



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: **07 2014 - 002**

Project Number: 2014-04-004
Installation Number: 077-0039

Parent Company: City Utilities of Springfield, Missouri

Parent Company Address: 301 East Central, P.O. Box 551, Springfield, MO 65801

Installation Name: City Utilities of Springfield – John Twitty Energy Center

Installation Address: 5100 West Farm Road 164, Springfield, MO 65801

Location Information: Greene County, S7, T28N, R22W

Application for Authority to Construct was made for:
Replacement of an existing ESP with a baghouse and installation of a PAC injection system. 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.

JUL 14 2014

EFFECTIVE DATE

Kyna L Moore
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. 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' Southwest 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.	2014-04-003

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."

City Utilities of Springfield – John Twitty Energy Center
Greene County, S7, T28N, R22W

1. Control Device Requirement - Baghouse
 - A. City Utilities of Springfield – John Twitty Energy Center shall control emissions from E09 Utility Boiler #1 using a baghouse as specified in the permit application.
 - B. The baghouse shall be operated and maintained in accordance with the manufacturer's specifications. The baghouse shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. The gauge or meter shall be located such that Department of Natural Resources' employees may easily observe it.
 - C. Replacement filters for the baghouse shall be maintained onsite at all times in sufficient quantities to replace broken bags. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
 - D. City Utilities of Springfield – John Twitty Energy Center shall continuously monitor and record the operating pressure drop across the baghouse. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance specifications.
 - E. City Utilities of Springfield – John Twitty Energy Center shall maintain a copy of the baghouse manufacturer's performance specifications on site.
 - F. City Utilities of Springfield – John Twitty Energy Center shall maintain an operating and maintenance log for the baghouse which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and

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Permit No.	
Project No.	2014-04-003

SPECIAL CONDITIONS:

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

- 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.

2. Control Device Requirement – Bin Vent Filter
 - A. City Utilities of Springfield – John Twitty Energy Center shall control emissions from E93 PAC Silo using a bin vent filter as specified in the permit application.

 - B. The bin vent filters shall be operated and maintained in accordance with the manufacturer's specifications.

 - C. Replacement filters for the bin vent shall be maintained onsite at all times in sufficient quantities to replace broken filters. The filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).

 - D. City Utilities of Springfield – John Twitty Energy Center shall maintain a copy of the bin vent filter manufacturer's performance specifications on site.

 - E. City Utilities of Springfield – John Twitty Energy Center shall maintain an operating and maintenance log for the bin vent filter which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.

3. Haul Road Requirements
City Utilities of Springfield – John Twitty Energy Center shall maintain E94 Paved PAC Silo Haul Road. Maintenance of the surface shall be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from the haul road while the plant is operating.

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Permit No.	
Project No.	2014-04-003

SPECIAL CONDITIONS:

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

4. **Recordkeeping and Reporting Requirements**
City Utilities of Springfield – John Twitty Energy Center 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. These records shall include MSDS for the PAC being used.

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

Project Number: 2014-04-004
Installation ID Number: 077-0039
Permit Number:

City Utilities of Springfield – John Twitty Energy Center
5100 West Farm Road 164
Springfield, MO 65801

Complete: May 28, 2014

Parent Company:
City Utilities of Springfield, Missouri
301 East Central, P.O. Box 551
Springfield, MO 65801

Greene County, S7, T28N, R22W

REVIEW SUMMARY

- City Utilities of Springfield, Missouri has applied for authority to replace the existing ESP on E09 Utility Boiler #1 with a baghouse and to install a PAC injection system consisting of E94 Paved PAC Haul Road, E93 PAC Silo, and a pneumatic conveyor at the John Twitty Energy Center.
- HAP emissions are not expected from the proposed equipment.
- 40 CFR Part 63, Subpart UUUUU – *National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units (MATS)* will apply to E09 Utility Boiler #1. Compliance for existing EGUs is required by no later than April 16, 2015. On November 21, 2012, City Utilities of Springfield - John Twitty Energy Center received approval from the Air Pollution Control Program for a one year extension of the compliance date as allowed by §112(i)(3)(B) of the Clean Air Act. The installation is required to demonstrate compliance with MATS by no later than April 16, 2016.
- A baghouse is replacing an existing ESP to control particulate emissions from E09 Utility Boiler #1. A bin vent filter is being used to control particulate emissions from E93 PAC Silo.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*. Potential emissions of controlled particulates are below de minimis levels. This permit was required to create federally enforceable control device requirements.
- This installation is located in Greene 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 #26 – Fossil-fuel-fired steam electric plants of more than 250 MMBtu/hr heat input. The installation's major source level is 100 tons per year and fugitive emissions are counted toward major source applicability.

- Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels.
- Emissions testing is not required for the equipment.
- A Part 70 Operating Permit application is required for this installation within one year of commencement of operations. The application shall include a CAM plan for the use of the baghouse on E09 Utility Boiler #1 to comply with NSPS D *Standards of Performance for Fossil-Fuel-Fired Steam Generators*.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

City Utilities of Springfield – John Twitty Energy Center is an existing electric power generation facility located within the city of Springfield, Missouri. The installation is an existing major source for both NSR and Title V permitting. Equipment at the installation includes coal, natural gas, and/or fuel oil boilers; natural gas or fuel oil-fired combustion turbines; fuel handling and storage; coal and ash handling; and coal unloading, conveying, and crushing.

Part 70 Operating Permit OP2008-056 was issued to the installation on November 26, 2008 and remains effective until a new Part 70 operating permit is issued. A Part 70 operating permit renewal application, Project 2013-06-003, was received by the Air Pollution Control Program on May 31, 2013 and is under review.

The following New Source Review permits have been issued to City Utilities of Springfield – John Twitty Energy Center by the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description
0482-002	Installation of two Twin-Pac Combustion Turbines
0391-001	Modifications to Coal-fired Boiler and two Twin-Pac Gas-Fired Combustion Turbines
0695-023	Modification of Side Discharge Chute on Fly Ash Silo and Installation of Natural Gas Burners
122004-007	PSD - Installation of a Pulverized Coal-Fired Boiler and Associated Material Handling Equipment
122004-007A	Corrections to PSD per MACC
102009-006	Temporary Permit – Well Drilling Generators
122004-007B	Unit 2 Update

PROJECT DESCRIPTION

City Utilities of Springfield, Missouri has applied for authority to replace the existing ESP on E09 Utility Boiler #1 with a baghouse and to install a PAC injection system consisting of E94 Paved PAC Haul Road, E93 PAC Silo, and a pneumatic conveyor at the John Twitty Energy Center.

The existing ESP on E09 Utility Boiler #1 achieved 97.1 percent particulate control. The new baghouse is guaranteed to achieve at least 99 percent particulate control. Special Condition 1 is a federally enforceable condition requiring the use of the baghouse. The upgrade to the particulate control system on E09 Utility Boiler #1 does not result in an emissions increase and was not included in project potential emission calculations.

The installation is also installing a PAC injection system to facilitate compliance with mercury requirements of MATS. The installation will receive PAC by truck on a new paved haul road – E94 Paved PAC Haul Road. The haul road is 0.49 miles in length. PAC will be stored in a new silo – E93 PAC Silo. Particulate emissions from the unloading of PAC into the silo will be controlled by a bin vent filter. Special Condition 2 is a federally enforceable condition requiring the use of the bin vent filter. PAC will be pneumatically conveyed from E93 PAC Silo and blown into the inlet duct to the new baghouse controlling particulate emissions from E09 Utility Boiler #1. The PAC injection rate will be limited to the amount necessary to achieve compliance with MATS due to the cost of PAC procurement. The maximum PAC injection rate is guaranteed by the manufacturer not to exceed 47.3 lb/hr for E09 Utility Boiler #1. The maximum PAC injection rate bottlenecks the annual usage of E94 Paved PAC Haul Road and E93 PAC Silo.

EMISSIONS/CONTROLS EVALUATION

No emission factors are currently available for the handling of PAC. A conservative estimate of emissions was made by using cement emission factors. Emission factors for the unloading of cement to an elevated storage silo were obtained from FIRE for Process SCC 30501107. MSDS for the PAC did not indicate HAP; therefore, only the particulate emission factors were used. No $PM_{2.5}$ emission factor was provided; therefore, $PM_{2.5}$ emissions were conservatively estimated using the PM_{10} emission factor provided.

Particulate emissions from E94 Paved PAC Haul Road were calculated using equations from the EPA document, AP-42, Compilation of Air Pollutant Emission Factors, Fifth Edition, Section 13.2.1 *Paved Roads*. Special Condition 3 is a federally enforceable condition requiring maintenance of the pavement.

PAC injection to the stack at 47.3 lb/hr will be controlled by a baghouse achieving 99 percent control efficiency. Particulate emissions were calculated as one percent of the maximum injection rate.

The following table provides an emissions summary for this project. Existing actual emissions were taken from the installation's 2013 EIQ and EPA's 2012 GHG Emissions

Data. Potential emissions of the application represent the bottlenecked potential of E94 Paved PAC Haul Road and E93 PAC Silo.

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory De Minimis Levels	Existing Potential Emissions	Existing Actual Emissions	Potential Emissions of the Application
PM	25.0	Major	N/A	2.09
PM ₁₀	15.0	Major	380.68	2.07
PM _{2.5}	10.0	Major	195.26	2.07
SO _x	40.0	Major	2,584.41	N/A
NO _x	40.0	Major	884.61	N/A
VOC	40.0	Major	22.34	N/A
CO	100.0	Major	603.98	N/A
GHG (CO ₂ e)	75,000	Major	4,840,150	N/A
HAP	25.0	Major	14.90	N/A
Hydrogen Fluoride (7664-39-3)	10.0	Major	12.92	N/A

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 controlled particulates are below de minimis levels. This permit was required to create federally enforceable control device requirements.

APPLICABLE REQUIREMENTS

City Utilities of Springfield – John Twitty 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.

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

- 10 CSR 10-6.070 *New Source Performance Regulations*
 - 40 CFR Part 60, Subpart D – *Standards of Performance for Fossil-Fuel-Fired Steam Generators* and 40 CFR Part 64 *Compliance Assurance Monitoring* apply to E09 Utility Boiler #1.
- 10 CSR 10-6.075 *Maximum Achievable Control Technology Regulations*
 - 40 CFR Part 63, Subpart UUUUU – *National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units* will apply to E09 Utility Boiler #1.

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.

Alana L. Rugen, P.E.
New Source Review Unit

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated March 27, 2014, received March 31, 2014, designating City Utilities of Springfield, Missouri as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- FIRE: <http://cfpub.epa.gov/webfire/index.cfm?action=fire.SearchEmissionFactors>

APPENDIX A

Abbreviations and Acronyms

%percent	m/s meters per second
°Fdegrees Fahrenheit	Mgal 1,000 gallons
acfm actual cubic feet per minute	MW megawatt
BACT Best Available Control Technology	MHDR maximum hourly design rate
BMPs Best Management Practices	MMBtu Million British thermal units
Btu British thermal unit	MMCF million cubic feet
CAM Compliance Assurance Monitoring	MSDS Material Safety Data Sheet
CAS Chemical Abstracts Service	NAAQS ... National Ambient Air Quality Standards
CEMS Continuous Emission Monitor System	NESHAPs National Emissions Standards for Hazardous Air Pollutants
CFR Code of Federal Regulations	NO_x nitrogen oxides
CO carbon monoxide	NSPS New Source Performance Standards
CO₂ carbon dioxide	NSR New Source Review
CO_{2e} carbon dioxide equivalent	PAC Powdered Activated Carbon
COMS Continuous Opacity Monitoring System	PM particulate matter
CSR Code of State Regulations	PM_{2.5} particulate matter less than 2.5 microns in aerodynamic diameter
dscf dry standard cubic feet	PM₁₀ particulate matter less than 10 microns in aerodynamic diameter
EQ Emission Inventory Questionnaire	ppm parts per million
ESP Electrostatic Precipitator	PSD Prevention of Significant Deterioration
EP Emission Point	PTE potential to emit
EPA Environmental Protection Agency	RACT Reasonable Available Control Technology
EU Emission Unit	RAL Risk Assessment Level
fps feet per second	SCC Source Classification Code
ft feet	scfm standard cubic feet per minute
GACT Generally Available Control Technology	SIC Standard Industrial Classification
GHG Greenhouse Gas	SIP State Implementation Plan
gpm gallons per minute	SMAL Screening Model Action Levels
gr grains	SO_x sulfur oxides
GWP Global Warming Potential	SO₂ sulfur dioxide
HAP Hazardous Air Pollutant	tph tons per hour
hr hour	tpy tons per year
hp horsepower	VMT vehicle miles traveled
lb pound	VOC Volatile Organic Compound
lbs/hr pounds per hour	
MACT Maximum Achievable Control Technology	
µg/m³ micrograms per cubic meter	

Mr. David M. Fraley, Ph.D.
Environmental Affairs Director
City Utilities of Springfield Missouri
P.O. Box 551
Springfield, MO 65801

RE: New Source Review Permit - Project Number: 2014-04-004

Dear Dr. Fraley:

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 Part 70 operating permit amendment 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 have any questions regarding this permit, please do not hesitate to contact Alana Rugen, 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:arl

Enclosures

c: Southwest Regional Office
PAMS File: 2014-04-004

Permit Number: