

**SPECIAL CONDITIONS:**

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

- 3) Watering may be suspended during freezing conditions and/or when use of the wet spray devices may damage the equipment. In the event of a water spray system failure, Ameren Missouri Labadie Energy Center may use an alternate source of water, such as a spray hose, to moisten the ash at an appropriate location until the water spray system is repaired. A brief description of such events shall be kept in a log.
2. Record Keeping and Reporting Requirements
    - A. Ameren Missouri Labadie Energy Center shall maintain all records required by this permit for not less than five years and shall make them immediately available to any Missouri Department of Natural Resources' personnel upon request.
    - B. Ameren Missouri Labadie Energy Center shall report to the Air Pollution Control Program's Compliance/Enforcement Section at P.O. Box 176, Jefferson City, MO 65102 or at [AirComplianceReporting@dnr.mo.gov](mailto:AirComplianceReporting@dnr.mo.gov), no later than 10 days after the end of the month during which any record required by this permit shows noncompliance with a limitation imposed by this permit.

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

Project Number: 2018-11-021

Installation ID Number: 071-0003

Permit Number: 032019-002

Installation Address:

Ameren Missouri Labadie Energy Center  
226 Labadie Power Plant Road  
Labadie, MO 63055  
Franklin County (S19, T44N, R2E)

Parent Company:

Ameren Corporation  
1901 Chouteau Avenue  
St. Louis, MO 63166

REVIEW SUMMARY

- Ameren Missouri Labadie Energy Center has applied for authority to modify the Unit 4 economizer ash handling process.
- The application was deemed complete on December 14, 2018.
- HAP emissions are expected from the proposed equipment. HAPs of concern from this process include trace particulate HAPs present in the ash.
- None of the NSPS or NESHAPs apply to this installation. None of the currently promulgated MACT regulations apply to the proposed equipment.
- Moisture content testing and/or a water spray system will be used to control particulate emissions from the drop point onto the dry flight conveyor.
- 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 below de minimis levels.
- This installation is located in Franklin County, an attainment/unclassifiable area for all criteria pollutants.
- This installation is classified as item number 26 on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2: *Fossil-fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input*. The installation's major source level is 100 tons per year and fugitive emissions are counted toward major source applicability.
- Emissions testing is not required for the equipment as a part of this permit. Testing may be required as part of other state, federal, or applicable rules.
- Submittal of an amendment to your Part 70 Operating Permit is required within 1 year of equipment startup.

- Approval of this permit is recommended with special conditions.

## INSTALLATION DESCRIPTION

Ameren Missouri Labadie Energy Center operates a baseload electric generating station primarily fired by subbituminous coal. The installation consists of four tangentially fired boilers with oil backup, coal and ash handling, haul roads, storage piles, emergency equipment, fuel and lube storage tanks, and parts washers. Ash is ponded onsite or sold offsite. The installation is a major source for PM, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>x</sub>, NO<sub>x</sub>, VOC, CO, and HAPs. The installation currently has a Part 70 Operating Permit (OP2017-048) that expires June 19, 2022. The following New Source Review permits have been issued to Ameren Missouri Labadie Energy Center from the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description
012018-002A	Alternative flue gas conditioning agent
012018-002	Temporary permit for flue gas conditioning
102016-004A	Verify ash rate
012005-016B	Update ash silo PTE
102016-004	Ash handling and landfill
092013-015	Temporary permit to test activated carbon at boiler 3
092013-006	Temporary permit to test coal additives at boilers 3 and 4
112012-011	Temporary permit to test compliance options for MACT UUUUU at boiler 3
0992-016B	New ESPs
122009-009	Temporary permit to test a SO <sub>3</sub> replacement
0992-016A	SO <sub>3</sub> injection revised special conditions
0992-016	SO <sub>3</sub> injection
0792-006	Economizer and fly ash transfer tanks, silos, sluicing
Formerly Mineral Resource Technologies, LLC (071-0164) now part of this installation	
012005-016A	Update railcar loading system design
012005-016	Fly ash silos, railcar loading
0699-001	Fly ash railcar loading (equipment replaced by permit 012005-016)
1294-015	Fly ash silos, truck loading system

## PROJECT DESCRIPTION

Since 2011, Ameren Missouri Labadie Energy Center has obtained several construction permits, permit amendments, and “no permit required” determination letters for the modification of the coal combustion residual (CCR) handling process. The first applicable project was a “no permit required” determination (2011-03-038) for the installation of a new submerged flight conveyor for transfer of bottom and economizer ash from Unit 4 to a three-sided bunker where it is then transferred to trucks for disposal in CCR impoundments. This change to Unit 4 ash handling made no changes to the wet sluicing of economizer ash from the economizer hoppers except to tie it into the new submerged flight conveyor.

In October 2016, Ameren Missouri Labadie Energy Center was issued Construction Permit No.102016-004 for several additional ash handling modifications that would be constructed and implemented in a phased manner. As various phases of construction are being completed, some of these modifications and associated new equipment are beginning to be placed into service. Specifically, the two new fly ash CCR silos have been installed, as well as two new truck loading systems. Modifications to the bottom and economizer ash handling systems for Units 1-3 are still underway. The change in Unit 4 economizer ash handling from wet sluicing to dry transfer of the economizer ash into the submerged flight conveyor has not been completed.

Due to physical limitations, the facility will not actually be able to transfer economizer ash into the submerged flight conveyor for Unit 4 bottom ash, as indicated in the previous construction permit. Instead, Ameren Missouri Labadie Energy Center is proposing to revise the design to move economizer ash via dry conveyors from the economizer hoppers and transfer it onto the incline of the submerged flight conveyor carrying bottom ash to the three-sided bunker. The dry flight conveyor transfer point will be moved from a point in the water bath of the submerged flight conveyor to a point on the incline of the Unit 4 submerged flight conveyor. The economizer ash is expected to mix with the wet bottom ash on the dry flight conveyor, resulting in a similar overall ash moisture content as what was originally permitted. To ensure the moisture content of the combined material is not significantly less than the projected value, moisture content testing of the mixed ash will be conducted.

The proposed change to the Unit 4 economizer ash handling system will not impact boiler operation, increase boiler heat rate, or result in any increased utilization above what the boiler is currently capable of achieving. The modifications to CCR handling will not debottleneck or otherwise affect the electrical loads served by the boiler. Emission points affected by the modifications to the Unit 4 ash handling include the following:

- Bottom and economizer ash drop to bunker
- Bottom and economizer ash unloading to landfill
- Bottom and economizer ash loading of trucks
- Transport truck haul roads

## EMISSIONS/CONTROLS EVALUATION

Emissions from CCR handling were calculated assuming a maximum annual throughput of 52,560 tons of combined bottom and economizer ash from Unit 4. This value is based on realistic projections of ash produced, which were used for the development of design rates in Construction Permit No. 102016-004. An ash moisture content of 13% was assumed, which was taken from a moisture test conducted for the previous construction permit.

Particulate emissions from material transfer points were calculated using the drop point equation, found in AP-42 Section 13.2.4 *Aggregate Handling and Storage Piles*

(November 2006). The affected emission points were revised to include the change in economizer ash composition due to the elimination of wet sluicing. Bottom ash and economizer ash were calculated together since they are physically mixed together when combined on the conveyor. A moisture content of 4.8% was used in the drop point equation, as this is the highest value listed to retain the quality rating of the equation.

Emissions from the hauling of Unit 4 bottom and economizer ash were included in this analysis because the installation historically marketed the ash as a saleable byproduct. The historic haul roads used to transport ash were reevaluated to provide a method for calculating baseline actual emissions, which could be compared to current ash hauling emissions from transporting Unit 4 ash to the pond. Potential emissions from haul roads were calculated using the predictive equations found in AP-42 Section 13.2.1 *Paved Roads* (January 2011) and Section 13.2.2 *Unpaved Roads* (November 2006). A silt loading value of 7.4 grams per square meter was used, which was the same value used to calculate the emissions in Construction Permit No. 102016-004.

Because this project involves modifying the operation of a permitted process, the actual emissions of the existing equipment can be subtracted from the total potential emissions of the new project. The increase in emissions from Unit 4 ash handling was determined by calculating the difference between the potential PM, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions of this new project and the baseline actual emissions of the equipment as it was originally permitted. Baseline actual emissions were calculated by taking the average annual emissions from the Unit 4 ash handling equipment since Ameren Missouri Labadie Energy Center originally began operating the equipment in April 2015 through July 2016 when they began modifying the operation. Table 2 provides a summary of the project emission calculations.

Table 2: Project Emission Calculations (tons per year)

Pollutant	Total Potential Emissions of the New Project	Baseline Actual Emissions	Potential Emissions of the Project
PM	89.41	68.10	21.30
PM <sub>10</sub>	24.65	14.94	9.72
PM <sub>2.5</sub>	6.06	2.94	3.12

Table 3 provides an emissions summary for this project. Existing potential emissions were taken from the installation's previous construction permit (102016-004). Existing actual emissions were taken from the installation's most recent EIQ. Potential emissions of the project represent the baseline actual emissions from the original project design subtracted from the potential emissions of the modified equipment, assuming continuous operation (8,760 hours per year).

Table 3: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2017 EIQ)	Potential Emissions of the Project	New Potential Emissions of the Installation
PM	25.0	Major	N/D	21.30	Major
PM <sub>10</sub>	15.0	Major	2,202.31	9.72	Major
PM <sub>2.5</sub>	10.0	Major	1,457.14	3.12	Major
SO <sub>x</sub>	40.0	Major	33,114.94	N/A	Major
NO <sub>x</sub>	40.0	Major	7,049.94	N/A	Major
VOC	40.0	Major	278.00	N/A	Major
CO	100.0	Major	2,318.02	N/A	Major
Total HAPs	25.0	Major	160.21	0.02	Major

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 below de minimis levels.

### APPLICABLE REQUIREMENTS

Ameren Missouri Labadie Energy Center 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, 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

- *Start-Up, Shutdown, and Malfunction Conditions*, 10 CSR 10-6.050
- *Operating Permits*, 10 CSR 10-6.065
- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
  - Per 10 CSR 10-6.110(4)(B)2.A, a full EIQ is required annually
- *Restriction of Emission of Odors*, 10 CSR 10-6.165
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170

- *Restriction of Emission of Visible Air Contaminants, 10 CSR 10-6.220*

#### STAFF RECOMMENDATION

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

#### PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated November 21, 2018, received November 26, 2018, designating Ameren Corporation as the owner and operator of the installation.

## APPENDIX A

### Abbreviations and Acronyms

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