

Hand Delivery

Jeff DeRouen, Executive Director Public Service Commission of Kentucky 211 Sower Boulevard P. O. Box 615 Frankfort, Kentucky 40602

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JUN 1 5 2011

PUBLIC SERVICE COMMISSION

June 15, 2011

RE: In the Matter of: <u>The Application of Louisville Gas and Electric Company</u> <u>for Certificates of Public Convenience and Necessity and Approval of Its</u> <u>2011 Compliance Plan for Recovery by Environmental Surcharge</u> **Case No. 2011-00162**

Dear Mr. DeRouen:

At page 1 in the direct testimony of Gary H. Revlett, Louisville Gas and Electric Company ("LG&E") committed to provide copies of permit applications for the projects in LG&E's 2011 Environmental Surcharge Compliance Plan as they are filed with the appropriate agencies.

Enclosed please find an original and ten (10) copies of LG&E's Mill Creek Construction Permit Application filed with the Louisville Metro Air Pollution Control District on June 13, 2011. The facilities referenced in the Construction Permit Application are the same facilities included in Project No. 26 of LG&E's 2011 Environmental Surcharge Compliance Plan in this proceeding.

Should you have any questions concerning the enclosed, please do not hesitate to contact me.

Sincerely,

Robert M. Conroy

cc: Parties of Record

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MILL CREEK GENERATING STATION CONSTRUCTION PERMIT APPLICATION

LOUISVILLE GAS & ELECTRIC COMPANY LOUISVILLE, KENTUCKY

Prepared by:

LOUISVILLE GAS & ELECTRIC COMPANY 220 West Main St. Louisville, Kentucky 40232 (502) 627-4621

June 2011





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Louisville Gas & Electric Company (LG&E) plans to construct additional air pollution control equipment at the existing Mill Creek electricity generating facility in Louisville, Kentucky. The project construction will coincide with the compliance dates for the new 1-hour SO₂ and NO₂ National Ambient Air Standards (NAAQS), the proposed new Clean Air Transport Rule (CATR), the proposed new Utility Boiler MACT (EGU MACT), the CO₂ NSR Tailoring Rule and the EPA reconsideration of the Regional Haze SIP for Kentucky (BART). As described in this application, the proposed project will be subject to District construction permitting requirements, but will not be subject to the requirements of Prevention of Significant Deterioration (PSD) or Non-Attainment New Source Review (NNSR) air permitting.

1.1 PROJECT DESCRIPTION

The construction project proposed for the Mill Creek facility is anticipated to begin in the summer of 2012 with full operation set to begin in 2016. The proposed construction projects at Mill Creek will consist of the following air emission units:

- Unit 1 (MC1)
 - o Pulse Jet Fabric Filter
 - Powdered Activated Carbon injection
 - Hydrated Lime Injection
 - Combined Flue-Gas Desulfurization Unit (with MC2)
- Unit 2 (MC2)
 - o Pulse Jet Fabric Filter
 - Powdered Activated Carbon injection
 - Hydrated Lime Injection
 - Combined Flue-Gas Desulfurization Unit (with MC1)
- Unit 3 (MC3)
 - Pulse Jet Fabric Filter
 - Powdered Activated Carbon injection
 - Hydrated Lime Injection (Previously permitted but not constructed)
 - o Modification and Connection to MC4 Flue-Gas Desulfurization Unit
- Unit 4 (MC4)
 - o Pulse Jet Fabric Filter
 - Powdered Activated Carbon injection
 - o Hydrated Lime Injection (Previously permitted but not constructed)
 - o Flue-Gas Desulfurization Unit

1.2 REGULATORY APPLICABILITY

The Mill Creek facility is comprised of a coal-fired power plant and is a PSD-major source. With the addition of the proposed control equipment at the facility, Mill Creek will remain a major source under the PSD permitting program because potential emissions of at least one pollutant will still

exceed the major source threshold of 100 tons per year (tpy). Further, as the facility will remain a PSD major source, PSD permitting is required for pollutants whose potential emissions increases due to the project exceed the Significant Emission Rate (SER). Emission increases of all PSD-regulated pollutants will be below the PSD permitting thresholds, including: oxides of nitrogen (NO_X), particulate matter (PM), particulate matter less than 10 and 2.5 microns in aerodynamic diameter (PM₁₀ and PM_{2.5}), carbon monoxide (CO), volatile organic compounds (VOC), sulfuric acid mist (H₂SO₄), sulfur dioxide (SO₂), fluorides, and lead (Pb).

LG&E is submitting this construction permit application in accordance with all federal and Louisville Metro Air Pollution Control District (APCD) specific requirements. Emission units associated with the proposed control equipment will be subject to New Source Performance Standards (NSPS), National Emissions Standards for Hazardous Air Pollutants (NESHAP), and several APCD regulations. Potential facility-wide emissions, baseline emissions, and PSD/NNSR permitting applicability are presented in Table 1-1.

	Project Potential	Baseline Actual	Project - Net	PSD/N	INSR
Pollutant	Emissions (tpy)	Emissions (tpy)	Emissions (tpy)	Thresholds (tpy)	Permitting Triggered?
PM	1,299.4	2,691.0	-1,391.6	25.0	No
PM10	921.9	1,910.6	-988.7	15.0	No
PM _{2 5}	662.1	1,372.4	-710.3	10.0	No
SO_2	8,462.8	28,239.7	-19,776.9	40.0	No
H_2SO_4	296.2	1,412.0	-1,115.8	7.0	No
CO ₂ e	46,545.2		46,545.2	75,000	No
Hg	0.0264	0.2000	-0.1736		

TABLE 1-1.	PSD	PERMITTING	APPI	ICABIL	JTY
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1.3 APPLICATION ORGANIZATION

The following information is included as part of this application submittal:

- ▲ Section 1 includes the application executive summary;
- ▲ Section 2 provides a description of the proposed project;
- ▲ Section 3 discusses the emissions calculation methodologies and presents the actual baseline emissions from units to be shutdown and future potential emissions from new units to be constructed;
- ▲ Section 4 details the regulatory applicability analysis;
- ▲ Section 5 contains an analysis demonstrating compliance with APCD STAR requirements for new emission units;
- ▲ Appendix A includes an area map, site layout, and process flow diagram;
- Appendix B contains the construction permit application forms;
- ▲ Appendix C presents the detailed emission calculations.

This section describes the proposed construction project at the Mill Creek Generation Station. A tentative facility layout and unit specific process flow diagrams are provided in Appendix A.

2.1 SITE DESCRIPTION

LG&E plans to modify and construct air pollution control equipment at the existing Mill Creek Generating Station in Louisville, Kentucky. The existing Mill Creek Generating Station, at which four coal-fired utility boilers and associated ancillary equipment are operated, is owned and operated by Louisville Gas & Electric. Jefferson County has been designated by the United States Environmental Protection Agency (U.S. EPA) as "attainment" or "unclassifiable" for all criteria pollutants except annual PM_{2.5}, for which Jefferson County has been designated nonattainment.¹

2.2 PROPOSED NEW AND MODIFIED OPERATIONS

The proposed control equipment, scheduled to commence construction in summer of 2012 and completion in 2016. New operations from the proposed construction process will include the FGD construction and upgrade projects, Pulse Jet Fabric Filter with PAC injection, sorbent injection, storage silos, ash storage and haul roads.

A process flow diagram for the proposed additions and modifications to the air pollution control equipment for the four coal-fired utility boilers is included in Appendix A and each of the air emission units is discussed in the following subsections.

Control Equipment	Unit 1	Unit 2	Unit 3	Unit 4	
SCR			SCR Turn-Down	SCR Turn-Down	
PJFF	New PJFF	New PJFF	New PJFF	New PJFF	
PAC Injection	2 Storage Silos	2 Storage Silos	2 Storage Silos	2 Storage Silos	
Lime Injection	2 Storage Silos	2 Storage Silos	2 Storage Silos	2 Storage Silos	
FGD	New Combin	ed FGD Unit	Upgrade of Unit 4	New FGD	
			Current FGD		
Stack	New Combined Stack		Move to Unit 4's	New	
			Existing		
Ash Storage	1 New Silo				

TABLE 2-1	PROPOSED	& MODIFIED	EQUIPMENT
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¹ On March 9, 2011 EPA published a federal register notice indicating that the Louisville areas has attained the 1997 annual PM_{25} NAAQS based on complete, quality-assured and certified 2007-2009 data. However, this determination is no equivalent to the redesignation of the area to attainment for the annual PM_{25} NAAQS and NNSR requirements must continue to be evaluated for this project.

2.2.1 FLUE GAS DESULFURIZATION (FGD) UNITS

The Mill Creek Air Compliance Projects includes the installation of several new air pollution controls. Some of these new and upgraded facilities are necessary to comply with the 1-hour SO₂ NAAQS, under which LMAPCD is expected to declare Jefferson County a non-attainment area for the 1-hour SO₂ NAAQS and will require SO₂ emission reductions at Mill Creek.

The new controls include the construction of new Flue Gas Desulfurization ("FGD") equipment and upgrades to some existing FGD equipment. More specifically, LG&E proposes to build two new FGDs (one to serve both Mill Creek Units 1 and 2, another to serve Mill Creek Unit 4), to tie Mill Creek Unit 3 into the existing (but upgraded) Mill Creek Unit 4 FGD, and then to remove the current FGDs on Mill Creek Units 1, 2, and 3. The basic design of an FGD like the ones LG&E proposes to install is shown in the figure below.

Mill Creek Units 1 & 2

Constructing a new FGD is a more cost-effective option than redesigning and modifying the existing, first-generation FGDs to increase the SO₂ removal efficiency from the current approximate 90 percent removal rate to the 98+ percent SO₂ removal efficiency that today's technology can achieve. To gain the necessary increased efficiency from the existing FGDs would require multiple, extended outages to accommodate the necessary structural and infrastructure revisions and repairs from the original designs. Long outages (of multiple months) would likely require replacement power to meet loads at peak times that is typically less economic than running the Mill Creek units. The new combined FGD will be designed to remove 98+ percent of the SO₂ emissions from both units. FGD is the best available control technology currently available for SO₂ reduction. Also, the planned FGD will be able to comply consistently with the EGU MACT HCl emissions limitations (measuring SO₂ as a proxy for HCl, as allowed by the proposed MACT rule).

The new FGD installation requires locating the FGD and associated equipment away from the existing FGD locations. This allows construction to be performed while the units remain in operation and then, when the construction is completed, the units can be tied into the new technologies during shorter outages. The new FGD locations will require new chimneys similar to those installed on the FGD projects recently completed at the KU Ghent and Brown stations. The addition of a higher-efficiency FGD in combination with the installation of additional particulate matter control equipment will require the installation of larger induced draft fans and/or the installation of booster fans to account for the increased pressure drop through the flue gas train.

LG&E proposes to begin initial demolition activities related to the construction of the new Unit 1 & 2 FGD (e.g., demolition of existing warehouses and craft locker rooms northeast of Units 1 and 2) in the fall of 2011 and to begin constructing the new FGD in early 2012 with the work being placed into operation by mid-2015. Once the new

FGD to service both Units 1 and 2 is placed into operation, the existing Mill Creek Units 1 and 2 FGDs will be demolished.

Mill Creek Unit 4

LG&E proposes to install a new FGD for Unit 4 that can consistently achieve SO₂ emissions reductions greater than 98 percent. FGD is the best available control technology currently available for SO₂ reduction. The new FGD's SO₂ scrubbing capabilities (compared to its current FGD) will increase the amount of limestone required and byproduct produced proportionally to the additional capture of SO₂. Also, as with the new combined Units 1 and 2 FGD, Unit 4's planned FGD will be able to comply with the proposed EGU MACT rule's HCl emissions limitations (measuring SO₂ as a proxy for HCl, as allowed by the proposed regulation).

The Unit 4 new FGD installation requires locating the FGD and associated equipment away from the existing Unit 4 FGD location. This allows construction to be performed while the unit remains in operation and then, when construction is completed, Unit 4 can be tied in to the new technology during a shorter outage. The new FGD location will include a new chimney for Unit 4 (Mill Creek Unit 3 will utilize the existing Unit 4 chimney) similar to those installed on the FGD projects recently completed. The addition of a higher-efficiency FGD in combination with the installation of additional particulate matter control equipment will require the installation of larger induced draft fans and/or the installation of booster fans to account for the increased pressure drop through the flue gas train.

LG&E proposes to begin initial demolition activities related to the construction of the Unit 4 FGD in the fall of 2011, and to begin building Unit 4's new FGD in early 2012 with the Unit 4 tie in occurring in late 2014.

Mill Creek Unit 3

Once the new Mill Creek Unit 4 FGD is in service, LG&E proposes to upgrade Unit 4's existing FGD system to accommodate Unit 3 so it can consistently achieve SO₂ emissions of 98 percent on a continuous basis when burning high-sulfur-content coals. The existing Unit 4 FGD is approximately 20% larger in size than the existing Unit 3 FGD (due to generating capacity differences between Units 3 and 4) and can accommodate the needed efficiency upgrades, whereas the existing Unit 3 FGD cannot be modified for the increased capacity due to physical structural steel constraints. Therefore, upgrading the existing Unit 4 FGD with modified spray levels and/or flue gas contact rings/trays and flue gas flow modifications is the most feasible and economical control technology considered for SO₂ reduction for Unit 3. The upgrade is expected to allow the Mill Creek Unit 3 to comply consistently with the EGU MACT rule's HCl emissions limitations (measuring SO₂ as a proxy for HCl, as allowed by the proposed new regulation).

Tying in Unit 3 to Unit 4's existing FGD will result in Unit 3's using the existing Unit 4 chimney. Unit 3's current chimney will be capped and remain in place. Once

the tie-in to the upgraded FGD is completed, Unit 3's current FGD modules will no longer be needed and will be demolished similar to that of Units 1 and 2.

LG&E proposes to begin replacing Unit 4's current FGD in early 2012. Refurbishment work on the existing FGD will occur after tying Unit 4 into the new FGD. LG&E plans to place Unit 4 back into service in late 2014, with Unit 3 being placed back into service (after being tied into the refurbished former Unit 4 FGD) in late 2015.

The additional SO_2 scrubbing capabilities or efficiencies for all four units will increase the amount of limestone required and by-product produced proportionally to the increase in SO_2 removal. Therefore the limestone handling equipment annual hours of operation will increase, however no new or modified equipment will be needed to accommodate the increase in annual limestone usage.

2.2.2 SCR TURN DOWN

Under the proposed CATR, LG&E and KU will be required to reduce their SO_2 annual emissions by approximately 40%. In addition to the new FGDs the Mill Creek air compliance projects includes modifications to Mill Creek Units 3 and 4 to expand the operating range of the unit's existing Selective Catalytic Reduction ("SCR") equipment which will reduce nitrogen compound ("NO_x") emissions. Currently, the SCRs can operate efficiently only when the Mill Creek Unit 3 and Unit 4 are operating at relatively high load levels with the boiler exit gas temperature above 630 degrees Fahrenheit. This temperature range cannot currently be reached during periods when the boiler is generating steam at mid to lower capacity.

Reduction of NO_x only occurs inside the SCRs, once the operating temperatures meet the design levels and ammonia is injected to react with NO_x to form molecular nitrogen and water. Each SCR contains a catalyst system of two to three layers to enhance the reactions between the NO_x and ammonia. This configuration can achieve a 90% NO_x removal efficiency when ammonia is injected with a boiler exit gas temperature above 630 degrees Fahrenheit. The ammonia injection must be turned off at lower temperatures, even though the unit can continue to operate at a lower level of power output. Therefore, one way to expand the operating range at which an SCR can operate efficiently is to adjust the economizers (the last boiler circuit component) on a generating unit to keep the flue gas at higher temperatures when operating at lower load levels.

These changes will also have the benefit of allowing LG&E's Mill Creek Units 3 & 4 to be dispatched economically over a broader operating range after CATR goes into effect and fewer CATR NO_x allowances will be consumed. Having the ability to bring these two units to lower operating levels while still having high degrees of NO_x removal will allow system operators greater flexibility to ensure economical generating system operation.

The CATR related air compliance project also includes an upgrade to the Unit 4 SCR to enhance its NO_X removal efficiency. Unit 4's SCR, although it compares favorably to other industry SCRs, performs slightly less efficient than the SCRs installed in the same era on Mill Creek Unit 3. Modeling of the flue gas and ammonia mixing will take place to determine where additional mixing vanes can be installed to improve the ammonia mixing prior to entering the SCR. This modification will result in a higher NO_x removal ability of the SCR through better utilization of ammonia.

LG&E proposes to begin upgrading the Unit 4 SCR in late 2011, and the work should be complete by mid-2012. The changes to increase the SCR operating range is proposed to begin work on Unit 3 in late 2011, and the work should be complete by mid-2013. LG&E proposes to begin work on Unit 4 in late 2011, and the work should be complete by late 2014.

These proposed SCR modifications will provide additional margin against the NO_x tonnage caps proposed in the new CATR regulation, thus deferring the need for additional SCR installations and additional cost for compliance with the proposed CATR, which imposes an approximately 15 percent reduction in the LG&E/KU annual NO_x emissions.

2.2.3 PJFF with Lime & PAC Injection

The last new regulation requiring additional control equipment is the Electric Generating Unit (EGU) Maximum Achievable Control Technology (MACT) standard. Compliance with this new regulation will require Hazardous Air Pollutant (HAP) Particulate Matter Control Systems to serve each of the four Mill Creek units. Each HAP Particulate Matter Control System comprises a pulse-jet fabric filter ("baghouse") to capture particulate matter, a Powdered Activated Carbon ("PAC") injection system to capture mercury, and a lime injection system to protect the baghouse from the corrosive effects of sulfuric acid mist ("SAM"). These HAP Particulate Matter Control Systems will be similar to the baghouse (including the lime and PAC injection systems) installed at Trimble County Unit 2 ("TC2") as part of its overall air quality control system. Attached in Appendix A are line-drawing schematic diagram of the existing and proposed components of the entire flue-gas stream for each Mill Creek generating unit.

The primary component of the HAP Particulate Matter Control System is particulatematter filtration via a fabric-filter baghouse. Baghouses like the ones LG&E proposes to install at Mill Creek can consistently achieve particulate matter emissions of less than 0.03 lb/MMBtu (the HAPs Rule's particulate matter emission limit) on a continuous basis, and will remove lime injection reagents and mercury-laden PAC, among other particulates. Each baghouse will increase the pressure drop of the flue gas system. As such, each unit's draft system will likely require additional fan capacity accomplished through the replacement of induced draft fans currently installed or the addition of booster fans. The second component of the Particulate Matter Control System is a lime injection system. Lime injection ahead of the baghouse protects the internal components of the baghouse from the corrosive effects of SAM.

The third component of a HAP Particulate Matter Control System is PAC injection. PAC injection is necessary to capture mercury in the flue gas stream. Elemental and oxidized forms of mercury collect on the powered carbon, making it possible for a downstream particulate control device to capture the mercury containing carbon. Each generating unit's PAC injection system will be installed immediately upstream of the baghouse. Coupled with baghouses, the PAC injection systems LG&E proposes to install will be able to meet the HAPs Rule's mercury emission limit of 13 lbs/TWh on a continuous basis.

LG&E proposes to begin installing the HAP Particulate Matter Control Systems to serve all the Mill Creek units in early 2012, and the work should be complete by mid-2015 for Units 1 and 2, late 2015 for Unit 3 and late 2014 for Unit 4.

2.2.4 STORAGE SILOS

All four units at Mill Creek currently include an electrostatic precipitator (ESP) for collection of particulate matter from each unit's flue gas stream. As part of the AQC modifications, the existing ESPs will supplemented by pulse jet fabric filters (PJFFs) to collect fly ash prior to the exhaust gas reaching the wet scrubbers. In addition, the project includes the injection of sorbent (lime/trona) for sulfuric acid (SO₃) control and powdered activated carbon (PAC) for mercury (Hg) control. The injected reagents must also be removed from the exhaust stream by the PJFF.

The lime and PAC injection system will require storage silos for the on-site storage of the material. Two PAC silos and two lime silos will be constructed for each unit for a total of eight PAC and eight lime storage silos. Each storage silo will be equipped with a bin vent for the control of particulate emissions.

The existing east and west ash storage silos each hold 2,081 tons. A new silo is sized at 3,620 tons to achieve total silo capacity of four days operation with the use of existing east and west silos and only new PJFFs in service. Total combined silo capacity of the existing east and west silos and the new silo is 7,782 tons with a total fly ash loading of Units 1, 2, 3 and 4 PJFFs combined of 1,945 tons per day. The fly ash handling system will include all equipment as indicated above for a complete operating system including, but not limited to, a new silo and truck unloading enclosure under the silo, platforms, stairs and ladders for access to all fly ash handling equipment including the silo, electric motors, control devices, and controls. A single vacuum conveying line will be used for Units 1, 2, and 3(each), and two vacuum conveying lines will be used for Unit 4. The new ash storage silo will be equipped with a bin vent for the control of particulate emissions.

2.3 SHUTDOWN OF EXISTING OPERATIONS

The Mill Creek facility currently operates flue gas desulfurization (FGD) processes on each of the coal-fired units. The Unit 1, Unit 2 and Unit 3 FGD units will be removed from service once the new units are constructed and connected to the existing coal-fired units.

Mill Creek is currently considered a "major" source with regards to the PSD/NNSR permitting programs. When a new project is implemented at a major source, the emissions changes resulting from the project must be below the SER thresholds for each PSD regulated pollutant to preclude PSD/NNSR applicability. When accounting for emissions increases associated with construction of new emission units, potential emission rates must be considered. However, when defining the magnitude of emissions decreases associated with shutdown emission units, actual emissions during a baseline period must be taken into consideration.

This section addresses the methodologies used to quantify the potential emissions decreases that will result from the addition of air pollution control equipment at the Mill Creek facility. Detailed emission calculations are shown in Appendix C. PSD/NNSR applicability is further defined in Section 4.

3.1 PSD-REGULATED POTENTIAL POLLUTANT EMISSION INCREASES

Sources of criteria pollutant and greenhouse gas (GHG) emissions increases from the FGD construction and upgrade projects, PJFF with PAC injection, sorbent injection, storage silos, ash storage and haul roads. Methodologies used to calculate potential emissions from these sources are discussed in the following sub-sections. Note that annual emissions are based on maximum operation at 8,760 hours per year unless otherwise noted.

3.1.1 FGD UNITS

Construction and modifications to the wet flue gas desulfurization (FGD) units were designed to obtain 98% SO₂ removal for each of the Mill Creek Units, which is considered the maximum attainable performance. The ability to realize high removal efficiencies on higher sulfur fuels is a major difference between wet scrubbers and semi-dry/dry FGD processes. In a WFGD system, the absorber module is located downstream of the induced draft (ID) fans. Flue gas enters the module and is contacted with a slurry containing reagent and byproduct solids. The SO₂ is absorbed into the slurry and reacts with the calcium through the following overall reactions:

$$SO_2 + CaCO_3 + \frac{1}{2}H_2O \rightarrow CaSO_3 \bullet \frac{1}{2}H_2O + CO_2$$

$$SO_2 + CaCO_3 + 2H_2O + \frac{1}{2}O_2 \rightarrow CaSO_4 \bullet 2H_2O + CO_2$$

In the Mill Creek FGD systems, air is bubbled through the reaction tank to practically convert all of the CaSO₃•1/2H₂O into calcium sulfate dihydrate (CaSO₄•2H₂O), which is commonly known as gypsum. Mill Creek produces a commercial grade of gypsum that is beneficially reused as a by-product for the production of portland cement or wallboard.

The removal rate of SO₂ is directly proportional to the amount of limestone utilized by the FGD process. Increasing the efficiency of the FGD units from approximately 90% to 98% causes an increase in emissions of particulate and CO₂ emissions. The ball mill and crushing system for the limestone is a wet system, therefore increased PM emissions are solely from the offloading, limestone storage piles and conveying of the limestone to the crusher. The limestone at the Mill Creek facility contains approximately 90% CaCO₃ and the average sulfur content for the coal at Mill Creek is 3.5%. Based on technical and historical use data, approximately 3,600 pounds of limestone is utilized per ton of SO₂ removed from the flue gas.

The increase in CO2 emissions were evaluated based on the potential-to-emit for the units at Mill Creek. An average coal heating value of 10,600 Btu/lb was used to determine the coal throughput based on a heat input of 3,085 MMBtu/hr each for Unit 1 and Unit 2, 4,204 MMBtu/hr for Unit 3, and 5,025 MMBtu/hr for Unit 4.

A total of 6,362,983 tons per year of coal would emit 423,138.4 tons per year of SO_2 in the flue gas. Increasing the removal efficiency for SO_2 from 90% to 98% would remove an additional 33,851.1 tons per year and increase the limestone usage by 105,785 tons per year and CO_2 emissions by 46,545 tons per year.

Emissions from the barge unloading and conveying of the limestone are insignificant. Based upon AP-42 emission factors, the additional 105,785 tons per year of limestone would increase fugitive PM emissions by 0.12 tons/yr, PM_{10} by 0.056 tons/yr and $PM_{2.5}$ by 0.0085 tons per year.

Detailed calculations are presented in Appendix C.

3.1.2 STORAGE SILOS

Emission increases from the storage of the hydrated lime, PAC and ash are insignificant and presented in Appendix C.

3.2 **PSD-Regulated Pollutant Emission Decreases**

LG&E, as part of this PSD analysis, has also considered emission reductions from the proposed and modified control equipment at the Mill Creek facility. Actual emissions for existing Mill Creek emission units were calculated based on a combination of CEMS data, stack test factors, AP-42 emission factors, actual fuel usage records, raw material (coal) and by-product (ash) throughput information, and operating records for ancillary emission units. Detailed calculations of baseline actual emission rates are shown in Appendix C.

Emission units constructed as part of the proposed control equipment at the Mill Creek facility will be subject to certain federal, state and APCD air quality regulations. This section of the application summarizes the air permitting requirements and the key air quality regulations that will apply to emission units constructed as part of this project. Specifically, applicability to New Source Review (NSR), New Source Performance Standards (NSPS), pollutant- and category-specific National Emission Standards for Hazardous Air Pollutants (NESHAP), Compliance Assurance Monitoring (CAM), Title V operating permit regulations, Acid Rain Program (ARP), Clean Air Interstate Rule (CAIR)/Clean Air Transport Rule (CATR), and APCD-specific regulations are addressed.

4.1 NSR APPLICABILITY

The NSR permitting program generally requires a stationary source obtain a permit and undertake other obligations prior to construction of any project at an industrial facility if the proposed project results in emission increases in excess of certain threshold levels. The NSR program is comprised of two elements: Non-Attainment NSR (NNSR) and Prevention of Significant Deterioration (PSD). The NNSR program potentially applies to new construction or modifications that result in emission increases of a particular pollutant for which the area in which the facility is located is classified as "nonattainment" for that pollutant. The PSD program applies to project increases of those pollutants for which the area the facility is located in is classified as "attainment" or "unclassifiable".

4.1.1 NON ATTAINMENT NEW SOURCE REVIEW / PSD

The Mill Creek Generating Station is located in Jefferson County which has been currently designated by the U.S. EPA as "attainment" or "unclassifiable" for all criteria pollutants with the exception of $PM_{2.5}$. A source is considered "major" for NNSR if it has the ability to emit 100 tpy of more of any non-attainment pollutant or its appropriate precursors. The Mill Creek facility is currently considered a major source with respect to NNSR due to the fact that $PM_{2.5}$ emissions are greater than 100 tpy.

A stationary source is considered "major" for PSD if it has the potential to emit either (1) 100 tons per year or more of a regulated pollutant if the source is classified as one of 28 designated industrial source categories, or (2) 250 tons per year or more of any regulated pollutant for unlisted sources. Mill Creek is currently considered a PSD major source. Because fossil fuel-fired steam electric plants are on the List of 28, and EPA considers a NGCC unit to constitute a fossil fuel-fired steam electric plant for the purposes of PSD, the source will remain a major source with regards to PSD because it will have the ability to emit 100 tons per year or more of regulated pollutants.²

² In contrast, EPA does not consider NGCC to qualify as a fossil fuel-fired steam electric plant for programs regulating individual units, such as New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants (NESHAP).

Thus, because the Cane Run Station is a major source under both PSD and NNSR, the proposed project emissions must not exceed the Significant Emission Threshold levels (SERs) for any of the regulated pollutants in order for the Mill Creek facility to be exempt from the additional permitting requirements of these regulations (see Table 1-1).

4.2 APPLICABLE NEW SOURCE PERFORMANCE STANDARDS

NSPS require new, modified, or reconstructed sources to control emissions to the level achievable by the best-demonstrated technology as specified in the applicable provisions. Moreover, any source subject to an NSPS is also subject to the general provisions of NSPS Subpart A, unless specifically excluded. The addition and modification to the control equipment at the facility is not anticipated to trigger any new NSPS standards. The facility will maintain and operate the units in accordance with all existing NSPS standards.

4.3 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

NESHAP, federal regulations found in Title 40 Parts 61 and 63 of the CFR, are emission standards for HAP and are primarily applicable to major sources of HAP (facilities that exceed the major source thresholds of 10 tpy of a single HAP and 25 tpy of any combination of HAP from stationary sources) or specifically designated area sources. NESHAP apply to sources in specifically regulated industrial source classifications (Clean Air Act Section 112(d)) or on a case-by-case basis (Clean Air Act Section 112(g)) for facilities not regulated as a specific industrial source type. Pollutant specific NESHAP may also be applicable.

The addition and modification to the control equipment at the facility is not anticipated to trigger any new NESHAP standards. The facility will maintain and operate the units in accordance with all existing NESHAP standards.

4.4 RISK MANAGEMENT PROGRAM

The Risk Management Program (RMP) in Section 112(r) of the 1990 Clean Air Act Amendments was established to prevent accidental releases of hazardous substances. Applicability of the RMP program is determined by comparing the quantity of each hazardous material stored in a vessel to the 112(r) threshold quantity.

The Mill Creek facility has an RMP plan that covers the storage and usage of anhydrous ammonia. The ammonia storage tanks will be relocated as shown in the site diagram in Appendix A. The amount of anhydrous ammonia stored, usage rate and facility operating procedures will not change. The RMP will be updated to include new diagrams of the location of the storage tanks and any ancillary equipment when the units are moved.

4.5 STRATOSPHERIC OZONE PROTECTION REGULATIONS

The requirements originating from Title VI of the Clean Air Act, entitled *Protection of Stratospheric Ozone*, are contained in 40 CFR §82. Subparts A through E and Subparts G and H of 40 CFR §82 are

not applicable to the Cane Run Station. 40 CFR §82 Subpart F, *Recycling and Emissions Reduction*, potentially applies if the facility operates, maintains, repairs, services, or disposes of appliances that utilize Class I or Class II ozone depleting substances. Subpart F generally requires persons completing the repairs, service, or disposal to be properly certified. All repairs, service, and disposal of ozone depleting substances from such equipment (air conditioners, refrigerators, etc.) at Mill Creek will be completed by a certified technician.

4.6 TITLE V OPERATING PERMIT PROGRAM

40 CFR §70 establishes the federal Title V operating permit program. APCD has incorporated the provisions of the federal program in APCD Regulation 2.16, *Title V Operating Permits*. The major source thresholds with respect to the APCD Title V operating permit program for sources in attainment areas are 10 tons per year of a single HAP, 25 tpy of any combination of HAP, or 100 tpy of a criteria pollutant.

The existing Mill Creek facility is currently a Title V major source, with potential emissions of at least one regulated pollutant exceeding 100 tpy. The Mill Creek facility will maintain its status as a major source with respect to the Title V program.

4.7 ACID RAIN PROGRAM

The Acid Rain Program (ARP) found at 40 CFR §72-78 applies to utility units. A utility unit is defined as a unit owned or operated by a utility that serves a generator in any state that produces electricity for sale. Mill Creek is currently subject to the ARP. The ARP requires pollutant monitors in addition to possession of SO₂ allowances for each ton of SO₂ emitted. Possession of the SO₂ allowances is not required until after the end of the year in which the SO₂ is emitted. LG&E will amend the ARP permit application under separate when required.

4.8 CLEAN AIR TRANSPORT RULE

The Clean Air Interstate Rule (CAIR) found at 40 CFR §96 applies to utility units. Pursuant to the applicability criteria in §97.104(a)(1) and §97.204(a)(1) for the CAIR NO_X and SO_2 trading programs, respectively, the proposed NGCCs are subject to CAIR since they serve a generator that supplies more than one-third of its potential electrical output capacity to any power distribution system for sale. On July 11, 2008, the DC Circuit Court vacated CAIR in its entirety; however, the court has since re-instated the program while EPA develops a revised CAIR. On July 6, 2010, U.S. EPA proposed the Clean Air Transport Rule (CATR) to replace CAIR. CATR is expected to be finalized in summer 2011. Despite this pending change, LG&E will submit a CAIR/CATR permit application under separate cover to meet the requirements of this regulation. LG&E will comply with the forthcoming CATR and the implementing APCD regulations as applicable.

4.9 KENTUCKY REQUIREMENTS

In addition to federal air regulations, the Commonwealth of Kentucky implements the state implementation plan (SIP) under approval from EPA. EPA is reconsidering the Regional Haze SIP

for Kentucky (BART). Under Kentucky's proposed Regional Haze SIP (BART), Mill Creek Units 3 & 4 are required to install SAM mitigation. The construction of the SAM mitigation was previously permitted but has net yet been constructed.

4.10 DISTRICT REGULATORY REQUIREMENTS

In addition to federal air regulations, APCD establishes regulations applicable at the emission unit level (source specific) and at the facility level for stationary sources. The rules also contain requirements related to the need for construction and/or operating permits.

4.10.1 APCD PART 1 – GENERAL PROVISIONS

4.10.1.1 REGULATION 1.01 – GENERAL PROVISIONS

This regulation describes the general application of District regulations and emission standards. LG&E will abide by all appropriate regulations and emission standards as determined by the APCD.

4.10.1.2 REGULATION 1.11 – OPEN BURNING

This regulation imposes restrictions on open burning activities. The regulation specifies what type of burning is permitted and when it is permitted. The facility shall comply with the requirements of this regulation in the event of performing open burning.

4.10.1.3 REGULATION 1.14 - CONTROL OF FUGITIVE PARTICULATE EMISSIONS

This regulation requires facilities to take reasonable precautions to prevent fugitive dust from becoming airborne. The appropriate precautions will be taken to prevent fugitive dust from becoming airborne and ensure that opacity from fugitive dust sources is less than 20% for any applicable units as required by this rule.

4.10.2 APCD PART 5 -- STANDARDS FOR TOXIC AIR CONTAMINANTS AND HAZARDOUS AIR POLLUTANTS

4.10.2.1 REGULATION 5.01 – GENERAL PROVISIONS

This regulation applies to the owner or operator of any process equipment that emits or may emit a toxic air contaminant or hazardous air pollutant or for which a toxic air contaminant or hazardous air pollutant emission standard or other requirement is prescribed in a Part 5 regulation. A new or modified process or process equipment shall comply with all applicable emission standards upon commencing operation. LG&E will comply with all appropriate Part 5 regulations upon commencing startup of the proposed control equipment.

4.10.2.2 REGULATION 5.02 – ADOPTION OF NESHAP

This regulation adopts particular NESHAP regulations that are listed in 40 CFR Parts 61 and 63. LG&E will comply with this District regulation by meeting the requirements of all NESHAP regulations that were discussed in Section 4.4 of this application.

4.10.2.3 REGULATION 5.21 – ENVIRONMENTAL ACCEPTABILITY OF TOXIC AIR CONTAMINANTS

The purpose of this regulation is to establish the criteria for determining the environmental acceptability of emissions of toxic air contaminants. This regulation sets the appropriate levels of risk that can be associated with toxic air contaminants at a new or modified process/facility. The APCD has developed the Strategic Toxic Air Reduction (STAR) Program to help reduce the levels of harmful contaminants in ambient air. LG&E has submitted a STAR compliance demonstration on the Mill Creek facility. No new TACs or increase in existing TACs is predicted. Appropriate STAR related forms will be submitted once final design and construction are completed.

4.10.3 APCD PART 7 - STANDARDS OF PERFORMANCE FOR NEW AFFECTED FACILITIES

4.10.3.1 REGULATION 7.01 – GENERAL PROVISIONS

This regulation establishes general requirements for any affected facility the construction, modification, or reconstruction of which is commenced on or after the effective date of an applicable standard of performance in Regulation 7. The new and modified control equipment will meet all applicable requirements set forth in Regulation 7.

4.10.3.2 REGULATION 7.02 – ADOPTION OF FEDERAL NSPS

This regulation adopts particular NSPS regulations that are listed in 40 CFR Part 60. LG&E will comply with this District regulation by meeting the requirements of all NSPS regulations that were discussed in Section 4.3 of this application.

4.10.3.3 REGULATION 7.08 - NEW PROCESS OPERATIONS

This regulation establishes emissions limitations from new process operations. PM emissions from control equipment applicable to this regulation will meet the required emission limitations.

The proposed project will be subject to the Louisville Strategic Toxic Ambient Reduction (STAR) requirements (Regulation 5.01) for all regulated toxic air contaminants (TAC) that will be emitted at the Mill Creek facility. The proposed modifications to the control equipment, will be in compliance with all STAR requirements for all TAC emitted at the facility. No new TACs will be introduced at the facility. A modified facility STAR demonstration will be provided for the facility once final design specifications and facility lay-outs have been determined.

FACILITY INFORMATION

Process Flow Diagram





**Replacement to new Booster Fans or larger ID Fans is yet to be determined

Black = Existing Red = Preliminary Additions

Jun-11

Mill Creek Unit 3 AQC Process Flow Diagram



**Replacement to new Booster Fans or larger ID Fans is yet to be determined

Black = Existing Red = Preliminary Additions Green = Previously approved. Not yet installed.

Jun-11





**Replacement to new Booster Fans or larger ID Fans is yet to be determined

Black = Existing Red = Preliminary Additions Green = Previously approved. Not yet installed.

Jun-11

APPENDIX B

CONSTRUCTION PERMIT APPLICATION FORMS



Section D: Application Type

New Construction /Installation

Modification

Operation

Reconstruction

Louisville Metro Air Pollution Control District

Mail Application To: Louisville Metro APCD 850 Barret Avenue Louisville, KY 40204

Form: AP-0808

Baghouse

Application For Permit To Construct, Reconstruct, Install, Modify, or Operate Process or Process Equipment

	www.iouisvinerv.gov/uped
Section A: Owner/Operator Information	
Business Name of Owner /Operator To Appear On The I	ermit:
Louisville Gas & Electric - Mill Creek Ge	nerating Station
Owner's Business Name (only if different from Business	Name of Owner/Operator):
Louisville Gas & Electric	
Section B: Equipment Location	Section C: Permit Mailing Address
Equipment Location Address:	Permit and Correspondence information:
14660 Dixie Highway	 Check here if same as equipment location address. 220 West Main Street
Street Address Louisville KY 40272 -	Street Address Louisville KY 40202 1377
City State Zip Code	City State Zip Code
Responsible Official Name: Ralph Bowling	Contact Name: Rebecca Cash
Responsible Official Title: VP Power Production	On Contact Title: Environmental Engineer
Phone: (502)627-4121	Phone: (502)627-4633
Fax: (502)627-4030	Fax: (502)627-2550

E-Mail: Rebecca.Cash@lge-ku.com

E-Mail: Ralph.Bowling@lge-ku.com

Reason for Submitting Application (Select all that apply):

Change of Ownership

Change of Location

Administrative Change

2			 Market and a second s 	Approximation to the party of	a na sa mana ana a	an Shara an a Shara an a	the former of the option	and services of	and the state of the	ala al'angkara angkara sa b	
	Da	te of	Cons	Inuction	i, Mod	lificati	on, In:	stallat	ion or	Operation:	

Estimated Start Date: May 2015 Operation

Actual Start Date:

(MM/DD/YYYY)

In accordance with District regulations 2.03. Section 1, you may not construct, install, modify, or operate an affected facility unless a permit has been issued by the District (LMAPCD). Please complete all requested information in this application. Incomplete applications may result in denial of issuing a permit to construct and operate process or process equipment.

What type of business is being conducted at this equipment location?			SIC Code		
Electric Services 49					
Section F: Authorization/Signature Thereby certify that all information	on contained herein and informatio	on submitted with this ap	oplication is true and correct.		
Signature of Responsible Official:	Title:				
Kalah Bowhi	VP Power Product	ion			
Print Name: Ralph Bowling	Date: 6911				
EMARCID Application Tracking #: Assigned Engineer: Use Only	Permit No(s):	Plant ID #:	NAICS Code:		

(502) 574-6000 FAX: (502) 574-5137 www.louisvilleky.gov/ancd

Form: AP-0808

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Section G: Equipment Information					
Manufacturer: TBD					
Model: TBD					
Serial Number:		n y 1885 an Mar y Princip VII V ant thai frywladin i lai 1866 a Brawl y a brinn y ba b Maran I a V			
ls the baghouse insulated? ✓ YES] NO				
Design Minimum Operating Temperature:	° F				
Design Maximum Operating Temperature:					
Are temperature controls provided?	YES 🗸 NO				
If YES, describe the temperature controls: Air Flow Through Baghouse: Forced Induced Other Specify:					
Direction of Flow Through Filters:] Inside Out] Outside In				
Particulate Removal Efficiency: 99 %)	1			
Attach the manufacturer's specification sheet for the	baghouse and particle size removal efficiency curve	and basis of determina	ition.		
Section H: Compartment Information					
Number of Compartments: TBD					
Number of Filters (Bags) Per Compartmen	It: TBD				
Can the Compartments be Isolated for Rep	lacement or Repair? YES NO				
Section 1: Gas Stream Information					
Maximum Inlet Volumetric Gas Flow Rate	e: acfm at feet				
Maximum Outlet Volumetric Gas Flow Ra	ate: acfm at feet				
Dew Point at maximum Moisture Content	of Gas: ° F				
pH of Gas Handled:					
Dust Characteristics: Sticky Wet Corrosive 🖌 Dry Other(Specify):					
Section J: Contaminant Information					
Percent of Each Contaminant in the Waste Gas and Removal Efficiency					
If more than five contaminants are present, attach additional copies of this page as needed.					
Contaminant Name	Contaminant CAS Number	Percent of Waste Gas	Removal Efficiency		
Antimony Compounds 7440-36-0 0.000105 99					
Arsenic Compounds 7440-38-2 0.002396 99					
Cadmium Compounds	Cadmium Compounds 7440-43-9 0.000598 99				
Chromium Compounds	7440-47-3	0.017737	99		
Nickel Compounds	7440-02-0	0.011513	99		

Baghouse

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Baghouse

Page 2 of 5 cont.

Section G: Equipment Information						
Manufacturer:						
Model:						
Serial Number:						
Is the baghouse insulated? □ YES □	Is the baghouse insulated? VES NO					
Design Minimum Operating Temperature:	° F	······				
Design Maximum Operating Temperature	°F					
Are temperature controls provided?	YES I NO					
If YES, describe the temperature controls:						
Air Flow Through Baghouse:	ed					
🗌 🗆 Induc	ced					
□ Othe	r Specify:					
Direction of Flow Through Filters:	Inside Out					
-	Outside In					
Particulate Removal Efficiency: %						
Attach the manufacturer's specification sheet for the	baghouse and particle size removal efficiency curv	e and basis of determin	ation.			
Number of Compartments:						
Number of Filters (Bags) Per Compartmer	nt:					
Can the Compartments be Isolated for Rep	placement or Repair? 🗆 YES 🗆 NO					
Section I: Gas Stream Information						
Maximum Inlet Volumetric Gas Flow Rate	e: acfm at feet					
Maximum Outlet Volumetric Gas Flow Ra	ate: acfm at feet		· · · · · · · · · · · · · · · · · · ·			
Dew Point at maximum Moisture Content of Gas: °F						
pH of Gas Handled:						
Dust Characteristics: □ Sticky □ Wet □ Corrosive □ Dry □ Other(Specify):						
Section 1: Contaminant Information						
Percent of Each Contaminant in the Waste Gas and Demoval Efficiency						
If more than five contaminants are present, attach additional conjector this page as needed						
Contaminant Name	Contaminant CAS Number	Percent of	Removal			
		Waste Gas	Efficiency			
Cobalt Compounds 7440-48-4 0.000861 99						
Lead Compounds	7439-92-1	0.019009	99			
Manganese Compounds	7439-96-5	0.032000	99			
Mercury Compounds	7439-97-6	0.000011	99			
Selenium Compounds	7782-49-2	0.000229	99			

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Baghouse
Baghous

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Sterior Kirabre Thei (Dag) mornation
Fabric Type: Felted Membrane Ceramic Cartridge Wowen PTFE Membrane Felted Wowen
Sintered Metal Other (Specify):
Fabric Material: TBD
Maximum Continuous Filter Operating Temperature: TBD °F
Clean Fabric Permeability: TBD scfm/ft ² at ΔP TBD inches of water
Fabric Filter (Bag) Diameter or Width: TBD inches
Fabric Filter (Bag) Length: TBD inches
Effective Area Per Filter: TBD square inches
Minimum Effective Air to Cloth Ratio: TBD inches
Maximum Effective Air to Cloth Ratio: TBD inches
Design Pressure Drop Across Baghouse: 6 inches water
Describe determining factor fabric filter changing/replacement:
Manufacturers recommendations and pressure drop across unit.
Attach the manufacturer's specification sheet for the fabric filters (bag).
Section L: Filter Cleaning Information
Filter Cleaning Method: Manual Cleaning Bag Collapse Reverse Air Jet
Preumatic Shakers Reverse Air Flow Other (Specify):
Air Pressure: psi
Describe how air is supplied to system:
The cleaning frequency will be regulated by the control system based on overall fabric filter pressure drop. Online or isolated mode of cleaning of fabric filter will also be regulated by the control system. The fabric filter will be pulse-cleaned utilizing clean, dry, oil free, compressed air supplied by pulse jet air compressors and associated air receivers and dryers.
Describe how filter cleaning is initiated:
Describe how filter cleaning is initiated: Timer Manual Pressure Drop Other (Specify):
Describe how filter cleaning is initiated: Timer Manual Pressure Drop Other (Specify):
Describe how filter cleaning is initiated: Timer Manual Pressure Drop Other (Specify): Section M: Hopper Information
Describe how filter cleaning is initiated: Imanual Imanual Imanual Pressure Drop Other (Specify): Imanual Imanua Imanual Imanual
Describe how filter cleaning is initiated: Imanual Imanual Pressure Drop Other (Specify): Other (Specify): Section M: Hopper Information Is the hopper heated? Image: YES NO Is there a hopper vibrator? Image: YES NO
Describe how filter cleaning is initiated: Image: Manual Timer Pressure Drop Other (Specify): Section M: Hopper Information Is the hopper heated? YES INO Is there a hopper vibrator? YES INO Describe how collected material is treated or disposed of:
Describe how filter cleaning is initiated: Imanual Timer Pressure Drop Other (Specify): Section M: Hopper Information Is the hopper heated? YES INO Is there a hopper vibrator? YES INO Describe how collected material is treated or disposed of: The dust collected in the fabric filter discharge hoppers will be fluidized and removed by the Fly Ash Handling System. The flue gas from the outlet plenum of the fabric filter will flow through the induced draft fans in the Induced Draft System and then to the Wet Flue Gas Desulfurization System.
Describe how filter cleaning is initiated: Manual Pressure Drop Timer Other (Specify): Section M: Hopper Information Is the hopper heated? YES YES NO Is there a hopper vibrator? YES YES NO Describe how collected material is treated or disposed of: The dust collected in the fabric filter discharge hoppers will be fluidized and removed by the Fly Ash Handling System. The flue gas from the outlet plenum of the fabric filter will flow through the induced draft fans in the Induced Draft System and then to the Wet Flue Gas Desulfurization System.
Describe how filter cleaning is initiated: Manual Pressure Drop Timer Other (Specify): Section M: Hopper Information Is the hopper heated? YES YES NO Is there a hopper vibrator? YES Describe how collected material is treated or disposed of: The dust collected in the fabric filter discharge hoppers will be fluidized and removed by the Fly Ash Handling System. The flue gas from the outlet plenum of the fabric filter will flow through the induced draft fans in the Induced Draft System and then to the Wet Flue Gas Desulfurization System.

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Baghouse

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Section 11. Other Informa			
Stack Height Above Grade:	Exity through FGE Stack feet		
Stack Exit Diameter:	feet		
(Provide stack dimensions if recta	ngular stack.)		
Is a Stack Cap Present?			
Stack Configuration:	_ Vertical _ H	orizontal 🔄 Downwar	d – Venting
(Check all that apply)	_ Other (Specify):		
Stack Exit Gas Temperature	° F	Stack Exit Gas Flow Rate:	ACFM
	-		
Distance to Nearest Property	Line: feet		
Describe nearest obstruction	:		
Height of Nearest Obstructio	on: teet	Distance to Nearest Obstruc	tion: feet
Are stack sampling ports pr	ovided?	0	
Section O: Monitoring an	d Alarm Information		
Are there any alarms associ	ated with this baghouse?	YES NO	
If YES, complete the following			an a
If there are more than three ala	0		
	rms, attach additional copies of th	is page as needed.	
Operating Parameter	rms, attach additional copies of th Describe Alarm Trigger	is page as needed. Monitoring Device or	Does the Alarm Initiate
Operating Parameter Monitored	rms, attach additional copies of th Describe Alarm Trigger	is page as needed. Monitoring Device or Alarm Type	Does the Alarm Initiate an Automated Response?
Operating Parameter Monitored Pressure drop across	rms, attach additional copies of th Describe Alarm Trigger	is page as needed. Monitoring Device or Alarm Type Visual	Does the Alarm Initiate an Automated Response?
Operating Parameter Monitored Pressure drop across baghouse.	rms, attach additional copies of th Describe Alarm Trigger	is page as needed. Monitoring Device or Alarm Type Visual Auditory	Does the Alarm Initiate an Automated Response? ✓ YES □ NO Describe:
Operating Parameter Monitored Pressure drop across baghouse.	rms, attach additional copies of th Describe Alarm Trigger	is page as needed. Monitoring Device or Alarm Type Visual Auditory Automatic	Does the Alarm Initiate an Automated Response? YES NO Describe: Response will be dependent
Operating Parameter Monitored Pressure drop across baghouse.	rms, attach additional copies of th Describe Alarm Trigger	is page as needed. Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring)	Does the Alarm Initiate an Automated Response? ✓ YES NO Describe: Response will be dependent upon the type of alarm and ourset operating conditions
Operating Parameter Monitored Pressure drop across baghouse.	rms, attach additional copies of th Describe Alarm Trigger	is page as needed. Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring) Other	Does the Alarm Initiate an Automated Response? YES NO Describe: Response will be dependent upon the type of alarm and current operating conditions.
Operating Parameter Monitored Pressure drop across baghouse.	rms, attach additional copies of th Describe Alarm Trigger	is page as needed. Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring) Other Visual	Does the Alarm Initiate an Automated Response? ☑ YES ☑ YES □ NO Describe: Response will be dependent upon the type of alarm and current operating conditions. □ YES □ □ YES □ □ YES □
Operating Parameter Monitored Pressure drop across baghouse.	rms, attach additional copies of th Describe Alarm Trigger	is page as needed. Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory	Does the Alarm Initiate an Automated Response? Image: YES image: NO Describe: Response will be dependent upon the type of alarm and current operating conditions. Image: YES image: YES image: NO Describe:
Operating Parameter Monitored Pressure drop across baghouse.	rms, attach additional copies of th Describe Alarm Trigger	is page as needed. Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory Auditory Auditory Auditory Auditory Auditory Auditory Automatic	Does the Alarm Initiate an Automated Response? ☑ YES □ NO Describe: Response will be dependent upon the type of alarm and current operating conditions. □ YES □ NO Describe:
Operating Parameter Monitored Pressure drop across baghouse.	rms, attach additional copies of th Describe Alarm Trigger	 is page as needed. Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory Auditory Auditory Automatic (Remote Monitoring) 	Does the Alarm Initiate an Automated Response? Image: YES NO Describe: Response will be dependent upon the type of alarm and current operating conditions. Image: YES NO Describe: NO Describe: NO
Operating Parameter Monitored Pressure drop across baghouse.	rms, attach additional copies of th Describe Alarm Trigger	is page as needed. Monitoring Device or Alarm Type ✓ Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory Automatic (Remote Monitoring) Other	Does the Alarm Initiate an Automated Response? ☑ YES □ NO Describe: Response will be dependent upon the type of alarm and current operating conditions. □ YES □ NO Describe:
Operating Parameter Monitored Pressure drop across baghouse.	rms, attach additional copies of th Describe Alarm Trigger	 is page as needed. Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory Auditory Automatic (Remote Monitoring) Other 	Does the Alarm Initiate an Automated Response? ☑ YES □ NO Describe: Response will be dependent upon the type of alarm and current operating conditions. □ YES □ NO Describe:
Operating Parameter Monitored Pressure drop across baghouse.	rms, attach additional copies of th Describe Alarm Trigger	 is page as needed. Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory Automatic (Remote Monitoring) Other Other Visual Automatic Other Other Other 	Does the Alarm Initiate an Automated Response? Image: YES Image: NO Describe: Response will be dependent upon the type of alarm and current operating conditions. Image: YES Image: NO Describe: Image: YES Image: NO Describe:
Operating Parameter Monitored Pressure drop across baghouse.	rms, attach additional copies of th Describe Alarm Trigger	is page as needed. Monitoring Device or Alarm Type ✓ Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory Automatic (Remote Monitoring) Other Visual Automatic (Remote Monitoring) Other Automatic	Does the Alarm Initiate an Automated Response? Image: YES NO Describe: Response will be dependent upon the type of alarm and current operating conditions. Image: YES NO Describe: NO Describe: NO Describe: NO Describe: NO Describe: NO
Operating Parameter Monitored Pressure drop across baghouse.	rms, attach additional copies of th Describe Alarm Trigger	is page as needed. Monitoring Device or Alarm Type ✓ Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory Auditory Other Other Other Other Visual Auditory Auditory Auditory Auditory Automatic (Remote Monitoring) Other Visual Auditory Automatic Quitory Auditory Auditory Other	Does the Alarm Initiate an Automated Response? Image: YES NO Describe: Response will be dependent upon the type of alarm and current operating conditions. Image: YES NO Describe: NO Describe: NO Describe: NO Describe: NO Describe: NO
Operating Parameter Monitored Pressure drop across baghouse.	rms, attach additional copies of th Describe Alarm Trigger	is page as needed. Monitoring Device or Alarm Type ✓ Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory Automatic (Remote Monitoring) Other	Does the Alarm Initiate an Automated Response? ☑ YES □ NO Describe: Response will be dependent upon the type of alarm and current operating conditions. □ YES □ NO Describe: □ YES □ NO Describe:

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Section P: Additional Information

Attach potential emissions calculations with your application. If there are no emission calculations provided with the application, the LMAPCD will calculate the potential emission rates for this equipment. This will result in a delay in the issuance of the permit. The potential emission rates shall be based on operation at maximum equipment capacity. The annual potential emissions shall be based on 8,760 operating hours per year. All potential emission calculations shall represent pre-control emissions.

Is there any additional information pertinent to this application?	\checkmark	YES	NO
If yes, describe below:			

The Particulate Removal System will collect particulate matter from the boiler flue gas stream on filter bags. Particulate matter will also be collected from the powder activated carbon (PAC) and sorbent injection systems in ductwork upstream of the pulse jet fabric filter. The collected particulate will be stored in hoppers until removed by the Fly Ash Handling System.

The Particulate Removal System consists of compartmentalized PJFF located between the sorbent injection lances and the inlet of the induced draft (ID) fans. The number of compartments is determined by economic compartment sizing, total flue gas flow rate, air-to-cloth ratio, and cleaning system design. The PJFF will be designed with a spare compartment.

Under normal operation, flue gas enters the fabric filter inlet plenum and is distributed to the individual compartments through inlet dampers at each fabric filter compartment. Flue gas will pass upwards through the filter bags where the particulates within the gas stream will collect on the outside of the filter bags and the clean gas exits each fabric filter compartment through an outlet damper into fabric filter outlet plenum. To prevent collapse of the bag, a metal cage is installed on the inside of the filter bags. Filter bags and cages are suspended from a tube sheet at the top of the compartment. Each individual compartment will be provided with inlet and outlet isolation dampers for access or maintenance.

The collected particulate will be cleaned from the filter bags by suddenly inflating the filter bags with a pulse of compressed air over several rows of filter bags, causing the dust on the outside to separate from the bags and drop into hoppers below. Online or isolated mode of cleaning of fabric filter will also be regulated by the control system.

The dust collected in the fabric filter discharge hoppers will be fluidized and removed by the Fly Ash Handling System. The flue gas from the outlet plenum of the fabric filter will flow through the induced draft fans in the Induced Draft System and then to the Wet Flue Gas Desulfurization System.

Emissions from MC1 and MC2 exit their respective baghouse and flow to a combined wet flue gas desulfurization (FGD) process before exiting a combined stack. See FGD form for MC1/MC2 for stack parameters.



Mail Application To: Louisville Metro APCD 850 Barret Avenue Louisville, KY 40204

Form: AP-0808

Baghouse

Application For Permit To Construct, Reconstruct, Instal Modify, or Operate Process or Process Equipment

Business Name of Owner /Operator To Appear On The Permit: Louisville Gas & Electric - Mill Creek Generating Station Owner's Business Name (only if different from Business Name of Owner/Operator): Louisville Gas & Electric Section B: Equipment Location Section C: Permit Mailing Address Equipment Location Address: Permit and Correspondence information: 14660 Dixie Highway Street Address Street Address Permit and Correspondence information: City State Responsible Official Name: Ralph Bowling Responsible Official Title: VP Power Production Phone: (502)627-4121 Fax: (502)627-4030	
Louisville Gas & Electric - Mill Creek Generating Station Owner's Business Name (only if different from Business Name of Owner/Operator): Louisville Gas & Electric Section B: Equipment Location Section C: Permit Mailing Address Equipment Location Address: Permit and Correspondence information: 14660 Dixie Highway Check here if same as equipment location address. 220 West Main Street Street Address Louisville KY 40272 City State Zip Code Responsible Official Name: Ralph Bowling Responsible Official Title: VP Power Production Phone: (502)627-4121 Fax: (502)627-4030	
Owner's Business Name (only if different from Business Name of Owner/Operator): Louisville Gas & Electric Section B: Equipment Location Equipment Location Address: Permit and Correspondence information: 14660 Dixie Highway Permit and Correspondence information: Street Address Permit and Correspondence information: Louisville KY City KY Responsible Official Name: Ralph Bowling Responsible Official Title: VP Power Production Phone: (502)627-4121 Fax: (502)627-4030	
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14660 Dixie Highway Street Address Louisville KY 40272 City State Zip Code Responsible Official Name: Ralph Bowling Phone: (502)627-4121 Fax: (502)627-4030	7
Street Address KY 40272 137 Louisville KY 40202 137 City State Zip Code City State Zip Code Responsible Official Name: Ralph Bowling Contact Name: Rebecca Cash Contact Title: Environmental Engineer Phone: (502)627-4121 Phone: (502)627-4030 Fax: Fax:	
Instruction Instruction Instruction Instruction City State Zip Code City State Zip Code Responsible Official Name: Ralph Bowling Contact Name: Rebecca Cash Contact Title: Environmental Engineer Phone: (502)627-4121 Phone: (502)627-4030 Fax: Fax:	· · · · ·
Responsible Official Name: Ralph Bowling Contact Name: Rebecca Cash Responsible Official Title: VP Power Production Contact Title: Environmental Engineer Phone: (502)627-4121 Phone: (502)627-4030 Fax: (502)627-4030 Fax:	
Responsible Official Title:VP Power ProductionContact Title:Environmental EngineerPhone:(502)627-4121Phone:(502)627-4633Fax:(502)627-4030Fax:	~
Phone: (502)627-4121 Fax: (502)627-4030 Fax: (502)627-4030	
Fax: (502)627-4030	
E-Mail: Ralph.Bowling@lge-ku.com	
Section D: Application Type	
Reason for Submitting Application (Select all that apply): Date of Construction, Modification. Installation or Operation	n:
New Construction /Installation Change of Ownership (MM/DD/YYYY)	
Modification Change of Location Estimated Start Date: April 2015 Operation	_
Reconstruction Administrative Change Actual Start Date:	
Operation In accordance with District regulations 2.03. Section 1, may not construct, install, modify, or operate an affe	/ou ted
facility unless a permit has been issued by the Dis (IMAPCD) Please complete all requested information in	rict his
application. Incomplete applications may result in denia issuing a permit to construct and operate process or pro-	of
equipment.	
Section E: Facility Business Information What type of business is being conducted at this equipment location? SIC Co	e
Electric Services 49	
Section F: Authorization/Signature hereby certify that all information contained herein and information submitted with this application is true and correct	
Signature of Responsible Official: Title:	
Kalph Bowh VP Power Production	
Print Name: Ralph Bowling Date: (a/ 9/11)	
LAMARCED Application Tracking #: Assigned Engineer: Permit No(s): Plant ID #: NAICS Code: Use Only	

Form: AP-0808

	Laura Matrice Contraction
Form: AP-0808	Page 2 of 5
Section G: Equipment Information	
Manufacturer: TBD	

Model: TBD Serial Number: Is the baghouse insulated? VES NO Design Minimum Operating Temperature: ° F				
Serial Number: Is the baghouse insulated? YES NO Design Minimum Operating Temperature: *F				
Is the baghouse insulated? VES NO Design Minimum Operating Temperature: °F				
Design Minimum Operating Temperature: *F				
Design Maximum Operating Temperature: °F				
Are temperature controls provided? YES / NO				
If YES, describe the temperature controls:				
Air Flow Through Baghouse: Forced Induced Other Specify:				
Direction of Flow Through Filters: Inside Out				
Particulate Removal Efficiency: 99 %				
Attach the manufacturer's specification sheet for the baghouse and particle size removal efficiency curve and basis of determination.				
Section H: Compartment Information				
Number of Compartments: TBD				
Number of Filters (Bags) Per Compartment: TBD				
Can the Compartments be Isolated for Replacement or Repair? YES NO				
Section I: Gas Stream Information				
Maximum Inlet Volumetric Gas Flow Rate: acfm at feet				
Maximum Outlet Volumetric Gas Flow Rate: acfm at feet				
Dew Point at maximum Moisture Content of Gas: °F				
pH of Gas Handled:				
Dust Characteristics: Sticky Wet Corrosive I Dry Other(Specify):				
Section J: Contaminant Information				
Percent of Each Contaminant in the Waste Gas and Removal Efficiency				
If more than five contaminants are present, attach additional copies of this page as needed.				
Contaminant Name Contaminant CAS Number Percent of Removal Waste Gas Efficiency				
Antimony Compounds 7440-36-0 0.000105 99				
Arsenic Compounds 7440-38-2 0.002396 99				
Cadmium Compounds 7440-43-9 0.000598 99				
Chromium Compounds 7440-47-3 0.17737 99				

Baghouse

Form: AP-0808

Page 2 of 5 cont.

Baghouse

Section G: Equipment Information						
Manufacturer:						
Model:						
Serial Number:						
Is the baghouse insulated?	□ NO					
Design Minimum Operating Temperature	:°F					
Design Maximum Operating Temperature						
Are temperature controls provided?	TYES ∐ NO					
If YES, describe the temperature controls:						
Air Flow Through Parhouses - Form	od					
An Flow Infough Dagnouse. \Box Indu	ced					
\Box Othe	r Specify:					
	, speen ji					
Direction of Flow Through Filters:	Inside Out					
ſ	1 Outside In					
	/					
Particulate Removal Efficiency: %						
Section H: Compartment Information	Jugnouse and particle size remotiat enterently curt					
Number of Compartments:						
Number of Filters (Bags) Per Compartmen	nt:					
Can the Compartments be Isolated for Rep	placement or Repair? YES NO					
Section I: Gas Stream Information						
Maximum Inlet Volumetric Gas Flow Rat	e: acfm at feet					
Maximum Outlet Volumetric Gas Flow R	Maximum Outlet Volumetric Gas Flow Rate: acfm at feet					
Dew Point at maximum Moisture Content	Dew Point at maximum Moisture Content of Gas: [°] F					
pH of Gas Handled:						
Dust Characteristics: Sticky U Wet Corrosive Dry Other(Specify):						
Section 1. Contaminant Information						
Decembra J: Contaminant Information						
Fercent of Each Contaminant in the waste Gas and Kenloval Efficiency						
Contaminant Name Contaminant CAS Number Percent of Removal						
Containmant I (unit		Waste Gas	Efficiency			
Cobalt Compounds	Cobalt Compounds 7440-48-4 0.000861 99					
Lead Compounds	7439-92-1	0.019009	99			
Manganese Compounds	7439-96-5	0.032000	99			
Mercury Compounds	7439-97-6	0.000011	99			
Selenium Compounds	7782-49-2	0.000229	99			

Form: AP-0808

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Section K:Fabric Filter (Bag) Information			
Fabric Type: Felted Membrane Ceramic Cartridge			
Woven PTFE Membrane Felted-Woven			
Sintered Wetar Other (Speerry).			
Fabric Material: TBD			
Maximum Continuous Filter Operating Temperature: TBD °F			
Clean Fabric Permeability: TBD $scfm/ft^2$ at ΔP TBD inches of water			
Fabric Filter (Bag) Diameter or Width: TBD inches			
Fabric Filter (Bag) Length: TBD inches			
Effective Area Per Filter: TBD square inches			
Minimum Effective Air to Cloth Ratio: TBD inches			
Maximum Effective Air to Cloth Ratio: TBD inches			
Design Pressure Drop Across Baghouse: 6 inches water			
Describe determining factor fabric filter changing/replacement:			
Manufacturers recommendations and pressure drop across unit.			
Attach the manufacturer's specification sheet for the fabric filters (bag).			
Section L: Filter Cleaning Information			
Filter Cleaning Method: Manual Cleaning Bag Collapse Reverse Air Jet			
☐ Mechanical Shakers ☐ Sonic Cleaning ✓ Pulse Jet			
Theamatic snakers Reverse An How Other (speeny).			
Air Pressure: psi			
Describe how air is supplied to system:			
The cleaning frequency will be regulated by the control system based on overall fabric filter pressure drop. Online or isolated mode of cleaning of fabric filter will also be regulated by the control system. The fabric filter will be pulse-cleaned utilizing clean, dry, oil free, compressed air supplied by pulse jet air compressors and associated air receivers and dryers.			
Describe how filter cleaning is initiated: Manual Pressure Drop			
Timer Other (Specify):			
Section M: Hopper Information			
Is the hopper heated? YES INO			
Is there a hopper vibrator? 🔲 YES 🔽 NO			
Describe how collected material is treated or disposed of:			
The dust collected in the fabric filter discharge hoppers will be fluidized and removed by the Fly Ash Handling System. The flue gas from the outlet plenum of the fabric filter will flow through the induced draft fans in the Induced Draft System and then to the Wet Flue Gas Desulfurization System.			
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Baghouse

	Page	4	of	5
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Stack Height Above Grade: Descupation feet Stack Exit Diameter: feet (Provide stack dimensions if rectongular stack.) feet Is a Stack Cap Present? YES NO Stack Configuration: Vertical Horizontal Downward – Venting (Check all that apply) Other (Specify): Stack Exit Gas Temperature: * F Stack Exit Gas Flow Rate: ACFM Distance to Nearest Property Line: feet Describe nearest obstruction: feet Height of Nearest Obstruction: Itel Distance to Nearest Obstruction: feet Are stack sampling ports provided? YES NO Section O: Monitoring and Alarm Information. Are there any alarms associated with this baghouse? YES NO Section O: Does the Alarm Initiate an Automated Response? If there are more than three alarms, attach additional cepies of this page as needed. Operating Parameter Describe Alarm Trigger Monitoring Device or Alarm Type Does the Alarm Initiate an Automated Response? Pressure drop across baghouse. Will be programmed manufacturer's recommendation. Quescribe: NO Quescribe: NO Quescribe: NO Quescribe	Section N: Stack Informa	ition		
Stack Exit Diameter: feet (Provide stack dimensions if rectangular stack.) Is a Stack Cap Present? YES NO Stack Configuration: (Check all that apply) Other (Specify): Stack Exit Gas Tenperature: * F Stack Exit Gas Tenperature: * F Distance to Nearest Property Line: feet Describe nearest obstruction: Height of Nearest Obstruction: Height of Nearest Obstruction: Rection O: Monitoring and Alarm Information: Are there any alarms associated with this baghouse? YES NO Section O: Monitoring Parameter Monitored Pressure drop across baghouse. Will be programmed baghouse. Will be programmed baghouse. Will be programmed baghouse. Will be programmed baghouse. Will be dependation. (Remote Monitoring) Other Visual YES NO Barn Type NO Describe commendation. Pressure drop across Will be programmed baged upon the commendation. (Remote Monitoring) Other Other Visual YES NO Describe: NO Describ	Stack Height Above Grade:	Exits through FGD Stark feet		
(Provide stack dimensions (frectangular stack.) is a Stack Cap Present? YES Stack Configuration: Vertical (Check all that apply) Other (Specify): Stack Exit Gas Temperature: 'F Stack Exit Gas Temperature: 'F Distance to Nearest Property Line: feet Describe nearest obstruction: Height of Nearest Obstruction: Height of Nearest Obstruction: Reet Distance to Nearest obstruction: Feet Describe nearest obstruction: If eet Are stack sampling ports provided? YES NO Monitoring and Alarm Information Are there are more than three naterns, attach additional copies of this page as needed. Does the Alarm Initiate an Automated Response? If there are more than three naterns, attach additional copies of this page as needed. Describe: Pressure drop across Will be programmed based upon the manufacturer's recommendation. Q YES NO Quertic operating Parameter Describe Care operating conditions. Pressure drop across Will be programmed based upon the manufacturer's recommendation. Q YES NO Distance Monitoring) Other YES NO Describe: NO	Stack Exit Diameter:	feet		
Is a Stack Cap Present? YES NO Stack Configuration: Vertical Horizontal Downward - Venting (Check all that apply) Other (Specify): Stack Exit Gas Flow Rate: ACFM Distance to Nearest Property Line: feet Describe nearest obstruction: feet Describe nearest obstruction: feet Distance to Nearest Obstruction: feet Are stack sampling ports provided? YES NO Section O: Monitoring and Alarm Information Are there any alarms associated with this baghouse? Z YES NO If there are more than three alarms, attach additional copies of this page as needed. Does the Alarm Initiate an Automated Response? Pressure drop across Will be programmed baghouse. Auditory Describe: Response will be dependent enderm and current operating conditions. Other Other Visual YES NO Autionatic (Remote Monitoring) Other Pressure drop across NO additory Describe: NO Auditory Describe: Automatic (Remote Monitoring) Other Visual YES NO Dother Visual YES	(Provide stack dimensions if recto	angular stack.)		
Is a Stack Cap Present? YES NO Stack Configuration: Vertical Image: Check all that apply Other (Specify): Stack Exit Gas Temperature: 'F Stack Exit Gas Flow Rate: ACFM Distance to Nearest Property Line: feet Describe nearest obstruction: Feet Height of Nearest Obstruction: feet Distance to Nearest Obstruction: feet Are stack sampling ports provided? YES NO Section O: Monitoring and Alarm Information Are stack sampling ports provided? YES NO Section O: Monitoring Device or Monitoring Device or Monitored Pressure drop across Will be programmed based upon the manufacturer's recommendation. Q Yisual YES NO Pressure drop across baghouse. Will be programmed based upon the manufacturer's recommendation. Q Visual YES NO Quictory Quictory Quictory Describe: NO Quictory Quictory Quictory Quictory Describe: Monitoring Other Visual YES NO Describe: Auditory Quictory Describe:				
Is a Stack Cap Present? YES NO Stack Configuration: Vertical Horizontal Downward – Venting (Check all that apply) Other (Specify): Stack Exit Gas Flow Rate: ACFM Distance to Nearest Property Line: feet Describe nearest obstruction: feet Describe nearest obstruction: feet Distance to Nearest Obstruction: feet Are stack sampling ports provided? YES NO NO Section O: Monitoring and Alarm Information Are stack sampling ports provided? YES NO If there any alarms associated with this baghouse? YES NO NO NO If there are more than three alarms, attach additional copies of this page as needed. Does the Alarm Initiate an Automated Response? Pressure drop across baghouse. Will be programmed baghouse. Q YES NO Describe: Auditory Response will be dependent urrent operating conditions. Response will be dependent urrent operating conditions. Querter is a commendation. Q Visual YES NO Describe: Querter is conditions. Q Visual YES NO Describe: Auditory Quescribe				
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Monitored Alarm Type an Automated Response? Pressure drop across baghouse. Will be programmed based upon the manufacturer's recommendation. I Visual I YES NO Image: Addition of the manufacturer's recommendation. Automatic (Remote Monitoring) Describe: Response will be dependent upon the type of alarm and current operating conditions. Image: Automatic (Remote Monitoring) Image: YES NO Image: Automatic (Remote Monitoring) Image: YES Image: YES	Operating Parameter	Describe Alarm Trigger	Monitoring Device or	Does the Alarm Initiate
Pressure drop across baghouse. Will be programmed based upon the manufacturer's recommendation. ✓ Visual ✓ YESNO Describe: Automatic (Remote Monitoring) Other Describe: Auditory JEST NO Describe: Response will be dependent upon the type of alarm and current operating conditions. Other Visual YESNO Auditory Describe: NO Other Auditory Describe: Automatic (Remote Monitoring) Other Describe: Automatic (Remote Monitoring) Other Describe: Automatic (Remote Monitoring) Other Describe: Other Other Describe: NO	Monitored	-	Alarm Type	an Automated Response?
baghouse. based upon the manufacturer's recommendation. Auditory Describe: Response will be dependent upon the type of alarm and current operating conditions. Other Visual YES NO Automatic (Remote Monitoring) Other Describe: NO Visual YES NO Describe: Automatic (Remote Monitoring) Other Other Describe: Automatic (Remote Monitoring) Other Describe: NO Other Automatic (Remote Monitoring) Describe: NO Other Other Other Describe: NO Other Other Describe: NO Describe: Other Other Describe:	Pressure drop across	Will be programmed	Visual	YES NO
manufacturer's recommendation. Automatic (Remote Monitoring) Response will be dependent upon the type of alarm and current operating conditions. Other Visual YES NO Automatic (Remote Monitoring) Other Describe: Automatic (Remote Monitoring) Other Describe: Automatic (Remote Monitoring) Other Describe: Visual YES NO Auditory Describe: NO Auditory Other Describe: Auditory Other Describe: Other Other Other	baghouse.	based upon the	Auditory	Describe:
recommendation. (Remote Monitoring) Upport the type of alarmand current operating conditions. Other Other Image: Condition of the type of alarmand current operating conditions. Image: Condition of the type of alarmand current operating conditions. Image: Condition of the type of alarmand current operating conditions. Image: Condition of the type of alarmand current operating conditions. Image: Condition of the type of alarmand current operating conditions. Image: Condition of the type of alarmand current operating conditions. Image: Condition of the type of alarmand current operating conditions. Image: Condition of the type of alarmand current operating conditions. Image: Condition of the type of alarmand current operating conditions. Image: Condition of the type of alarmand current operating conditions. Image: Condition of the type of alarmand current operating conditions. Image: Condition of the type of alarmand current operating conditions. Image: Condition of the type of alarmand current operating conditions. Image: Condition of the type of alarmand current operating conditions. Image: Condition operating conditions. Image: Condition operating condition operating conditions. Image: Condition operating conditions. Image: Condition operating condition operating condition operating conditions. Image: Condition operating conditions. Image: Condition operating conditing conditing condition operating conditing conditing cond		manufacturer's	Automatic	Response will be dependent
Other Other Visual YES Auditory Describe: Automatic (Remote Monitoring) Other Other Visual YES Visual User Other Other Auditory Describe: Auditory Describe: Auditory Describe: Auditory Describe: Automatic (Remote Monitoring) Other Other		recommendation.	(Remote Monitoring)	current operating conditions.
Visual YES NO Auditory Describe: Automatic (Remote Monitoring) Other Other Visual YES Auditory Describe: Auditory Describe: Other Other Auditory Describe: Auditory Describe: Auditory Describe: Automatic (Remote Monitoring) Other Other			Other	
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Automatic (Remote Monitoring) Other Visual Auditory Auditory Automatic (Remote Monitoring) Auditory Automatic (Remote Monitoring) Other			Auditory	Describe:
(Remote Monitoring) Other Visual YES Auditory Describe: Automatic (Remote Monitoring) Other Other			Automatic	
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(Remote Monitoring)			Automatic	
□ Other			(Remote Monitoring)	
			Other	

Form: AP-0808

Section P: Additional Information

Attach potential emissions calculations with your application. If there are no emission calculations provided with the application, the LMAPCD will calculate the potential emission rates for this equipment. This will result in a delay in the issuance of the permit. The potential emission rates shall be based on operation at maximum equipment capacity. The annual potential emissions shall be based on 8,760 operating hours per year. All potential emission calculations shall represent pre-control emissions.

Is there any additional information pertinent to this application?	\square	YES	NO
If yes, describe below:			

The Particulate Removal System will collect particulate matter from the boiler flue gas stream on filter bags. Particulate matter will also be collected from the powder activated carbon (PAC) and sorbent injection systems in ductwork upstream of the pulse jet fabric filter. The collected particulate will be stored in hoppers until removed by the Fly Ash Handling System.

The Particulate Removal System consists of compartmentalized PJFF located between the sorbent injection lances and the inlet of the induced draft (ID) fans. The number of compartments is determined by economic compartment sizing, total flue gas flow rate, air-to-cloth ratio, and cleaning system design. The PJFF will be designed with a spare compartment.

Under normal operation, flue gas enters the fabric filter inlet plenum and is distributed to the individual compartments through inlet dampers at each fabric filter compartment. Flue gas will pass upwards through the filter bags where the particulates within the gas stream will collect on the outside of the filter bags and the clean gas exits each fabric filter compartment through an outlet damper into fabric filter outlet plenum. To prevent collapse of the bag, a metal cage is installed on the inside of the filter bags. Filter bags and cages are suspended from a tube sheet at the top of the compartment. Each individual compartment will be provided with inlet and outlet isolation dampers for access or maintenance.

The collected particulate will be cleaned from the filter bags by suddenly inflating the filter bags with a pulse of compressed air over several rows of filter bags, causing the dust on the outside to separate from the bags and drop into hoppers below. Online or isolated mode of cleaning of fabric filter will also be regulated by the control system.

The dust collected in the fabric filter discharge hoppers will be fluidized and removed by the Fly Ash Handling System. The flue gas from the outlet plenum of the fabric filter will flow through the induced draft fans in the Induced Draft System and then to the Wet Flue Gas Desulfurization System.

Emissions from MC1 and MC2 exit their respective baghouse and flow to a combined wet flue gas desulfurization (FGD) process before exiting a combined stack. See FGD form for MC1/MC2 for stack parameters.



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Louisville Metro Air Pollution Control District

Mail Application To: Louisville Metro APCD 850 Barret Avenue Louisville, KY 40204

Form: AP-0808

Baghouse

Application For Permit To Construct, Reconstruct, Install Modify, or Operate Process or Process Equipment

struct, Install, quipment	(502) 574-6000 FAX: (502) 574-5137 <u>www.louisvilleky.gov/aped</u>

Section A: Owner/Operator Information Business Name of Owner /Operator To Appear On The Permit:	
Louisville Gas & Electric - Mill Creek Generat	ing Station
Owner's Business Name (only if different from Business Name of	of Owner/Operator):
Louisville Gas & Electric	
Section B: Equipment Location	Section C: Permit Mailing Address
Equipment Location Address:	Permit and Correspondence information:
14660 Dixie Highway	220 West Main Street
Street Address	Street Address Louisville KY 40202 1377
City K1 Zip Code Zip Code	City State Zip Code
Responsible Official Name: Ralph Bowling	Contact Name: Rebecca Cash
Responsible Official Title: VP Power Production	Contact Title: Environmental Engineer
Phone: (502)627-4121	Phone: (502)627-4633
Fax: (502)627-4030	Fax:
E-Mail: Ralph.Bowling@lge-ku.com	E-Mail: Rebecca.Cash@lge-ku.com
Section D: Application Type	
Reason for Submitting Application (Select all that apply):	Date of Construction, Modification, Installation or Operation:
New Construction /Installation Change of Ownership	(MM/DD/YYYY)
Modification Change of Location	Estimated Start Date: October 2015 Operation
Reconstruction Administrative Chang	e Actual Start Date:
Operation	In accordance with District regulations 2.03, Section 1, you may not construct, install, modify, or operate an affected facility unless a permit has been issued by the District (LMAPCD). Please complete all requested information in this application. Incomplete applications may result in denial of issuing a permit to construct and operate process or process equipment.
Section E: Facility Business Information What type of business is being conducted at this equipment location?	SIC Code
Electric Services	49
Section F: Authorization/Signature I hereby certify that all infor	mation contained herein and information submitted with this application is true and correct.
Signature of Responsible Official:	Title:
Kalph Bowh	VP Power Production
Print Name: Ralph Bowling	Date: 6 9 11
LMAPCD Application Tracking #: Assigned Engineer: Use Only	Permit No(s): Plant ID #: NAICS Code:

Form: AP-0808

Pollution	Control	District			

Section G: Equipment Information						
Manufacturer: TBD						
Model: TBD		a mba-naine an a fha fh air da fha bhaile 1999 anns ann an Anns anns gun fa anns ann an Anns anns anns anns an				
Serial Number:						
Is the baghouse insulated? YES	NO	n taav sema tina ini kana arta 1966 alaan ini yaa araa kata asaa ay a				
Design Minimum Operating Temperature	: [°] F					
Design Maximum Operating Temperature	: °F					
Are temperature controls provided?	YES INO					
If YES, describe the temperature controls:						
Air Flow Through Baghouse:						
Direction of Flow Through Filters:	Inside Out Outside In					
Particulate Removal Efficiency: 99 9	<i>/</i> o					
Attach the manufacturer's specification sheet for the	baghouse and particle size removal efficiency cu	rve and basis of determin	ation.			
Section H: Compartment Information						
Number of Compartments: TBD						
Number of Filters (Bags) Per Compartment: TBD						
Can the Compartments be Isolated for Replacement or Repair? VES NO						
Section I: Gas Stream Information						
Maximum Inlet Volumetric Gas Flow Rate: acfm at feet						
Maximum Outlet Volumetric Gas Flow Rate: acfm at feet						
Dew Point at maximum Moisture Content of Gas: [°] F						
pH of Gas Handled:		*****				
Dust Characteristics: Sticky Wet Corrosive 🖌 Dry Other(Specify):						
Section J: Contaminant Information						
Percent of Each Contaminant in the Waste Gas and Removal Efficiency						
If more than five contaminants are present, atta	ach additional copies of this page as needed.					
Contaminant Name	Contaminant CAS Number	Percent of Waste Gas	Removal Efficiency			
Antimony Compounds	7440-36-0	0.000105	99			
Arsenic Compounds	7440-38-2	0.002396	99			
Cadmium Compounds	7440-43-9	0.000598	99			
Chromium Compounds	7440-47-3	0.017737	99			
Nickel Compounds	7440-02-0	0.011513	99			

Baghouse

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Section G: Equipment Information Manufacturer: Model: Serial Number: Is the baghouse insulated? □ YES □ NO °F Design Minimum Operating Temperature: Design Maximum Operating Temperature: °F Are temperature controls provided? U YES [] NO If YES, describe the temperature controls: Air Flow Through Baghouse: □ Forced 1 Induced \Box Other Specify: Direction of Flow Through Filters: ____ Inside Out Ĩ Outside In Particulate Removal Efficiency: % Attach the manufacturer's specification sheet for the baghouse and particle size removal efficiency curve and basis of determination. Section H: Compartment Information Number of Compartments: Number of Filters (Bags) Per Compartment: Can the Compartments be Isolated for Replacement or Repair?
YES 11 NO Section I: Gas Stream Information Maximum Inlet Volumetric Gas Flow Rate: acfm at feet Maximum Outlet Volumetric Gas Flow Rate: acfm at feet °F Dew Point at maximum Moisture Content of Gas: pH of Gas Handled: Dust Characteristics: 🗍 Sticky □ Wet □ Other(Specify): □ Corrosive □ Dry Section J: Contaminant Information Percent of Each Contaminant in the Waste Gas and Removal Efficiency If more than five contaminants are present, attach additional copies of this page as needed. **Contaminant Name Contaminant CAS Number Percent** of Removal Waste Gas Efficiency **Cobalt Compounds** 7440-48-4 0.000861 99 Lead Compounds 7439-92-1 0.019009 99 99 Manganese Compounds 7439-96-5 0.032000 **Mercury Compounds** 7439-97-6 0.000011 99 0.000229 99 Selenium Compounds 7782-49-2

Page 2 of 5 cont.

Form: AP-0808

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Section K:Fabric Filter (Bag) Information				
Fabric Type: Felted Membrane Ceramic Cartridge				
Woven PTFE Membrane Felted-Woven				
Sintered Metal Other (Specify):				
Fabric Material: TBD				
Maximum Continuous Filter Operating Temperature: TBD * F				
Clean Fabric Permeability: TBD scfm/ft ² at ΔP TBD inches of water				
Fabric Filter (Bag) Diameter or Width: TBD inches				
Fabric Filter (Bag) Length: TBD inches				
Effective Area Per Filter: TBD square inches				
Minimum Effective Air to Cloth Ratio: TBD inches				
Maximum Effective Air to Cloth Ratio: TBD inches				
Design Pressure Drop Across Baghouse: 6 inches water				
Describe determining factor fabric filter changing/replacement:				
Manufacturers recommendations and pressure drop across unit.				
Attach the manufacturer's specification sheet for the fabric filters (bag).				
Section L: Filter Cleaning Information				
Filter Cleaning Method: Manual Cleaning Bag Collapse Reverse Air Jet				
Mechanical Shakers Sonic Cleaning Pulse Jet				
Priedmatic Snakers [] Reverse All Flow [] Other (Spechy).				
Air Pressure: psi				
Describe how air is supplied to system:				
The cleaning frequency will be regulated by the control system based on overall fabric filter pressure drop. Online or isolated mode of cleaning of fabric filter will also be regulated by the control system. The fabric filter will be pulse-cleaned utilizing clean, dry, oil free, compressed air supplied by pulse jet air compressors and associated air receivers and dryers.				
Describe how filter cleaning is initiated:				
Timer Other (Specify):				
Section M: Hopper Information				
Is the hopper heated? 🔲 YES 📝 NO				
Is there a hopper vibrator? YES NO				
Describe how collected material is treated or disposed of:				
The dust collected in the fabric filter discharge hoppers will be fluidized and removed by the Fly Ash Handling System. The flue gas from the outlet plenum of the fabric filter will flow through the induced draft fans in the Induced Draft System and then to the Wet Flue Gas Desulfurization System.				

Form: AP-0808

Baghouse

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Section N: Stack Informa	tion		
Stack Height Above Grade:	Exits through FGE Stack. feet		
Stack Exit Diameter:	feet		
(Provide stack dimensions if recta	ngular stack.)		
Is a Stack Cap Present?	VES NO		
Stock Configuration:		orizontal Downwar	d Venting
(Check all that apply)	Other (Specify)		d - Venting
Stack Exit Gas Temperature	: [°] F	Stack Exit Gas Flow Rate:	ACFM
Distance to Nearest Property	/Line: feet		**************************************
Describe nearest obstruction			
Height of Nearest Obstruction	on: feet	Distance to Nearest Obstruc	tion: feet
Are stack sampling ports p	rovided? [] YES [] N	0	
Section O: Monitoring an	d Alarm Information		
Are there any atarms associ	ated with this baghouse:		
If YES, complete the followin	1g.	is name as needed	
If there are more than three ata	Describe Alorm Trigger	Monitoring Device or	Does the Alarm Initiate
Monitored	Describe Afarm Trigger	Alarm Type	an Automated Response?
		Visual	YES NO
Pressure drop across	vviii be programmed	□ Auditory	Describe:
bagnouse.	manufacturer's	☐ Automatic	Response will be dependent
	recommendation.	(Remote Monitoring)	upon the type of alarm and
		□ Other	current operating conditions.
			T YES T NO
		Auditory	Describe:
		Automatic	
		(Remote Monitoring)	
	1	\square Other	
			T YES T NO
			Describe:
			170301100.
		(Damote Monitoring)	

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Section P: Additional Information

Attach potential emissions calculations with your application. If there are no emission calculations provided with the application, the LMAPCD will calculate the potential emission rates for this equipment. This will result in a delay in the issuance of the permit. The potential emission rates shall be based on operation at maximum equipment capacity. The annual potential emissions shall be based on 8,760 operating hours per year. All potential emission calculations shall represent pre-control emissions.

Is there any additional information pertinent to this application?	\mathbf{V}	YES	NO
If yes, describe below:			

The Particulate Removal System will collect particulate matter from the boiler flue gas stream on filter bags. Particulate matter will also be collected from the powder activated carbon (PAC) and sorbent injection systems in ductwork upstream of the pulse jet fabric filter. The collected particulate will be stored in hoppers until removed by the Fly Ash Handling System.

The Particulate Removal System consists of compartmentalized PJFF located between the sorbent injection lances and the inlet of the induced draft (ID) fans. The number of compartments is determined by economic compartment sizing, total flue gas flow rate, air-to-cloth ratio, and cleaning system design. The PJFF will be designed with a spare compartment.

Under normal operation, flue gas enters the fabric filter inlet plenum and is distributed to the individual compartments through inlet dampers at each fabric filter compartment. Flue gas will pass upwards through the filter bags where the particulates within the gas stream will collect on the outside of the filter bags and the clean gas exits each fabric filter compartment through an outlet damper into fabric filter outlet plenum. To prevent collapse of the bag, a metal cage is installed on the inside of the filter bags. Filter bags and cages are suspended from a tube sheet at the top of the compartment. Each individual compartment will be provided with inlet and outlet isolation dampers for access or maintenance.

The collected particulate will be cleaned from the filter bags by suddenly inflating the filter bags with a pulse of compressed air over several rows of filter bags, causing the dust on the outside to separate from the bags and drop into hoppers below. Online or isolated mode of cleaning of fabric filter will also be regulated by the control system.

The dust collected in the fabric filter discharge hoppers will be fluidized and removed by the Fly Ash Handling System. The flue gas from the outlet plenum of the fabric filter will flow through the induced draft fans in the Induced Draft System and then to the Wet Flue Gas Desulfurization System.

Emissions from MC3 exit the baghouse and flow to a wet flue gas desulfurization (FGD) process before exiting the stack. See FGD form for MC3 for stack parameters.



Mail Application To: Louisville Metro APCD 850 Barret Avenue Louisville, KY 40204

www.louisvilleky.gov/apcd

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(502) 574-6000 FAX: (502) 574-5137

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Baghouse

Application For Permit To Construct, Reconstruct, Install, Modify, or Operate Process or Process Equipment

Section A: Owner/Operator Information				
Business Name of Owner /Operator To Appear On	The Permit:			
Louisville Gas & Electric - Mill Creel	Generating Stat	ion		
Owner's Business Name (only if different from Bus	siness Name of Owner/C	perator):		
Louisville Gas & Electric				
Section B: Equipment Location	Secti	on C: Permit Ma	iling Address	
Equipment Location Address:	Permi	t and Correspondence Check here if same	e information:	n address
14660 Dixie Highway	220 1	Vest Main Street		
Street Address	- Street	Address	KY	40202 _ 1377
City State Zip Code	City		State	Zip Code
Responsible Official Name: Ralph Bowling	Conta	ct Name: Rebec	ca Cash	
Responsible Official Title: VP Power Prod	uction Conta	ct Title: Environ	imental Engine	er
Phone: (502)627-4121	Phone	. (502)627-46	33	
Fax: (502)627-4030	Fax:			
E-Mail: Ralph.Bowling@lge-ku.com	E-Ma	_{E-Mail:} Rebecca.Cash@lge-ku.com		
Section D: Application Type			How Mudification 1	wallation or Operations
Reason for Submitting Application (Select all that a	apply):	Date of Construct	non, wouncation, n	istantation of Operation.
New Construction /Installation	of Ownership		() November (2014 Operation
Modification Change	of Location	Estimated Start I	Date: NOVEMBER 2	
Reconstruction Adminis	trative Change	Actual Start Date	**************************************	
Operation		In accordance w may not constru- facility unless a (LMAPCD). Plea application. Inco- issuing a permit equipment.	ith District regulation ict, install, modify, a permit has been ase complete all require omplete applications to construct and op-	ons 2.03, Section 1, you or operate an affected issued by the District ested information in this may result in denial of erate process or process
Section E: Facility Business Information	out location?			SIC Code
Electric Services	chi location?			49
Section F: Authorization/Signature I hereby co	tify that all information conta	ned herein and informatio	on submitted with this app	lication is true and correct.
Signature of Responsible Official:	Tit VI	le: P Power Pr oduct	ion	
Print Name: Palph Rowling	Da	le: Lalal.	•	
LMAPCD Application Tracking #: Assig	ned Engineer: Per	mit No(s):	Plant ID #:	NAICS Code:

Form: AP-0808

ıl cy

Baghouse

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Section G: Equipment Information					
Manufacturer:					
Model:		annan annan 2011 (m. 2012 ann 2012 (m. 2012 ann			
Serial Number:					
Is the baghouse insulated? \square YES	□ NO				
Design Minimum Operating Temperature	: °F				
Design Maximum Operating Temperature	: °F				
Are temperature controls provided?	JYES 🗆 NO				
If YES, describe the temperature controls					
Air Flow Through Baghouse: I Force I Indu Othe	ed ced er Specify:				
Direction of Flow Through Filters:	Inside OutOutside In				
Particulate Removal Efficiency: 9	%		······································		
Attach the manufacturer's specification sheet for the	baghouse and particle size removal efficiency curv	e and basis of determin	ation.		
Section H: Compartment Information					
Number of Compartments:					
Number of Filters (Bags) Per Compartment	nt:				
Can the Compartments be Isolated for Rej	placement or Repair? 🗇 YES 👘 NO				
Section 1: Gas Stream Information					
Maximum Inlet Volumetric Gas Flow Rat	e: acfm at feet				
Maximum Outlet Volumetric Gas Flow R	ate: acfm at feet	· · · · · · · · · · · · · · · · · · ·			
Dew Point at maximum Moisture Content	of Gas: °F				
pH of Gas Handled:					
Dust Characteristics: Sticky We	et 🗍 Corrosive 🗍 Dry 🧻 Oth	er(Specify):			
Section J: Contaminant Information					
Percent of Each Contaminant in the Waste	e Gas and Removal Efficiency				
If more than five contaminants are present, atta	ach additional copies of this page as needed.	······································	••••••••••••••••••••••••••••••••••••••		
Contaminant Name	Contaminant CAS Number	Percent of Waste Gas	Removal Efficiency		
Cobalt Compounds	7440-48-4	0.000861	99		
Lead Compounds 7439-92-1 0.019009 99					
Manganese Compounds	7439-96-5	0.032000	99		
Mercury Compounds	7439-97-6	0.000011	99		
Selenium Compounds	7782-49-2	0.000229	99		

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Baghouse

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Fabric Type: Felted Membrane Ceramic Cartridge				
Woven PTFE Membrane Felted-Woven				
Sintered Metal Otner (Specify):				
Fabric Material: TBD				
Maximum Continuous Filter Operating Temperature: TBD ° F				
Clean Fabric Permeability: TBD scfm/ft ² at ΔP TBD inches of water				
Fabric Filter (Bag) Diameter or Width: TBD inches				
Fabric Filter (Bag) Length: TBD inches				
Effective Area Per Filter: TBD square inches				
Minimum Effective Air to Cloth Ratio: TBD inches				
Maximum Effective Air to Cloth Ratio: TBD inches				
Design Pressure Drop Across Baghouse: 6 inches water				
Describe determining factor fabric filter changing/replacement:				
Manufacturers recommendations and pressure drop across unit.				
Attach the manufacturer's specification sheet for the fabric filters (bag).				
Section L: Filter Cleaning Information				
Filter Cleaning Method: 🗌 Manual Cleaning 📄 Bag Collapse 🔲 Reverse Air Jet				
☐ Mechanical Shakers ☐ Sonic Cleaning ✓ Pulse Jet				
[] Pheumatic Snakers [] Reverse Air Flow [] Other (Spechy):				
Air Pressure: psi				
Describe how air is supplied to system:				
The cleaning frequency will be regulated by the control system based on overall fabric filter pressure drop. Online or isolated mode of cleaning of fabric filter will also be regulated by the control system. The fabric filter will be pulse-cleaned utilizing clean, dry, oil free, compressed air supplied by pulse jet air compressors and associated air receivers and drvers.				
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The cleaning frequency will be regulated by the control system based on overall fabric filter pressure drop. Online or isolated mode of cleaning of fabric filter will also be regulated by the control system. The fabric filter will be pulse-cleaned utilizing clean, dry, oil free, compressed air supplied by pulse jet air compressors and associated air receivers and dryers. Describe how filter cleaning is initiated: Manual Pressure Drop Timer Other (Specify): Section M: Hopper Information Is the hopper heated? YES NO				
The cleaning frequency will be regulated by the control system based on overall fabric filter pressure drop. Online or isolated mode of cleaning of fabric filter will also be regulated by the control system. The fabric filter will be pulse-cleaned utilizing clean, dry, oil free, compressed air supplied by pulse jet air compressors and associated air receivers and dryers. Describe how filter cleaning is initiated: Manual ✓ Pressure Drop Timer Other (Specify): Section M: Hopper Information Is the hopper vibrator? YES NO				
The cleaning frequency will be regulated by the control system based on overall fabric filter pressure drop. Online or isolated mode of cleaning of fabric filter will also be regulated by the control system. The fabric filter will be pulse-cleaned utilizing clean, dry, oil free, compressed air supplied by pulse jet air compressors and associated air receivers and dryers. Describe how filter cleaning is initiated: Manual Pressure Drop Timer Other (Specify): Section M: Hopper Information Is the hopper heated? YES NO Is there a hopper vibrator? YES NO Describe how collected material is treated or disposed of: NO				
The cleaning frequency will be regulated by the control system based on overall fabric filter pressure drop. Online or isolated mode of cleaning of fabric filter will also be regulated by the control system. The fabric filter will be pulse-cleaned utilizing clean, dry, oil free, compressed air supplied by pulse jet air compressors and associated air receivers and dryers. Describe how filter cleaning is initiated: Manual Manual Pressure Drop Timer Other (Specify): Section M: Hopper Information Is the hopper heated? YES NO Is there a hopper vibrator? YES NO Describe how collected material is treated or disposed of: The dust collected in the fabric filter discharge hoppers will be fluidized and removed by the Fly Ash				
The cleaning frequency will be regulated by the control system based on overall fabric filter pressure drop. Online or isolated mode of cleaning of fabric filter will also be regulated by the control system. The fabric filter will be pulse-cleaned utilizing clean, dry, oil free, compressed air supplied by pulse jet air compressors and associated air receivers and dryers. Describe how filter cleaning is initiated: Manual Manua				
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Form: AP-0808

Baghouse

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Section N: Stack Informa	ition		
Stack Height Above Grade:	Exils through FGE Stack feet		
Stack Exit Diameter:	feet		
(Provide stack dimensions if recta	ngular stack.)		
Is a Stack Can Present?	VES LINO		
Stock Configuration		arizontal Downwar	d Vanting
(Check all that apply)	\square Other (Specify)		u – v chung
(Chech an mat appry)			
Stack Exit Gas Temperature	°F	Stack Exit Gas Flow Rate:	ACFM
Distance to Nearest Property	Line: feet		
Describe nearest obstruction			
Height of Nearest Obstruction	on: feet	Distance to Nearest Obstruc	tion: feet
Ano stall someling ports	rovidado TVES TNI	\cap	
Section O: Monitoring an	d Alarm Information		
Are there any alarms associ	ated with this baghouse?	✓ YES □ NO	
If YES, complete the following	ng.		
If there are more than three ala	rms, attach additional copies of th	is page as needed.	
Operating Parameter	Describe Alarm Trigger	Monitoring Device or	Does the Alarm Initiate
Monitored		Alarm Type	an Automated Response?
Pressure drop across	Will be programmed	Visual	YES NO
baghouse.	based upon the	Auditory	Describe:
	manufacturer's	Automatic	Response will be dependent
	recommendation.	(Remote Monitoring)	current operating conditions.
		Other	
		🔲 Visual	□ YES □ NO
		Auditory	Describe:
		Automatic	
		(Remote Monitoring)	
		Other	
		Visual	🗌 YES 🔲 NO
		Auditory	Describe:
		Automatic	
		(Remote Monitoring)	
		☐ Other	

Form: AP-0808

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Section P: Additional Information

Attach potential emissions calculations with your application. If there are no emission calculations provided with the application, the LMAPCD will calculate the potential emission rates for this equipment. This will result in a delay in the issuance of the permit. The potential emission rates shall be based on operation at maximum equipment capacity. The annual potential emissions shall be based on 8,760 operating hours per year. All potential emission calculations shall represent pre-control emissions.

Is there any additional information pertinent to this application?	🗹 YES 📋 NO
If yes, describe below:	

The Particulate Removal System will collect particulate matter from the boiler flue gas stream on filter bags. Particulate matter will also be collected from the powder activated carbon (PAC) and sorbent injection systems in ductwork upstream of the pulse jet fabric filter. The collected particulate will be stored in hoppers until removed by the Fly Ash Handling System.

The Particulate Removal System consists of compartmentalized PJFF located between the sorbent injection lances and the inlet of the induced draft (ID) fans. The number of compartments is determined by economic compartment sizing, total flue gas flow rate, air-to-cloth ratio, and cleaning system design. The PJFF will be designed with a spare compartment.

Under normal operation, flue gas enters the fabric filter inlet plenum and is distributed to the individual compartments through inlet dampers at each fabric filter compartment. Flue gas will pass upwards through the filter bags where the particulates within the gas stream will collect on the outside of the filter bags and the clean gas exits each fabric filter compartment through an outlet damper into fabric filter outlet plenum. To prevent collapse of the bag, a metal cage is installed on the inside of the filter bags. Filter bags and cages are suspended from a tube sheet at the top of the compartment. Each individual compartment will be provided with inlet and outlet isolation dampers for access or maintenance.

The collected particulate will be cleaned from the filter bags by suddenly inflating the filter bags with a pulse of compressed air over several rows of filter bags, causing the dust on the outside to separate from the bags and drop into hoppers below. Online or isolated mode of cleaning of fabric filter will also be regulated by the control system.

The dust collected in the fabric filter discharge hoppers will be fluidized and removed by the Fly Ash Handling System. The flue gas from the outlet plenum of the fabric filter will flow through the induced draft fans in the Induced Draft System and then to the Wet Flue Gas Desulfurization System.

Emissions from MC4 exit the baghouse and flow to a wet flue gas desulfurization (FGD) process before exiting the stack. See FGD form for MC4 for stack parameters.



Form: AP-0908

Scrubber

Mail Application To: Louisville Metro APCD 850 Barret Avenue Louisville, KY 40204

(502) 574-6000 FAX: (502) 574-5137 www.louisvilleky.gov/apcd

Application	For Permit To Construct, Reconstruct, Ins	stall,
Modify,	or Operate Process or Process Equipment	

Section A: Owner/Operator Information		
Business Name of Owner /Operator To Appear On The Permit:		
Louisville Gas & Electric - Mill Creek Generating S	Station	
Owner's Business Name (only if different from Business Name of	Owner/Operator):	
Louisville Gas & Electric		
Section B: Equipment Location	Section C: Permit Mailing Address	
Equipment Location Address:	Permit and Correspondence information:	on address
14660 Dixie Highway	220 West Main Street	
Street Address	Street Address	40202 1377
City State Zip Code	City State	z Zip Code
Responsible Official Name: Ralph Bowling	Contact Name: Rebecca Cash	
Responsible Official Title: VP Power Production	Contact Title: Environmental Engin	eer
Phone: (502)627-4121	Phone: (502)627-4633	
Fax: (502)627-4030	Fax: (502)627-2550	
_{E-Mail:} Ralph.Bowling@lge-ku.com	E-Mail: Rebecca.Cash@lge-ku.c	om
Section D: Application Type		
Reason for Submitting Application (Select all that apply):	Date of Construction, Modification,	Installation or Operation:
New Construction /Installation Change of Ownership	(MM/DD/YYYY)	0045 0
Modification Change of Location	Estimated Start Date: April/Way	2015 Operation
Reconstruction Administrative Change	Actual Start Date:	
Operation	In accordance with District regulation	ions 2.03, Section 1, you
	facility unless a permit has been	issued by the District
	application. Incomplete application	s may result in denial of
	equipment.	perate process or process
Section E: Facility Business Information		
What type of business is being conducted at this equipment location?		
Electric Services	ation material basels and information submitted with this are	Plicetion is true and correct
Signature of Responsible Official:	Title:	pitcanon is ride and correct
Kalal Kowin	VP Power Production	
Print Name: Ralph Bowling	Date: (2 9 11	
Application Tracking +: Assigned Engineer:	Permit No(s): Plant ID #:	NAICS Code:

Pressure Drop Across Scrubber: 12.0

Form: AP-0908

Section G: Equip	ment Information				
Manufacturer: TBD	······································			ar Breathard X 7 7000-100 Balara an a Mile anna aite ann an Bhar an Mhaara Racaanaan an an 1970 a Naara an	·····
Model: TBD	**************************************				
Serial Number: TBD)				<u></u>
Attach the Manufact	urer's Specification S	heet for the Scrubber a	nd any Removal Efficie	ency calculations.	
Section H: Cont:	aminant Informati	01			
Concentration of 1	Each Contaminant	in the Waste Gas,	Vapor Pressure, So	lubility in the Scrubb	ing Liquor, and
Removal Efficienc	y				
If more than six conta	aminants are present,	attach additional copie	s of this page as needed		Demons
		in Waste Gas	vapor Pressure	Scrubbing Liquor	Efficiency
SO2					98 %
		3-3.5		Slightly Soluble	
			psi at	☐ Highly soluble	
		% by Weight	- H.	Miscible	
				Not Applicable	
HCI				Insoluble	98 %
				Slightly Soluble	
		Of the NET States	psi at	Missible	
		% by weight	Ľ	Misciple	
				I INOT Applicable	0/
				Slightly Soluble	70
			nsiat	Highly soluble	
		% by Waight	° F	Miscible	
		70 by Weight	E.	Not Applicable	
· · · · · · · · · · · · · · · · · · ·					0/0
				Slightly Soluble	,,,
			nsi at	Highly soluble	
		% by Weight	°F	Miscible	
		, , , , , , , , , , , , , , , , , , ,		Not Applicable	
				Insoluble	%
				Slightly Soluble	
			psi at	Highly soluble	
		% by Weight	۴F	Miscible	-
				Not Applicable	
				Insoluble	%
				Slightly Soluble	
			psi at	Highly soluble	
		% by Weight	°F	Miscible	
				Not Applicable	
Section 1: Gas Str	eam Information	Data oor oor	aafm at	• E	
waximum Inlet Vo	numetric Gas Flow	Kate: 695,086	acim at 330	L.	
Maximum outlet V	olumetric Gas Flov	v Rate: 577.347	acim at 128	~ F ,	

inches water

Scrubber

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Form: AP-0908

Section J: Scrubbing Liquor Inform	mation				
Scrubbing Liquor Components					
If more than five components are present, a	ttach additional copies of this page as needed				
Scrubbing Liquor Component	CAS Number	Concentration			
Limestone		14-16 % by Weight			
		% by Weight			
		% by Weight			
		% by Weight			
		% by Weight			
Scrubbing Liquor Flow Rate: 19,400	gallons/minute				
pH Operating Range: 5-6					
Is the scrubbing liquor recirculated?	YES V NO				
Is there more than one operating scenar	rio for the scrubber? YES	NO			
If YES, complete the following informa	tion.				
Alternate Operating Scenario Scrubbin	g Liquor Flow Rate: gal	lons/minute			
Alternate Operating Scenario pH Opera	ating Range:				
Is the scrubbing liquor recirculated in t	he alternate operating scenario?	YES NO			
Describe how spent scrubbing liquor is	s treated or disposed of:				
Section K: Operational Information	0	ter se			
Scrubber Type: 🖌 Spray Tower	Ionizing Fluidized Bc	d Scrubber Venturi			
Packed Bed Tray Tower 🖌 Other (Specify):					
Scrubber Height: fe	eet				
Scrubber Inside Diameter: fe	eet				
Does the scrubber use packing?	YES V NO				
If YES, complete the following informa	tion.				
Packing Type: Berl Saddle	Pall Ring				
Intalox Saddle	Intalox Saddle Tellerette				
Raschig Ring	Marbles				
Lesig Ring Other (Specify):					
Packing Size: inch					
Packing Material:					
Height of Packing: feet					
Does the scrubber use trays, plates, or baffles? VES NO					
Type of Impactor/Impingement: 🖌 Trays 🔄 Baffles					
Plates Other (Specify):					
Type of Perforation: I Holes Adjustable Trays					
	Bubble Caps Other (Specify):				

inches

Movable Discs

Spacing Between Trays, Plates, or Baffles: 60

Scrubber

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Form: AP-0908

Configuration:	Counter - Current		
	Co - Current		
	Other (Specify):		
Will a mist eliminator be in	stalled? VES NO)	
If YES, complete the following	1g		
Describe the mist eliminator	•		
Section L: Stack Informa	tion		
Stack Height Above Grade:	500 feet		
Stack Exit Diameter: 15.5	feet		
(Provide stack dimensions if recta	ngular stack.)		
Is a stack cap present?	YES 🖌 NO		
Stack Configuration:	Vertical Hc	orizontal Downward	d – Venting
(Check all that apply)	Other (Specify):		
Stack Exit Gas Temperature	: 130 ° F	Stack Exit Gas Flow Rate: 2,	,067,979 ACFM
Distance to Nearest Property	Line: feet		
Describe nearest obstruction			
Height of Nearest Obstruction	on: feet	Distance to Nearest Obstruct	tion: feet
		<u> </u>	
Are stack sampling ports pr	rovided? VES NO)	
Section M: Monitoring an	nd Alarm Information	1. 1	
Are there any alarms associ	ated with this scrubber?	VYES NO	
If YES, complete the following	ng.	·	
If there are more than three ala	rms, attach additional copies of thi	is page as needed.	Theory dia a transformer of the state
Operating Parameter	Describe Alarm Trigger	Monitoring Device or	Does the Alarm Initiate
Monitored		Alarm Type	an Automated Response?
Recycle Pump Amps	> 10 Amps		
	u -		Desembe:
		LI Automatic	Valves and the mist eliminator
		(Remote Monitoring)	are on automatic control with manual canability
Reaction Tank pH	> 4.0 pH	Visual	
		Auditory	Describe:
		Automatic	
		(Kemote Monitoring)	
		U Other	
Stack Exit Temperature	100 F < T < 170 F	Visual	YES NO
			Describe:
		L Automatic	
		(Remote Monitoring)	
		□ Other	

Scrubber

Form: AP-0908

Scrubber

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Additional Information Section N:

Attach potential emissions calculations with your application. If there are no emission calculations provided with the application, the LMAPCD will calculate the potential emission rates for this equipment. This will result in a delay in the issuance of the permit. The potential emission rates shall be based on operation at maximum equipment capacity. The annual potential emissions shall be based on 8,760 operating hours per year. All potential emission calculations shall represent pre-control emissions.

Is there any additional information pertinent to this application? YES NO If yes, describe below:

Constructing a new FGD is a more cost-effective option than redesigning and modifying the existing. first-generation FGDs to increase the SO2 removal efficiency from the current approximate 90 percent removal rate to the 98+ percent SO2 removal efficiency that today's technology can achieve. To gain the necessary increased efficiency from the existing FGDs would require multiple, extended outages to accommodate the necessary structural and infrastructure revisions and repairs from the original designs. Long outages (of multiple months) would likely require replacement power to meet loads at peak times that is typically less economic than running the Mill Creek units. The new combined FGD will be designed to remove 98+ percent of the SO2 emissions from both units. FGD is the best available control technology currently available for SO2 reduction. Also, the planned FGD will be able to comply consistently with the EGU MACT HCI emissions limitations (measuring SO2 as a proxy for HCI, as allowed by the proposed MACT rule).

The new FGD installation requires locating the FGD and associated equipment away from the existing FGD locations. This allows construction to be performed while the units remain in operation and then, when the construction is completed, the units can be tied into the new technologies during shorter outages. The new FGD locations will require new chimneys similar to those installed on the FGD projects recently completed at the KU Ghent and Brown stations. The addition of a higher-efficiency FGD in combination with the installation of additional particulate matter control equipment will require the installation of larger induced draft fans and/or the installation of booster fans to account for the increased pressure drop through the flue gas train.

LG&E proposes to begin initial demolition activities related to the construction of the new Unit 1 & 2 FGD (e.g., demolition of existing warehouses and craft locker rooms northeast of Units 1 and 2) in the fall of 2011 and to begin constructing the new FGD in early 2012 with the work being placed into operation by mid-2015. Once the new FGD to service both Units 1 and 2 is placed into operation, the existing Mill Creek Units 1 and 2 FGDs will be demolished.





Form: AP-0908

Louisville Metro Air Pollution Control District

Scrubber

Mail Application To: Louisville Metro APCD 850 Barret Avenue Louisville, KY 40204

(502) 574-6000 FAX: (502) 574-5137 www.louisvilleky.gov/apcd

Application	For	Permit	To	Cons	struct,	Reco	nstru	ct, Inst	all,
Modify,	or (Operate	Pr	ocess	or Pre	ocess	Equip	ment	

Section A: Owner/Operator Informa	Section A: Owner/Operator Information					
Business Name of Owner /Operator To Appear On The Permit:						
Louisville Gas & Electric - Mill Ci	eek Generating Stat	ion				
Owner's Business Name (only if different f	rom Business Name of Ow	mer/Operator):				
Louisville Gas & Electric						
Section B: Equipment Location	S	Section C: Permit N	lailing Addre	\$5		
Equipment Location Address:	F	Permit and Corresponde	nce information	n: t location a	ddress	
14660 Dixie Highway		220 West Main Street				
Street Address	/2 S	Street Address		КY	40202 1377	
City State Zip	Code G	City		State	Zip Code	
Responsible Official Name: Ralph Bo	wling	Contact Name: Rebe	ecca Cash		-	
Responsible Official Title: VP Power	Production	Contact Title: Enviro	onmental E	nginee	ſ	
Phone: (502)627-4121	F	Phone: (502)627-4	633	an sa ing mangang sa ang sa ita ita ita ita ita ita ita ita ita it		
_{Fax:} (502)627-4030	F	Fax: (502)627-25	50			
E-Mail: Ralph.Bowling@lge-ku	.com E	E-Mail: Rebecca.Cash@lge-ku.com				
Section D: Application Type						
Reason for Submitting Application (Select	all that apply):	Date of Constr	action, Modific	ation, insu	mation of Operation:	
New Construction /Installation	Change of Ownership	(MM/DD/YYYY)				
Modification	Change of Location	Estimated Start Date:NOVERTIDER 2014 Operation				
Reconstruction	Administrative Change	Actual Start Date:				
Operation		In accordance may not cons facility unless (LMAPCD). F application. I issuing a perm equipment.	with District r truct, install, n a permit has lease complete complete appli- it to construct	egulations nodify, or s been iss all request ications m and opera	2.03, Section 1, you operate an affected used by the District ed information in this ay result in denial of te process or process	
Section E: Facility Business Informa	ition				SIC Code	
Electric Services	s equipment readon,				49	
Section F: Authorization/Signature (hereby certify that all information	contained herein and inform	ation submitted with	h this applica	tion is true and correct.	
Signature of Responsible Official:		Title: VP Power	Production			
Print Name. Ralph Bowling		Date: le[9]11				
LMAPCD Application Tracking #:	Assigned Engineer:	Permit No(s):	Plant ID #:		NAICS Code:	

Section I: Gas Stream Information

Pressure Drop Across Scrubber: 12.0

Maximum Inlet Volumetric Gas Flow Rate: 447,593

Maximum outlet Volumetric Gas Flow Rate: 371,776

Form: AP-0908

Section C: Fouin	ment Information				
Manufacturer: TBD	ALLEY ADDIDITECTURE				
Model TBD	********				
Serial Number TBD			#, ************************************	۵	
Attach the Manufactu	irer's Specification SI	heet for the Scrubber a	nd any Removal Efficie	ency calculations.	
Section H: Conta	minant Informati	on	•	<u>.</u>	
Concentration of I	Each Contaminant	in the Waste Gas,	Vapor Pressure, So	lubility in the Scrubbi	ing Liquor, and
If more than six conts	y minants are present	attach additional conie	s of this name as needed		
Contaminant	CAS Number	Concentration	Vanor Pressure	Soluhility in	Removal
Contennationit		in Waste Gas	Theor Tressure	Scrubbing Liquor	Efficiency
SO2		3-3.5 % by Weight	psi at ° F	☐ Insoluble ☐ Slightly Soluble ☐ Highly soluble ☐ Miscible ☐ Not Applicable	98 %
HCI		% by Weight	psi at ° F	 Insoluble Slightly Soluble ✓ Highly soluble Miscible Not Applicable 	98 %
		% by Weight	psi at °F	 Insoluble Slightly Soluble Highly soluble Miscible Not Applicable 	%
		% by Weight	psi at ° F	 Insoluble Slightly Soluble Highly soluble Miscible Not Applicable 	%
		% by Weight	psi at ° F	 Insoluble Slightly Soluble Highly soluble Miscible Not Applicable 	%
		% by Weight	psi at ° F	 Insoluble Slightly Soluble Highly soluble Miscible Not Applicable 	%

°F

°F

acfm at 330

acfm at 128

inches water

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Scrubber

Form: AP-0908

Section J: Scrubbing Liquor Info	rmation	
Scrubbing Liquor Components		
If more than five components are present, a	attach additional copies of this page as neede	d
Scrubbing Liquor Component	CAS Number	Concentration
Limestone		14-16 % by Weight
		% by Weight
		% by Weight
		% by Weight
Scrubbing Liquor Flow Rate: 24 000	gallons/minute	% by Weight
pH Operating Range: 5-6	Barrow, Internet	
Is the scrubbing liquor recirculated?	YES NO	
Is there more than one operating scena	ario for the scrubber? YES	NO
If YES, complete the following informa	ation.	
Alternate Operating Scenario Scrubbin	ng Liquor Flow Rate: ga	llons/minute
Alternate Operating Scenario pH Oper	rating Range:	
Is the scrubbing liquor recirculated in	the alternate operating scenario?	YES NO
Describe how spent scrubbing liquor i	s treated or disposed of:	
Section K. Anerational Informatio		
SUCCEDENTS, OPELALUMAI IMULMANU	/11	
Scrubber Type: Spray Tower	Ionizing Fluidized Be	ed Scrubber Venturi
Scrubber Type: Spray Tower Packed Bed	Ionizing Fluidized B Tray Tower ✓ Other (Spec	ed ScrubberVenturi ify):
Scrubber Type: Spray Tower Packed Bed Scrubber Height: f	Ionizing Fluidized B Tray Tower ✓ Other (Spec	ed Scrubber Venturi ify):
Scrubber Type: V Spray Tower Packed Bed Scrubber Height: f Scrubber Inside Diameter: f	Ionizing Fluidized B Tray Tower ✓ Other (Spec feet	ed Scrubber Venturi ify):
Scrubber Type: ✓ Spray Tower Packed Bed Scrubber Height: f Scrubber Inside Diameter: f Does the scrubber use packing? f	I Ionizing Fluidized Bo Tray Tower ✓ Other (Spec feet YES ✓ NO	ed Scrubber Venturi ify):
Scrubber Type: Scrubber Height: Scrubber Inside Diameter: Does the scrubber use packing? If YES, complete the following information of the scrubber use packing information of the scrubber use packin	I Ionizing Fluidized Bo Tray Tower ✓ Other (Spec feet feet YES ✓ NO ation.	ed Scrubber Venturi ify):
Scrubber Type: ✓ Spray Tower Packed Bed Packed Bed Scrubber Height: f Scrubber Inside Diameter: f Does the scrubber use packing? f If YES, complete the following information Packing Type: Berl Saddle Sate	I Ionizing Fluidized Bo Tray Tower ✓ Other (Spec Feet YES ✓ NO ation. Pall Ring	ed Scrubber Venturi ify):
Scrubber Type: ✓ Spray Tower Packed Bed Packed Bed Scrubber Height: f Scrubber Inside Diameter: f Does the scrubber use packing? f If YES, complete the following information Packing Type: Berl Saddle Intalox Saddle	I Ionizing Fluidized Be Tray Tower ✓ Other (Spec Feet YES ✓ NO ation. Pall Ring ☐ Pall Ring ☐ Tellerette	ed Scrubber Venturi ify):
Scrubber Type: ✓ Spray Tower Packed Bed Scrubber Height: f Scrubber Inside Diameter: f Does the scrubber use packing? f If YES, complete the following information Packing Type: Berl Saddle Intalox Saddle Raschig Ring Raschig Ring	I Ionizing Fluidized Bo Tray Tower ✓ Other (Spec feet YES ✓ NO ation. Pall Ring Tellerette Marbles	ed Scrubber Venturi ify):
Scrubber Type: ✓ Spray Tower Packed Bed Packed Bed Scrubber Height: f Scrubber Inside Diameter: f Does the scrubber use packing? f If YES, complete the following information Packing Type: Berl Saddle Intalox Saddle Raschig Ring Lesig Ring	I Ionizing Fluidized Be Tray Tower ✓ Other (Spec Feet YES ✓ NO ation. Pall Ring Tellerette Marbles Other (Specify):	ed Scrubber Venturi ify):
Scrubber Type: ✓ Spray Tower Packed Bed Scrubber Height: f Scrubber Inside Diameter: f Does the scrubber use packing? f If YES, complete the following information Packing Type: Berl Saddle Raschig Ring Lesig Ring Lesig Ring Packing Size: inch	I Ionizing Fluidized Bo Tray Tower ✓ Other (Spec Feet Feet YES ✓ NO ation. Pall Ring Tellerette Marbles Other (Specify):	ed Scrubber Venturi ify):
Scrubber Type: ✓ Spray Tower Packed Bed Scrubber Height: f Scrubber Inside Diameter: f Does the scrubber use packing? f If YES, complete the following information f Packing Type: Berl Saddle Intalox Saddle Raschig Ring Lesig Ring Lesig Ring Packing Material: Intalox Saddle	I Ionizing Fluidized Bo Tray Tower ✓ Other (Spec Feet YES ✓ NO ation. Pall Ring Tellerette Marbles Other (Specify):	ed Scrubber Venturi ify):
Scrubber Type: ✓ Spray Tower Packed Bed Scrubber Height: f Scrubber Inside Diameter: f Does the scrubber use packing? f If YES, complete the following informat Packing? Packing Type: Berl Saddle Raschig Ring Lesig Ring Packing Size: inch Packing Material: Height of Packing:	I Ionizing Fluidized Bo Tray Tower ✓ Other (Spec feet YES ✓ NO ation. Pall Ring Tellerette Marbles Other (Specify):	ed Scrubber Venturi ify):
Scrubber Type: ✓ Spray Tower Packed Bed Scrubber Height: f Scrubber Inside Diameter: f Does the scrubber use packing? f If YES, complete the following information f Packing Type: Berl Saddle Intalox Saddle Raschig Ring Lesig Ring Lesig Ring Packing Material: feet Does the scrubber use trays, plates, o feet	I Ionizing Fluidized Bo Tray Tower ✓ Other (Spec Feet YES ✓ NO ation. Pall Ring Tellerette Marbles Other (Specify): The files? YES ✓ YES NO	ed Scrubber Venturi ify):
Scrubber Type: ✓ Spray Tower Packed Bed Scrubber Height: f Scrubber Inside Diameter: f Does the scrubber use packing? f If YES, complete the following informat Packing? Packing Type: Berl Saddle Raschig Ring Lesig Ring Packing Size: inch Packing Material: Height of Packing: Height of Packing: feet Does the scrubber use trays, plates, o Type of Impactor/Impingement:	I Ionizing Fluidized Be Tray Tower ✓ Other (Spec Feet Feet YES ✓ NO ation. Pall Ring Tellerette Marbles Other (Specify): Trays Baffles Plates Other (Specify):	ed Scrubber Venturi ify):
Scrubber Type: ✓ Spray Tower Packed Bed Scrubber Height: f Scrubber Inside Diameter: f Does the scrubber use packing? f If YES, complete the following information Packing information Packing Type: Berl Saddle Raschig Ring Lesig Ring Packing Size: inch Packing Material: feet Does the scrubber use trays, plates, o Type of Impactor/Impingement:	I Ionizing Fluidized Be Tray Tower ✓ Other (Spec Feet Feet YES ✓ NO ation. Pall Ring Tellerette Marbles Other (Specify): Trays Baffles Plates Other (Specify): Adjustable Trays	ed Scrubber Venturi ify):
Scrubber Type: Scrubber Height: Scrubber Inside Diameter: Does the scrubber use packing? If YES, complete the following information of the following info	I Ionizing Fluidized Bo Tray Tower ✓ Other (Spec Feet Feet YES ✓ NO ation. Pall Ring Tellerette Marbles Other (Specify): Trays Baffles Plates Other (Specify): Adjustable Trays Caps Other (Specify):	ed Scrubber Venturi ify):
Scrubber Type: ✓ Spray Tower Packed Bed Scrubber Height: f Scrubber Inside Diameter: f Does the scrubber use packing? f If YES, complete the following information Packing information Packing Type: Berl Saddle Intalox Saddle Raschig Ring Lesig Ring Lesig Ring Packing Size: inch Packing Material: feet Does the scrubber use trays, plates, o Type of Impactor/Impingement: Type of Perforation: ✓ Holes Bubble of	I Ionizing Fluidized Be Tray Tower ✓ Other (Spec Feet Feet YES ✓ NO ation. Pall Ring Tellerette Marbles Other (Specify): Adjustable Trays Caps Other (Specify): e Discs	ed Scrubber

Scrubber

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Scrubber Page 4 of 5

Form: AP-0908

Configuration:	Counter - Current		
	Co - Current		
	Other (Specify):		
Will a mist eliminator be in	stalled? VES NO)	
If YES, complete the following	ng		
Describe the mist eliminator	:		
Soution I. Starly Informer	Han		
Section L: Stack informa	11011		
Stack Height Above Grade:	600 teet		
Stack Exit Diameter: 19.5	feet		
(Provide stack dimensions if recta	ngular stack.)		
la o stook aan measant?	VES ZNO		
15 a stack cap present?			
Stack Configuration:	Vertical Ho	orizontal Downward	d – Venting
(Check all that apply)	Other (Specify):		
Stack Exit Gas Temperature	: 130 ° F	Stack Exit Gas Flow Rate: 1,	348,885 ACFM
L. L.			
Distance to Nearest Property	Line: 765 feet		
Describe nearest obstruction	; building		
Height of Nearest Obstruction		Distance to Nearest Obstruct	ion: 145 feet
reight of mealest Obstraction		Sistemes to i tourobi Obbiluo	
		L	
Are stack sampling ports pi		J	
Section NI: Monitoring a	nd Alarm Information		
Are there any alarms associ	ated with this scrubber?	V YES NO	
If YES, complete the following	ng.		
If there are more than three ala	rms, attach additional copies of thi	s page as needed.	1
Operating Parameter	Describe Alarm Trigger	Monitoring Device or	Does the Alarm Initiate
Monitored		Alarm Type	an Automated Response?
Desuela Duma Amas	> 10 Ampa	🖸 Visual	YES NO
Recycle Pump Amps	- TO Amps	□ Auditory	Describe:
		🗇 Automatic	
		(Remote Monitoring)	1
		□ Other	
		Visual	YES NO
Reaction Tank pH	> 4.0 pH		Describe:
			120301100.
		(Domoto Maniforino)	
		(Kemole Monitoring)	
Stack Exit Temperature	100 F < T < 170 F	Visual	YES NO
a contraction and a contraction		☐ Auditory	Describe:
		□ Automatic	
		(Remote Monitoring)	
		□ Other	

Form: AP-0908

Scrubber

Page 5 of 5

Section N: Additional Information

Attach potential emissions calculations with your application. If there are no emission calculations provided with the application, the LMAPCD will calculate the potential emission rates for this equipment. This will result in a delay in the issuance of the permit. The potential emission rates shall be based on operation at maximum equipment capacity. The annual potential emissions shall be based on 8,760 operating hours per year. All potential emission calculations shall represent pre-control emissions.

Is there any additional information pertinent to this application?	\checkmark	YES		NO
If yes, describe below:	لمستسما		LI	

Once the new Mill Creek Unit 4 FGD is in service, LG&E proposes to upgrade Unit 4's existing FGD system to accommodate Unit 3 so it can consistently achieve SO2 emissions of 98 percent on a continuous basis when burning high-sulfur-content coals. The existing Unit 4 FGD is approximately 20% larger in size than the existing Unit 3 FGD (due to generating capacity differences between Units 3 and 4) and can accommodate the needed efficiency upgrades, whereas the existing Unit 3 FGD cannot be modified for the increased capacity due to physical structural steel constraints. Therefore, upgrading the existing Unit 4 FGD with modified spray levels and/or flue gas contact rings/trays and flue gas flow modifications is the most feasible and economical control technology considered for SO2 reduction for Unit 3. The upgrade is expected to allow the Mill Creek Unit 3 to comply consistently with the EGU MACT rule's HCI emissions limitations (measuring SO2 as a proxy for HCI, as allowed by the proposed new regulation).

Tying in Unit 3 to Unit 4's existing FGD will result in Unit 3's using the existing Unit 4 chimney. Unit 3's current chimney will be capped and remain in place. Once the tie-in to the upgraded FGD is completed, Unit 3's current FGD modules will no longer be needed and will be demolished similar to that of Units 1 and 2.

LG&E proposes to begin replacing Unit 4's current FGD in early 2012. Refurbishment work on the existing FGD will occur after tying Unit 4 into the new FGD. LG&E plans to place Unit 4 back into service in late 2014, with Unit 3 being placed back into service (after being tied into the refurbished former Unit 4 FGD) in late 2015.



Mail Application To: Louisville Metro APCD 850 Barret Avenue Louisville, KY 40204

Form: AP-0908

Scrubber

(502) 574-6000 FAX: (502) 574-5137 www.louisvilleky.gov/apcd

Application	For	Permit	То	Cons	truct	, Recc	Inst	ruct,	Install,
Modify,	or (Operate	Pro	cess	or Pr	ocess	Equ	uipm	ent

Section A: Owner/Operator Inform	ation	(1983) S	171 A.S. 12				
Business Name of Owner /Operator To Ap	Business Name of Owner /Operator To Appear On The Permit:						
Louisville Gas & Electric - Mill C	reek Generating Sta	tion					
Owner's Business Name (only if different	from Business Name of Ov	vner/Op	erator):				
Louisville Gas & Electric							
Section B: Equipment Location		Section	a C: Permit Ma	iling Addre	·\$\$		
Equipment Location Address:		Permit:	and Corresponden	ce information	a: t location :	addrace	
14660 Dixie Highway		220 We	est Main Street				
Street Address	72	Street A	Address		КY	40202	1377
City State Zip	o Code	City		*****	State	Zip Cod	e
Responsible Official Name: Ralph Bo	owling	Contact	_{Name:} Rebec	ca Cash		-	
Responsible Official Title: VP Powe	r Production	Contact	Title: Enviror	nmental E	nginee	r	
Phone: (502)627-4121		Phone:	(502)627-46	633			
Fax: (502)627-4030		Fax: (502)627-255	0			
E-Mail: Ralph.Bowling@lge-ku	I.com	E-Mail: Rebecca.Cash@lge-ku.com					
Section D: Application Type	I						
Reason for Submitting Application (Selec	t all that apply):		Date of Construc	ction, Modific	ation, Inst	allation or (Operation:
New Construction /Installation	Change of Ownership	(MM/DD/YYYY)					
Modification	Change of Location		Estimated Start I	Date: NOVe	mber 20	014 Ope	ration
Reconstruction	Administrative Change		Actual Start Date	ð:	**************************************		
Operation			In accordance w may not constru	vith District r uct, install, n	cgulations nodify, or	2.03, Sect operate a	tion 1, you in affected
			facility unless a	a permit has ase complete	been is	sued by the	he District
			application. Inc	omplete appli	ications m	ay result in	n denial of
			equipment.	to constituct			or process
Section E: Facility Business Inform	ation					1	SIC Code
Flectric Services	ns equipment tocurent					49	
Section F: Authorization/Signature	l hereby certify that all information	i containe	d herein and information	on submitted with	h this applica	uion is true an	d correct.
Signature of Responsibly Official:		Title:					
Kalph Bowlin			VP Power Pi	roduction			
Print Name:	\ \	Date:	(.19	111			
Application Tracking #:	Assigned Engineer:	Perm	iit No(s):	Plant ID #:		NAICS C	ode:
OSCOND							

Pressure Drop Across Scrubber: 12.0

Form: AP-0908

Section G: Equip	ment Information				
Manufacturer: TBD					
Model: TBD					
Serial Number: TBD	1				
Attach the Manufactu	urer's Specification Sl	neet for the Scrubber a	nd any Removal Efficie	ency calculations.	
Section H: Conta	iminant Informati	on			
Concentration of I	Each Contaminant	in the Waste Gas,	Vapor Pressure, So	lubility in the Scrubbi	ng Liquor, and
Removal Efficiency	У				
If more than six conta	iminants are present,	attach additional copie	s of this page as needed	1.	r
Contaminant	CAS Number	Concentration in Waste Gas	Vapor Pressure	Solubility in Scrubbing Liquor	Removal Efficiency
200					98 %
S02				Slightly Soluble	
		3-3.5	psi at	Highly soluble	
	1	% by Weight	۴F	Miscible	
				Not Applicable	
				Insoluble	98 %
				Slightly Soluble	
			psi at	Highly soluble	
		% by Weight	۴F	Miscible	
				Not Applicable	
				Insoluble	%
				Slightly Soluble	
	1		psi at	Highly soluble	
		% by Weight	° F	Miscible	
				Not Applicable	
				Insoluble	%
			• .	Slightly Soluble	
	1		psi at	Hignly soluble	
		% by weight	ľ	Miscible	
	······			Inor Applicable	0/
	1			Slightly Soluble	70
			nciat	Highly soluble	
		% by Weight	° F	Miscible	
	1	70 by Weight	A.	Not Applicable	
					0/0
				Slightly Soluble	/0
			psi at	Highly soluble	
		% by Weight	۴F	Miscible	
				Not Applicable	
Section I: Gas Str	eam Information				
Maximum Inlet Vo	lumetric Gas Flow	Rate: 2,026,176	acfm at 350	°F	
Maximum outlet V	olumetric Gas Flov	v Rate: 1,674,655	acfm at 130	°F	

inches water

Scrubber

Page 2 of 5

1 TD 0.000 F

Form: AP-0908						Page 3 of 5
Section J: Scrubbing Liquor Info	rmation					
Scrubbing Liquor Components					<u> </u>	
If more than five components are present,	attach addition	al copies o	of this pag	ge as neede	ed.	
Scrubbing Liquor Component		CAS Nu	mber			Concentration
Limestone					14-16	% by Weight
						% by Weight
						% by Weight
						% by Weight
						% by Weight
Scrubbing Liquor Flow Rate:	gall	ons/minu	ıte			
pH Operating Range: 5-6						
Is the scrubbing liquor recirculated?	✓ YES	NO				
Is there more than one operating scena	ario for the so	crubber?		YES .	/ NO	
If YES, complete the following inform	ation.					
Alternate Operating Scenario Scrubbi	ng Liquor Flo	ow Rate:		ga	llons/minut	te
Alternate Operating Scenario pH Ope	rating Range	-				
Is the scrubbing liquor recirculated in	the alternate	operating	g scenari	io?	YES	NO
Describe how spent scrubbing liquor i	is treated or d	lisposed of	of:		- I I F	
		ŕ				
Section K: Operational Information)n					
Scrubber Type: 🖌 Spray Tower Packed Bed	lonizi Tray	ng Fower	Fl ✓ Ot	uidized B her (Spec	ed Scrubber vify):	Venturi
Scrubber Height:	feet					
Scrubber Inside Diameter:	feet			·		
Does the scrubber use packing ?	YES /	NO			אין איז	

Scrubber Inside Diameter:	feet
Does the scrubber use packing?	YES 🗸 NO
If YES, complete the following infor	mation.
Packing Type: Berl Saddle	Pall Ring
Intalox Saddl	e 🔲 Tellerette
Raschig Ring	Marbles
Lesig Ring	Other (Specify):
Packing Size: in	sh
Packing Material:	
Height of Packing: fe	et
Does the scrubber use trays, plates	or baffles? VES NO
Type of Impactor/Impingement:	Trays Bafiles
	Plates Other (Specify):
Type of Perforation:	Adjustable Trays
Bubb	e Caps Other (Specify):
Mova	ole Discs
Spacing Between Trays, Plates, or I	affles: 60 inches

Scrubber

Scrubber

Page 4 of 5

Form: AP-0908

Configuration:	Counter - Current		
	Other (Specify):		
Will a mist eliminator be in	istalled? YES N	0	
If YES. complete the following	ng.		
Describe the mist eliminator			
Section L: Stack Informa	ition		
Stack Height Above Grade:	600 feet		
Stack Exit Diameter: 24.0	feet		
(Provide stack dimensions if recta	ingular stack.)		
Is a stack cap present?	YES NO		
Stack Configuration:	Vertical H	orizontal Downward	l – Venting
(Check all that apply)	Other (Specify):		
Stack Exit Gas Temperature	: 130 ° F	Stack Exit Gas Flow Rate: 1.	641.798 ACFM
chien inter ous remperature			
Distance to Nearest Property	y Line: feet		
Describe nearest obstruction	1:		
Height of Nearest Obstruction	on: feet	Distance to Nearest Obstruct	ion: feet
C			
Are stack sampling ports pr	rovided? VES N	0	
Section M: Monitoring an	nd Alarm Information		
Are there any alarms associ	ated with this scrubber?	✓ YES NO	
If YES, complete the following	ng.		
If there are more than three ala	rms, attach additional copies of th	is page as needed.	
Operating Parameter	Describe Alarm Trigger	Monitoring Device or	Does the Alarm Initiate
Monitored		Alarm Type	an Automated Response?
Recycle Pump Amps	> 10 Amps	Visual	YES NO
ricely ele r'amp rimpe	i o i inipo	Auditory	Describe:
		L Automatic	
		(Remote Monitoring)	
		U Other	
Reaction Tank pH	> 4.0 pH	Visual	
•	·	L Auditory	Describe:
		(Demote Menitoring)	
		(Remote Monitoring)	
Stack Exit Temperature	100 F < T < 170 F		
-		Automatia	
		(Demote Menitoring)	
		C Other	
			I Contraction of the second

Form: AP-0908

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Section N: Additional Information

Attach potential emissions calculations with your application. If there are no emission calculations provided with the application, the LMAPCD will calculate the potential emission rates for this equipment. This will result in a delay in the issuance of the permit. The potential emission rates shall be based on operation at maximum equipment capacity. The annual potential emissions shall be based on 8,760 operating hours per year. All potential emission calculations shall represent pre-control emissions.

Is there any additional information pertinent to this application?	V YES	NO
If yes, describe below:		L1

LG&E proposes to install a new FGD for Unit 4 that can consistently achieve SO2 emissions reductions greater than 98 percent. FGD is the best available control technology currently available for SO2 reduction. The new FGD's SO2 scrubbing capabilities (compared to its current FGD) will increase the amount of limestone required and byproduct produced proportionally to the additional capture of SO2. Also, as with the new combined Units 1 and 2 FGD, Unit 4's planned FGD will be able to comply with the proposed EGU MACT rule's HCI emissions limitations (measuring SO2 as a proxy for HCI, as allowed by the proposed regulation).

The Unit 4 new FGD installation requires locating the FGD and associated equipment away from the existing Unit 4 FGD location. This allows construction to be performed while the unit remains in operation and then, when construction is completed, Unit 4 can be tied in to the new technology during a shorter outage. The new FGD location will include a new chimney for Unit 4 (Mill Creek Unit 3 will utilize the existing Unit 4 chimney) similar to those installed on the FGD projects recently completed. The addition of a higher-efficiency FGD in combination with the installation of additional particulate matter control equipment will require the installation of larger induced draft fans and/or the installation of booster fans to account for the increased pressure drop through the flue gas train.

LG&E proposes to begin initial demolition activities related to the construction of the Unit 4 FGD in the fall of 2011, and to begin building Unit 4's new FGD in early 2012 with the Unit 4 tie in occurring in late 2014.

Scrubber



Form: AP-1108

Louisville Metro Air Pollution Control District

Adsorption

Mail Application To: Louisville Metro APCD 850 Barret Avenue Louisville, KY 40204

Application For Permit To Construct, Reconstruct, Install, Modify, or Operate Process or Process Equipment

Section A: Owner/Operator Information Business Name of Owner /Operator To Appear On The Permit: Louisville Gas & Electric - Mill Creek Generating Station Owner's Business Name (only if different from Business Name of Owner/Operator): Louisville Gas & Electric - Mill Creek Generating Station Section B: Equipment Location Section C: Permit Mailing Address Equipment Location Address: Permit and Correspondence information: 11 Check here if same as equipment location address. 14660 Dixie Highway 220 West Main Street Street Address Street Address 40272 KY 40202 1377 Louisville Louisville KY City State Zip Code City State Zip Code Contact Name: Rebecca Cash Responsible Official Name: Responsible Official Title: VP Power Production Contact Title: Environmental Engineer Phone: (502)627-4121 Phone: (502)627-4633 Fax: (502)627-4030 Fax: (502)627-2550 E-Mail: Ralph.Bowling@lge-ku.com E-Mail: Rebecca.Cash@lge-ku.com Section D: Application Type Reason for Submitting Application (Select all that apply): Date of Construction, Modification, Installation or Operation: New Construction /Installation Change of Ownership (MM/DD/YYYY) See baghouse application Modification 11 Change of Location Estimated Start Date: 11 Reconstruction FI Administrative Change 11 Actual Start Date: 11 Operation In accordance with District regulations 2.03, Section 1, you may not construct, install, modify, or operate an affected facility unless a permit has been issued by the District (LMAPCD). Please complete all requested information in this application. Incomplete applications may result in denial of issuing a permit to construct and operate process or process equipment. Section E: Facility Business Information SIC Code What type of business is being conducted at this equipment location? Electric Services 49 Section F: Authorization/Signature 1 hereby certify that all information contained herein and information submitted with this application is true and correct. Signature of Responsible Official: Title: VP Power Production Date: Print Name Ralph Bowling \mathcal{Q}_{i} LMAPCD Use Only Application Tracking #: Assigned Engineer: Permit No(s): Plant ID #: NAICS Code:

(502) 574-6000 FAX: (502) 574-5137 www.leuisvilleky.gov/aped

Form: AP-1108

Adsorption

Page 2 of 4

Section G: Equipment Information				
Manufacturer: TBD				
Model: TBD				
Serial Number: TBD				
Attach the manufacturer's specification sheet for the adsorption equipment.				
Section H: Adsorbent Information				
Describe adsorbent type and physical properties:				
Injection of Powdered activated carbon and hydrated lime into pulse jet fabric filter. The hydrated lime protects the fabric filter from the corrosivity of the flue gas due to the Low NOx burners. The PAC injection controls the mercury emissions from the flue gas. The PAC and hydrated lime injected into the system is mixed with the ash exiting the fabric filter.				
Breakthrough Capacity (pounds contaminant/100 pounds adsorbent):				
Operating Temperature Range of Adsorbent: from °F to °F				
Life Expectancy of Adsorbent:				
Provide any necessary additional information regarding the absorbent:				
Section I: Adsorber Bed Information				
Adsorbent Charge per Adsorber Vessel: NA				
Number of Adsorber Vessels:				
Configuration of Adsorber Vessels:				
Length of Mass Transfer Zone: feet				
Attach basis of design for the length of the mass transfer zone calculation.				
Adsorber Bed Cross Sectional Area: square feet				
Adsorption Bed Depth: feet				
Working Capacity of Adsorbent %				
Section J: Regeneration Information				
Is the adsorbent regenerated? YES 🗸 NO				
If the adsorbent is regenerated, complete the following information. If not, proceed to Section K.				
Predicted Regeneration Cycle:				
Describe Regeneration Trigger:				
Predicted Number of Times Adsorbent Will be Regenerated Before Replacement:				
Regeneration Location: 🗆 On-Site 🗆 Off-Site				
If regeneration is conducted on-site, complete the following information. If it is conducted off site, proceed to Section K				
Type of Regeneration: 🗆 Steam 📋 Electric 🗀 Hot Air 🔛 Other (Specify):				
If steam regeneration is used, complete the following information. If not, proceed to Section K				
Available Steam for Regeneration: pounds of steam				
Describe how the regeneration liquid is treated or disposed of:				

Form: AP-1108

Adsorption

Page 3 of 4

Section K: Gas Stream In	formation					
Maximum Inlet Volumetric Gas Flow Rate:			acfm at	°F and	l % mo	isture
Maximum Outlet Volumetric Gas Flow Rate:		acfm at °F and		l % mo	% moisture	
Design Range of Pressure D	rop Across Bed: N	4	inc	ches water		
Residence Time:	minutes					
Section L: Contaminant In	oformation	3				
Will heat of adsorption poter	ntially lead to temp	erature exc	ursions?	YES 🗸 N	0	
If YES, describe how tempe	rature excursions w	ill be hand	led:			
Contaminant	CAS	S Number	Per	cent Relative Saturation	Vapor Pressure	Removal Efficiency
Mercury				%	psi	90 %
				<u>%</u>	psi	<u>%</u>
				<u> </u>	psi	<u> </u>
				%	psi psi	%
Section M: Stack Informa	tion					
Stack Height Above Grade:	Exits through FGD Stack	feet	Stack Exit	Diameter:	, , ,	feet
	-		(Provide sta	ck dimensions if rech	angular stack)	
Is a stack cap present?	YES NO					
Stack Configuration: (Check all that apply)	Vertical Other (Specify)	<u></u> на :	orizontal	Downwa	rd – Venting	
Stack Exit Gas Temperature	η φιλές του στο πολογουλογιού που ποι το	F	Stack Exit	Gas Flow Rate:		ACFM
Distance to Nearest Property Describe Nearest Obstruction	Line:	feet				
Height of Nearest Obstruction: feet		Distance to Nearest Obstruction: feet				
Are stack sampling ports pr	ovided? L YES		6			
Section N: Monitoring an	id Alarm Informa	tion		n <u>e Unite</u> ri		
Are there any alarms associ	ated with this contr	ol device?	YE	IS 🖌 NO		
If there are more than three alan	ms, attach additional	copies of th	is page as nee	ded.	Door the Al	arm Initiata
Monitored	Describe Atarm	Ingger	Al	arm Type	an Automate	ed Response?
			U Visual Audito Autom (Remo	ory atic ote Monitoring)	Describe:	⊥ NO
			☐ Visual ☐ Auditc ☐ Autom (Remo	ory aatic ste Monitoring)	U YES Describe:	I NO
			□ Visual □ Audito □ Autom (Remo	ory natic ste Monitoring)	Describe:	I NO

Adsorption

Form: AP-1108

Page 4 of 4

Section N: Additional Information

Attach potential emissions calculations with your application. If there are no emission calculations provided with the application, the LMAPCD will calculate the potential emission rates for this equipment. This will result in a delay in the issuance of the permit. The potential emission rates shall be based on operation at maximum equipment capacity. The annual potential emissions shall be based on 8,760 operating hours per year. All potential emission calculations shall represent pre-control emissions.

Is there any additional information pertinent to this application? YES NO If yes, describe below:

See Appendix C of application packet for calculations for throughput of PAC and hydrated lime through each of the four fabric filter systems.



Form: AP-1908

Louisville Metro Air Pollution Control District

Silo

Mail Application To: Louisville Metro APCD 850 Barret Avenue Louisville, KY 40204

(502) 574-6000

FAX: (502) 574-5137

www.louisvilleky.gov/apcd

Application For Permit To Construct, Reconstruct, Install, Modify, or Operate Process or Process Equipment

Section A: Owner/Operator Information					
Business Name of Owner /Operator To App	pear On The Permit:		<u> </u>		
Louisville Gas & Electric - Mill Creek Gener	rating Station				
Owner's Business Name (only if different f	from Business Name of Ov	wner/Operator):			
Louisville Gas & Electric		,			
Section B: Fourinment Location		Section C+ Permit M	ailing Addrose		
Equipment Location Address:	Permit and Correspondence information:				
14660 Dixie Highway	Check here if same as equipment location address. 220 West Main Street				
Street Address Louisville KV 4027	2	Street Address Louisville	κy	40202 1377	
City State Zip	Code	City	State	Zip Code	
Responsible Official Name: Ralph Bo	wling	Contact Name: Rebed	cca Cash		
Responsible Official Title: VP Power	Production	Contact Title: Environmental Engineer			
Phone: (502)627-4121		Phone: (502)627-40	633		
Fax: (502)627-4030	-	Fax: (502)627-255	50		
_{E-Mail:} Ralph.Bowling@lge-ku.	.com	E-Mail: Rebecca.Cash@lge-ku.com			
Section D: Application Type					
Reason for Submitting Application (Select a	all that apply):	Date of Construc	ction, Modification, Ir	stallation or Operation:	
New Construction /Installation	Change of Ownership	(MM/DD/YYY	Y)		
Modification	Change of Location	Estimated Start I	Date: See bagho	ouse application	
Reconstruction	Administrative Change	ge Actual Start Date:			
Operation	In accordance with District regulations 2.03, Section 1, you may not construct, install, modify, or operate an affected facility unless a permit has been issued by the District (LMAPCD). Please complete all requested information in this application. Incomplete applications may result in denial of issuing a permit to construct and operate process or process equipment.				
Section E: Pacifity Business Informat	tion equipment location?			I SIC Coda	
Electric Services	, egunnine novan (ni			49	
Section F: Authorization/Signature 16	nerchy certify that all information	contained herein and informati	on submitted with this appl	ication is true and correct.	
Signature of Responsible Official:	Title: VP Power Production				
Print Name: Palph Bowling		Date:			
Application Tracking #:	Assigned Engineer:	Permit No(s): Plant ID #: NAICS Code:			
USCOMY					

Form: AP-1908

Section G: Equipment Information					
Manufacturer: TBD					
Model: TBD		na an ann an Anna an An			
Serial Number: TBD					
Silo Type: 🖌 Tower Silo 🛛 Bunker Silo 🔹 Other (Specify):					
Number of Compartments in Silo: 1					
Material Stored in Silo: Powdered Ac	ctivated Carbon (F	PAC)			
If there are more than three materials store	d in the silo, attach ad	ditional copies of this pa	ige as needed.		
Material	Material Density		Compartment Stored In		
Powdered Activated Carbon (PAC)	0.0125	tons/cubic foot			
		tons/cubic foot			
		tons/cubic foot			
Attach a Material Safety Data Sheet (MSDS	5) for <u>each</u> material sto	ored in the silo.			
Silo Storage Capacity: 94	tons				
Silo Loading Method: Pneumatic ✓ Vacuum Hydraulic Other (Specify): Mechanical Vacuum					
Maximum Rate of Silo Loading: tons/hour Maximum Unloading Rate: tons/hour					
Is the silo equipped with a pressure-v	acuum relief valve	? ☑ YES □	NO		
If yes, describe the pressure relief valve settings: TBD					
Is the silo equipped with a system that prevents overfilling? YES NO					
Describe the overfilling prevention system:					
TBD					
Is the silo equipped with a silo level m	onitoring system?	YES	NO		
If YES, Type of Level Indicator:					
TBD					
Is the silo equipped with a power/control panel with a high level indicator?					

Silo

Page 2 of 5

Form: AP-1908

Section H: Control Device Information					
Is an air pollution control device used? VES NO					
If an air pollution control device is used, complete the following:					
Is a cyclone collector used?					
If yes, complete form AP-1208 and attach to this application.					
Is a baghouse used?					
If yes, complete form AP-0808 and attach to this application.					
Is any other control device used? YES V NO					
If yes, attach a copy of the control device manufacturer's specification sheets.					
If any other control device is used, complete the following:					
Describe control device:					
Pollutants Controlled: [] HAPs [] TACs [] PM [] PM ₁₀ [] Metals [] Other (Specify):					
Control Device Manufacturer:					
Control Device Model:					
Control Device Serial Number:					
Control Device Design Capacity:					
Control Device Removal or Destruction Efficiency:					
Section 1: Stack Information					
Stack Height Above Grade: TBDfeetStack Exit Diameter:feet					
(Provide stack dimensions if rectangular stack.)	(Provide stack dimensions if rectangular stack.)				
To a stack con proceed?					
Stack cap present: I LO NO					
Stack Configuration. Check all that much					
Stock Exit Gas Temperature: ⁶ E Stock Exit Gas Elow Pote: ACEM					
Stack Exit Gas Femperature. F Stack Exit Gas Flow Rate, ACFM					
Distance to Nearest Property Line: feet					
Describe Nearest Obstruction:					
Height of Nearest Obstruction: feet Distance to Nearest Obstruction: feet					
A restack compling ports provided? VES NO					
Are stack sampning ports provided?					

.
Form: AP-1908

Page 4 of 5

Section J: Monitoring Inf	ormation				
Will emissions data be recorded by a continuous emission monitoring system (CEMS)? YES / NO					
If yes, attach a copy of the contin	uous emission monitoring system	manufacturer's specification shee	ets.		
If yes, complete the following	information:				
Pollutants Monitored:	VOC HAPs TAC	$PM \square PM_{10} \square$	$NO_x \square SO_2 \square Metals$		
Describe the continuous emis	ssion monitoring system:				
Manufacturer:					
Model:					
Serial Number:					
Will multiple emission uniter	s be monitored at the same poi	nt? YES NO			
If Yes, Emission Units Moni	tored:				
Will more than one emission	unit be emitting from the corr	bined point at any time?	YES NO		
Emission Units Emitting Sim	ultaneously:				
Section K: Visible Emissio	ns Monitoring Information				
Proposed Technique Used to Monitor Visible Emissions: Opacity Monitor (COM) ✓ Manual (Method 9) Other (Describe):					
If an opacity monitor (COM)) is used, complete the followir	ng information:			
Describe the continuous opag	city monitoring system:	<u>C.* Naanaanaanaanaanaanaanaanaanaanaanaanaan</u>			
Manufacturer:					
Model:					
Serial Number:					
Proposed Frequency of Opac	ity Monitoring:				
Section I : Monitoring an	Alarm Information				
Are there any alarms associa	ated with this silo?	TYES NO			
If there are more than three alar	ms, attach additional copies of thi	s page as needed.			
Operating Parameter Describe Alarm Trigger Monitoring Device or Does the Alarm Initiate					
Monitored		Alarm Type	an Automated Response?		
		Visual	YES NO		
		Auditory	Describe:		
		Automatic			
		(Remote Monitoring)			
Other					
		Visual	YES NO		
		Auditory	Describe:		
		Automatic			
(Remote Monitoring)					
Other					
Visual YES NO					
		Auditory	Describe:		
Automatic					
		(Remote Monitoring)			
		Other			

Form: AP-1908

Section M: Additional Information
Attach potential emissions calculations with your application. If there are no emission calculations provided with the
application, the LMAPCD will calculate the potential emission rates for this equipment. This will result in a delay in
the issuance of the permit. The potential emission rates shall be based on operation at maximum equipment capacity.
The annual potential emissions shall be based on 8,760 operating hours per year. All potential emission calculations
shall represent pre-control emissions.
Is there any additional information pertinent to this application? 🗹 YES 🔲 NO
If yes, describe below:

Two PAC silos will be constructed for each unit for a total of eight PAC silos.

Silo

Page 5 of 5



Mail Application To: Louisville Metro APCD 850 Barret Avenue Louisville, KY 40204

www.louisvilleky.gov/apcd

(502) 574-6000 FAX: (502) 574-5137

Form: AP-0808

Baghouse

Application For Permit To Construct, Reconstruct, Install, Modify, or Operate Process or Process Equipment

Section A: Owner/Operator Information					
Business Name of Owner /Operator To Appear On T	he Permit:				
Louisville Gas & Electric - Mill Creek	Generating Staf	tion			
Owner's Business Name (only if different from Busin	ess Name of Owner/C	Operator):			
Louisville Gas & Electric					
Section B: Equipment Location	Secti	on C: Permit I	Aailing Addre	SS	
Equipment Location Address:	Permi	it and Correspond	ence information	1:	1 7
14660 Dixie Highway	220 V	Nest Main Street	me as equipment	location	address.
Street Address 40272	Street	Address		κy	40202 1377
<u>City</u> State Zip Code	Louis	sville		State	Zin Code
Responsible Official Name: Ralph Bowling	Conta	nct Name: Reb	ecca Cash	onate	
Responsible Official Title: VP Power Produc	ction Conta	et Title: Envir	onmental E	nginee	r
Phone: (502)627-4121	Phone	. (502)627-	4633		
Fax: (502)627-4030	Fax:				
E-Mail: Ralph.Bowling@lge-ku.com	E-Ma	E-Mail: Rebecca.Cash@lge-ku.com			
Section D: Application Type					
Reason for Submitting Application (Select all that ap	ply):	Date of Const	ruction, Modifie	ation. Inst	allation or Operation:
New Construction /Installation Change of	Ownership	(MM/DD/YY	YY)		
Modification Change of	Location	Estimated Sta	t Date: See S	Silo Appl	lication
Reconstruction Administra	ative Change	Actual Start E	ate:		
Operation		In accordance may not con facility unles (LMAPCD). I application. issuing a per equipment.	with District r struct, install, n s a permit has Please complete ncomplete appli nit to construct	egulations nodify, on been is all reques ications m and open	s 2.03, Section 1, you r operate an affected sued by the District ted information in this hay result in denial of ate process or process
Section E: Facility Business Information	11				L PIC Cada
Electric Services	A location?				49
Section F: Authorization/Signature Lhereby certil	y that all information contai	ined herein and inform	ation submitted with	a this applie:	ation is true and correct.
Signature of Responsible Official: Title:					
Kalah Dowh	VP Power Production				
Print Name: Ralph Bowling	Print Name: Ralph Bowling Date: Le 9/11				
LMAPCD Application Tracking * Assigne	d Engineer: Per	mit No(s):	Plant ID #:		NAICS Code:

Form: AP-0808

Page 2 of 5

Section G: Equipment Information						
Manufacturer: TBD						
Model: TBD						
Serial Number:						
Is the baghouse insulated? YES [NO					
Design Minimum Operating Temperature	: °F					
Design Maximum Operating Temperature	e: °F		Mandall (p i terra e razza angelera a permanana angelera ina angelera ina angelera angelera angelera angelera a			
Are temperature controls provided?	YES V NO	******				
If YES, describe the temperature controls	: <u></u>					
Air Flow Through Baghouse: Ford Indu	ced iced er Specify:					
Direction of Flow Through Filters:	Inside Out Outside In					
Particulate Removal Efficiency: 99	%	*********				
Attach the manufacturer's specification sheet for the	e baghouse and particle size removal efficiency curv	e and basis of determin	ation.			
Section H: Compartment Information						
Number of Compartments: TBD						
Number of Filters (Bags) Per Compartme	nt: TBD					
Can the Compartments be Isolated for Re	placement or Repair? 🗸 YES 🔲 NO					
Section I: Gas Stream Information						
Maximum Inlet Volumetric Gas Flow Rat	te: acfm at feet	, , , , , , , , , , , , , , , , , , ,				
Maximum Outlet Volumetric Gas Flow Rate: acfm at feet						
Dew Point at maximum Moisture Content of Gas: [°] F						
pH of Gas Handled:						
Dust Characteristics: Sticky Wet Corrosive 🖌 Dry Other(Specify):						
Section J: Contaminant Information						
Percent of Each Contaminant in the Waste Gas and Removal Efficiency						
If more than five contaminants are present, attach additional copies of this page as needed.						
Contaminant Name	Contaminant CAS Number	Percent of	Removal			
		Waste Gas	Efficiency			
Powdered Activated Carbon 100 99						
	L	1	L			

Form: AP-0808

Section K:Fabric Filter (Bag) Information Fabric Type: Felted Membrane Ceramic Cartridge Woven PTFE Membrane Felted-Woven Felted-Woven Sintered Metal Other (Specify): Felted-Woven Felted-Woven Fabric Material: TBD Maximum Continuous Filter Operating Temperature: TBD ° F
Fabric Type: Felted Membrane Ceramic Cartridge Woven PTFE Membrane Felted-Woven Sintered Metal Other (Specify): Felted-Woven Fabric Material: TBD Maximum Continuous Filter Operating Temperature: TBD Felted-Woven
Woven PTFE Membrane Felted-Woven Sintered Metal Other (Specify): Felted-Woven Fabric Material: TBD Maximum Continuous Filter Operating Temperature: TBD ° F
Fabric Material: TBD Maximum Continuous Filter Operating Temperature: TBD ° F
Fabric Material: TBD Maximum Continuous Filter Operating Temperature: TBD * F
Maximum Continuous Filter Operating Temperature: TBD ° F
Clean Fabric Permeability: TBD scfm/ft ⁻ at ΔP TBD inches of water
Fabric Filter (Bag) Diameter or Width: TBD inches
Fabric Filter (Bag) Length: TBD inches
Effective Area Per Filter: TBD square inches
Minimum Effective Air to Cloth Ratio: TBD inches
Maximum Effective Air to Cloth Ratio: TBD inches
Design Pressure Drop Across Baghouse: TBD inches water
Describe determining factor fabric filter changing/replacement:
Manufacturers recommendations and pressure drop across unit.
Attach the manufacturer's specification sheet for the fabric filters (bag).
Section L: Filter Cleaning Information
Filter Cleaning Method: Manual Cleaning Bag Collapse Reverse Air Jet
☐ Mechanical Shakers ☐ Sonic Cleaning ✓ Pulse Jet
Pheumatic Shakers Reverse An Flow Other (specify).
Air Pressure: psi
Describe how air is supplied to system:
Describe how filter cleaning is initiated:
Timer Other (Specify):
Section M. Honner Information

Describe how collected material is treated or disposed of:

Bin vent material is released back to the silo or mixed with landfill waste.

Baghouse

Page	3	of	5
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Form: AP-0808

Baghouse

Page	4	of	5
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Section N: Stack Informa	tion		
Stack Height Above Grade:	TBD feet	i	
Stack Exit Diameter:	feet	:	
(Provide stack dimensions if recta	ngular stack.)		
Is a Stack Cap Present?	TYES INO		
Stack Configuration:	Vertical	Horizontal Downway	rd – Venting
(Check all that apply)	Other (Specify):		id venting
Stack Exit Gas Temperature:	°F	Stack Exit Gas Flow Rate:	ACFM
Distance to Nearest Property	Line: feet		
Describe nearest obstruction			
Height of Nearest Obstruction	n: feet	Distance to Nearest Obstruc	ction: feet
Are stack sampling ports pr	ovided? [] YES []	<u>NO</u>	
Are there any alarms associa	a Alarm This hashouse?		
If VES complete the following			
If there are more than three alar	5. ms. attach additional conies of	this page as needed.	2010-10-10-10-10-10-10-10-10-10-10-10-10-
Operating Parameter	Describe Alarm Trigger	Monitoring Device or	Does the Alarm Initiate
Monitored	60	Alarm Type	an Automated Response?
		🔲 Visual	YES NO
		Auditory	Describe:
		Automatic	
		(Remote Monitoring)	
		🗋 Other	
		🔲 Visual	YES NO
		Auditory	Describe:
		Automatic	
		(Remote Monitoring)	
		☐ Other	
		U Visual	☐ YES ☐ NO
		Auditory	Describe:
		Automatic	
		(Remote Monitoring)	
		□ Other	

Baghouse

Page 5 of 5

Form: AP-0808

Additional Information Section P:

Attach potential emissions calculations with your application. If there are no emission calculations provided with the application, the LMAPCD will calculate the potential emission rates for this equipment. This will result in a delay in the issuance of the permit. The potential emission rates shall be based on operation at maximum equipment capacity. The annual potential emissions shall be based on 8,760 operating hours per year. All potential emission calculations shall represent pre-control emissions.

 \square YES \square NO Is there any additional information pertinent to this application? If yes, describe below:

The bin vent controls fugitive emissions from top of silo. One bin vent will be constructed for each silo for a total of eight bin vents.



Form: AP-1908

Louisville Metro Air Pollution Control District

Mail Application To: Louisville Metro APCD 850 Barret Avenue Louisville, KY 40204

Application For Permit To Construct, Reconstruct, Install, Modify, or Operate Process or Process Equipment

Silo

Section A: Owner/Operator Information				
Business Name of Owner /Operator To Appear On The Permit:				
Louisville Gas & Electric - Mill Creek Generating Station				
Owner's Business Name (only if different from Business Name of (Owner/Operator)			
Louisville Gas & Flectric	o when operatory.			
Section B: Equipment Location	Section C: Permit Mailing Address			
Equipment Location Address:	Permit and Correspondence information:			
14660 Dixie Highway	220 West Main Street			
Street Address	Street Address			
City State Zip Code	City State Zin Code			
Responsible Official Name: Ralph Bowling	Contact Name: Rebecca Cash			
Responsible Official Title: VP Power Production	Contact Title: Environmental Engineer			
Phone: (502)627-4121	Phone: (502)627-4633			
Fax: (502)627-4030				
E-Mail: Ralph.Bowling@lge-ku.com	E-Mail: Rebecca.Cash@lge-ku.com			
Section D: Application Type				
Reason for Submitting Application (Select all that apply):	Date of Construction, Modification, Installation or Operation:			
New Construction /Installation Change of Ownership	(MM/DD/YYYY)			
Modification Change of Location	Estimated Start Date: See Baghouse Application			
Reconstruction Administrative Change	age Actual Start Date:			
Operation In accordance with District regulations 2.03, Section 1, may not construct, install, modify, or operate an affe facility unless a permit has been issued by the Di (LMAPCD). Please complete all requested information in application. Incomplete applications may result in deni issuing a permit to construct and operate process or pro equipment.				
Section E: Facility Business Information	SIC Coda			
Floatria Sonviace				
Section 1: Autoorization/Signature i hereby certify that all information contained herein and information submitted with this application is bue and correct.				
VP Power Production				
Print Name: Ralph Bowling	Date: Lelalu			
LMMAPCD Application Tracking #: Assigned Engineer: Permit No(s): Plant ID #: NAJCS Cod Use:Only Item to the second				

(502) 574-6000 FAX: (502) 574-5137 www.louisvilleky.gov/apcd

Form: AP-1908

Section G: Equipment Information				
Manufacturer: TBD				
Model: TBD				
Serial Number: TBD		······································		
Silo Type: 🖌 Tower Silo 🗌 B	unker Silo	Other (Specify):		
Number of Compartments in Silo: 1				
Material Stored in Silo: Hydrated Lim	ê			
If there are more than three materials stored	d in the silo, attach	additional copies of this pa	ge as needed.	
Material	Mater	rial Density	Compartment Stored In	
Hydrated Lime	0.016	tons/cubic foot		
		tons/cubic foot		
		tons/cubic foot		
Attach a Material Safety Data Sheet (MSDS) for <u>each</u> material	stored in the silo.		
Silo Storage Capacity: 120	tons			
Silo Loading Method: Pneumatic Vacuum Hydraulic Other (Specify): Mechanical				
Maximum Rate of Silo Loading: 40tons/hourMaximum Unloading Rate: 40tons/hour				
Is the silo equipped with a pressure-vacuum relief valve? 📝 YES 🗌 NO				
If yes, describe the pressure relief valve settings:				
TBD				
Is the silo equipped with a system that prevents overfilling? YES NO				
Describe the overfilling prevention system:				
TBD				
Is the silo equipped with a silo level monitoring system?				
If YES, Type of Level Indicator: Point Continuous Other (Specify):				
TBD				
Is the silo equipped with a power/control panel with a high level indicator?				

Page 2 of 5

Form: AP-1908

Section H: Control Device Information	
Is an air pollution control device used? YES N	10
If an air pollution control device is used, complete the followi	ing:
Is a cyclone collector used?	NO
If yes, complete form AP-1208 and attach to this application.	
Is a baghouse used? YES	NO
If yes, complete form AP-0808 and attach to this application.	
Is any other control device used? YES 🗸	NO
If yes, attach a copy of the control device manufacturer's specification	n sheets.
If any other control device is used, complete the following:	
Describe control device:	
Pollutants Controlled: HAPs TACs PM	\square PM ₁₀ \square Metals \square Other (Specify):
Control Device Manufacturer:	
Control Device Model:	
Control Device Serial Number:	
Control Device Design Capacity:	
Control Device Removal or Destruction Efficiency:	
Section I: Stack Information	
Stack Height Above Grade: TBD feet Stack Height Above Grade: TBD	tack Exit Diameter: feet
(//	Provide stack dimensions if rectangular stack.)
Is a stack cap present? YES NO	
Stack Configuration: Vertical Horiz	zontal Downward – Venting
(Check all that apply) Other (Specify):	
Stack Exit Gas Temperature: ° F S	tack Exit Gas Flow Rate: ACFM
Distance to Nearest Property Line: feet	
Describe Nearest Obstruction:	
Height of Nearest Obstruction: feet D	Distance to Nearest Obstruction: feet
Are stack sampling ports provided? YES NO	

Silo

Page 3 of 5

Form: AP-1908

Page 4	of 5
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Section J: Monitoring Inf	ormation			
Will emissions data be recorded by a continuous emission monitoring system (CEMS)? YES V NO				
If yes, attach a copy of the contin	nuous emission monitoring system	manufacturer's specification shee	ets.	
If yes, complete the following	g information:			
Pollutants Monitored:	VOC HAPs TAC Other (Specify):	$\square PM \square PM_{10} \square$	$NO_x \square SO_2 \square Metals$	
Describe the continuous emi	ssion monitoring system:			
Manufacturer:				
Model:				
Serial Number:				
Will multiple emission unite	s be monitored at the same poi	int? YES NO		
If Yes, Emission Units Moni	tored:			
Will more than one emission	unit be emitting from the con	bined point at any time?	YES NO	
Emission Units Emitting Sin	nultaneously:			
Section K: Visible Emission	ons Monitoring Information			
Proposed Technique Used to Monitor Visible Emissions: Opacity Monitor (COM) Image: Comparison of the compar				
If an opacity monitor (COM) is used, complete the following	ng information:		
Describe the continuous opa	city monitoring system:			
Manufacturer:	n			
Model:				
Scrial Number:				
Proposed Frequency of Opac	ity Monitoring:			
Section L: Monitoring an	d Alarm Information			
Are there any alarms associa	ated with this silo?	YES NO		
If there are more than three alarms, attach additional copies of this page as needed.				
Operating Parameter	Describe Alarm Trigger	Monitoring Device or	Does the Alarm Initiate	
Monitored		Alarm Type	an Automated Response?	
		🔲 Visual	YES NO	
		Auditory	Describe:	
		Automatic		
		(Remote Monitoring)		
		U Other		
		Visual	YES NO	
		Auditory	Describe:	
		Automatic		
		(Remote Monitoring)		
		Other		
1		Visual	L YES NO	
		Auditory	Describe:	
		Automatic (Demote Manifester)		
		(Kemote Monitoring)		

Form: AP-1908

Page 5 of 5

Charles Bills A different Tark and the
Section M: Authonal Information
Attach potential emissions calculations with your application. If there are no emission calculations provided with the
application, the LMAPCD will calculate the potential emission rates for this coupment. This will result in a delay in
the issuance of the permit. The potential emission rates shall be based on operation at maximum equipment capacity
The restance of the potential enhance in a 2700 start of operation at maximum equipment expansion
The annual potential emissions shall be based on 8,700 operating nours per year. All potential emission calculations
shall represent pre-control emissions.
Is there any additional information pertinent to this application? \checkmark VES \square NO
Is noted any determined in the matter of this approaches. E. The The The
If yes, describe below:
Two hydrated lime silos will be constructed for each unit for a total of eight hydrated lime storage silos.



Mail Application To: Louisville Metro APCD 850 Barret Avenue Louisville, KY 40204

www.louisvilleky.gov/apcd

(502) 574-6000 FAX: (502) 574-5137

Form: AP-0808

Baghouse

Application For Permit To Construct, Reconstruct, Install, Modify, or Operate Process or Process Equipment

Section A: Owner/Operator Information				
Business Name of Owner /Operator To Appear On The Perm	nit:			
Louisville Gas & Electric - Mill Creek Gene	erating Stat	tion		
Owner's Business Name (only if different from Business Na	me of Owner/C	Operator):		
Louisville Gas & Electric				
Section B: Equipment Location	Secti	on C; Permit Ma	iling Address	
Equipment Location Address:	Permi	t and Corresponden	ce information:	antina udduuna
14660 Dixie Highway	220 V	Vest Main Street	as equipment to	cation address.
Street Address	Street	Address	k	(Y 40202 1377
City State Zip Code	$ \frac{1000}{City}$			tate Zin Code
Responsible Official Name: Ralph Bowling	Conta	_{ct Name:} Rebec	ca Cash	
Responsible Official Title: VP Power Production	Conta	ct Title: Enviror	nmental Eng	jineer
Phone: (502)627-4121	Phone	. (502)627-46	333	
Fax: (502)627-4030	Fax:	**********		
_{E-Mail:} Ralph.Bowling@lge-ku.com	E-Ma	il: Rebecca.C	ash@lge-ku	J.com
Section D: Application Type Reason for Submitting Application (Select all that apply):		Date of Construc	tion, Modificatio	on, Installation or Operation
✓ New Construction /Installation Change of Owner:	ship	(MM/DD/YYY	Y)	
Modification Change of Location	n	Estimated Start I	Date: See Silo	Application
Reconstruction Administrative Ch	lange	Actual Start Date	2; 	
_ Operation		In accordance v may not constr facility unless (LMAPCD). Ple application. Inc issuing a permit equipment.	with District regu act, install, mod a permit has be ase complete all omplete applicat to construct and	lations 2.03, Section 1, yo lify, or operate an affecte een issued by the Distric requested information in thi ions may result in denial c l operate process or proces
Section E: Facility Business Information	<u>.</u>			
What type of business is being conducted at this equipment location Electric Services	n?			49
Section F: Authorization/Signature I hereby certify that all	information contai	ned herein and informati	on submitted with the	s application is true and correct.
Signature of Responsible Official	Titl	e:		
Kalph Bowh	VF	Power Product	ion	
Print Name: 1 / Ralph Bowling	Dat	e: Lelali	(
EMARCD Application Tracking #: Assigned Engin	eer: Per	mit No(s):	Plant ID #:	NAICS Code:

Form: AP-0808

Section G: Equipment Information			
Manufacturer: TBD			
Model: TBD			
Serial Number:			
Is the baghouse insulated? YES] NO		
Design Minimum Operating Temperature:	°F		
Design Maximum Operating Temperature			
Are temperature controls provided?	YES V NO		
If YES, describe the temperature controls:		······································	
Air Flow Through Baghouse: ✓ Forc Induce Othe	ed ced r Specify:		
Direction of Flow Through Filters:] Inside Out] Outside In		
Particulate Removal Efficiency: 99 %	/ 0		
Attach the manufacturer's specification sheet for the	baghouse and particle size removal efficiency curv	e and basis of determin	ation.
Section H: Compartment Information			
Number of Compartments: TBD			
Number of Filters (Bags) Per Compartmer	at: TBD		
Can the Compartments be Isolated for Rep	lacement or Repair? 🗸 YES 🔲 NO		
Section I: Gas Stream Information			
Maximum Inlet Volumetric Gas Flow Rate	e: acfm at feet		
Maximum Outlet Volumetric Gas Flow Ra	ate: acfm at feet		
Dew Point at maximum Moisture Content	of Gas: °F		
nH of Gas Handled		an the first of the second	
Dust Characteristics: Sticky We	t Corrective Z Dry C Oth	or(Spacify).	
Dust Characteristics.		er(speeny).	
Section J: Contaminant Information			
Percent of Each Contaminant in the Waste	Gas and Removal Efficiency		
If more than five contaminants are present, atta	ch additional conjes of this page as needed.		
Contaminant Name	Contaminant CAS Number	Percent of Waste Gas	Removal Efficiency
Calcium Hvdroxide	1305-62-0	90	99

Baghouse

Page 2 of 5

Form: AP-0808

Baghouse

Page 3 of 5

Section K:Fabric Filter (Bag) Information
Fabric Type: Felted Membrane Ceramic Cartridge
Woven PTFE Membrane Felted-Woven
Sintered Metal Other (Specify):
Fabric Material: TBD
Maximum Continuous Filter Operating Temperature: TBD ° F
Clean Fabric Permeability: TBD scfm/ft ² at ΔP TBD inches of water
Fabric Filter (Bag) Diameter or Width: TBD inches
Fabric Filter (Bag) Length: TBD inches
Effective Area Per Filter: TBD square inches
Minimum Effective Air to Cloth Ratio: TBD inches
Maximum Effective Air to Cloth Ratio: TBD inches
Design Pressure Drop Across Baghouse: TBD inches water
Describe determining factor fabric filter changing/replacement:
Manufacturers recommendations and pressure drop across unit.
Attach the manufacturer's specification sheet for the fabric filters (bag).
Section L: Filter Cleaning Information
Filter Cleaning Method: 🔲 Manual Cleaning 🔄 Bag Collapse 🔲 Reverse Air Jet
☐ Mechanical Shakers ☐ Sonic Cleaning [/] Pulse Jet
Pheumatic Snakers [] Reverse Air Flow [] Other (Specify):
Air Pressure: psi
Describe how air is supplied to system:
Describe how filter cleaning is initiated: Manual 7 Pressure Dron
$\square \text{ Timer} \square \text{ Other (Specify):}$
Section M: Hopper Information
Is the hopper heated? YES V NO
Is there a hopper vibrator?
Describe how collected material is treated or disposed of:
Bin vent material is released back to the silo or mixed with landfill waste.

Form: AP-0808

wagnouse

Page 4 of 5

Section N: Stack Informa	tion		
Stack Height Above Grade:	TBD fect		
Stack Exit Diameter:	feet	, , , , , , , , , , , , , , , , , , ,	
(Provide stack dimensions if recta	ngular stack.)		
Is a Stack Can Present?	TYES TINO		
Stack Configuration:		orizontal Downwar	d Venting
(Check all that apply)	Other (Specify):		u – venning
	onn (speen)).		
Stack Exit Gas Temperature:	: F	Stack Exit Gas Flow Rate:	ACFM
Distance to Nearest Property	Line: feet		
Describe nearest obstruction			
Height of Nearest Obstruction	on: feet	Distance to Nearest Obstruc	tion: feet
A so stack compling parts of			
Are stack sampling ports pr	d Alarm Information	0	
Are there any alarms associa	ated with this baghouse?	TYES INO	
If YES, complete the following	12.	,	
If there are more than three alar	ms, attach additional copies of th	is page as needed.	an numum na santan ing kanyang manyang mang kanyang kanyang kanyang kanyang mang kanyang kanyang kanyang kanyan
Operating Parameter	Describe Alarm Trigger	Monitoring Device or	Does the Alarm Initiate
Monitored		Alarm Type	an Automated Response?
		U Visual	□ YES □ NO
÷		Auditory	Describe:
		Automatic	
		(Remote Monitoring)	
		Other	
		🔲 Visual	TYES NO
		Auditory	Describe:
		Automatic	
		(Remote Monitoring)	
		Other	
		Visual	YES NO
		Auditory	Describe:
		Automatic	
		(Remote Monitoring)	
		Other	

Baghouse

Form: AP-0808

Page 5 of 5

Section P: Additional Information

Attach potential emissions calculations with your application. If there are no emission calculations provided with the application, the LMAPCD will calculate the potential emission rates for this equipment. This will result in a delay in the issuance of the permit. The potential emission rates shall be based on operation at maximum equipment capacity. The annual potential emissions shall be based on 8,760 operating hours per year. All potential emission calculations shall represent pre-control emissions.

Is there any additional information pertinent to this application? YES NO If yes, describe below:

The bin vent controls fugitive emissions from top of silo. One bin vent will be constructed for each silo for a total of eight bin vents.



Form: AP-1908

Louisville Metro Air Pollution Control District

Mail Application To: Louisville Metro APCD 850 Barret Avenue Louisville, KY 40204

FAX: (502) 574-5137

www.louisvilleky.gov/apcd

(502) 574-6000

Application For Permit To Construct, Reconstruct, Install, Modify, or Operate Process or Process Equipment

Section A: Owner/Operator Information	
Business Name of Owner /Operator To Appear On The Permit:	
Louisville Gas & Electric - Mill Creek Generating Station	
Owner's Business Name (only if different from Business Name of C	Dwner/Operator):
Louisville Gas & Electric	
Section B: Equipment Location	Section C: Permit Mailing Address
Equipment Location Address:	Permit and Correspondence information:
14660 Dixie Highway	220 West Main Street
Street Address Louisville KY 40272 -	Street Address Louisville KY 40202 1377
City State Zip Code	City State Zip Code
Responsible Official Name: Ralph Bowling	Contact Name: Rebecca Cash
Responsible Official Title: VP Power Production	Contact Title: Environmental Engineer
Phone: (502)627-4121	Phone: (502)627-4633
Fax: (502)627-4030	Fax: (502)627-2550
E-Mail: Ralph.Bowling@lge-ku.com	E-Mail: Rebecca.Cash@lge-ku.com
Section D: Application Type	
Reason for Submitting Application (Select all that apply):	Date of Construction, Modification, Installation or Operation:
New Construction /Installation Change of Ownership	(MM/DD/YYYY)
Modification Change of Location	Estimated Start Date: Fall 2014
Reconstruction Administrative Change	Actual Start Date:
Operation	In accordance with District regulations 2.03, Section 1, you may not construct, install, modify, or operate an affected facility unless a permit has been issued by the District (LMAPCD). Please complete all requested information in this application. Incomplete applications may result in denial of issuing a permit to construct and operate process or process equipment.
Section E: Facility Business Information What type of business is being conducted at this equipment location?	SIC Code
Electric Services	49
Section F: Authorization/Signature 1 hereby certify that all informati	ion contained herein and information submitted with this application is true and correct.
Signature of/Responsible Official:	Title:
Kalal Dowling	VP Power Production
Print Name: Ralph Bowling	Date: $G\left(9\right)$
LMAPCD Application Tracking #: Assigned Engineer:	Permit No(s): Plant ID #: NAICS Code:

Form: AP-1908

Section G: Equipment Information			
Manufacturer: TBD			
Model: TBD			
Scrial Number: TBD			
Silo Type: 🖌 Tower Silo 🛛 E	Bunker Silo	Other (Specify):	
Number of Compartments in Silo: 1			
Material Stored in Silo: Fly Ash	***************************************		
If there are more than three materials store	d in the silo, attacl	1 additional copies of this p	age as needed.
Material	Mate	erial Density	Compartment Stored In
Fly Ash	0.0205	tons/cubic foot	
,		tons/cubic foot	
		tons/cubic foot	
Attach a Material Safety Data Sheet (MSDS	5) for <u>each</u> materia	l stored in the silo.	
Silo Storage Capacity: 3,620 tons			
Silo Loading Method: Pneumatic Vacuum Hydraulic Other (Specify): Mechanical			
Maximum Rate of Silo Loading: 79.5tons/hourMaximum Unloading Rate: 79.5tons/hour			
Is the silo equipped with a pressure-vacuum relief valve? VES NO			
If yes, describe the pressure relief valve settings:			
ls the silo equipped with a system that prevents overfilling? YES NO			
Describe the overfilling prevention system:			
TBD			
Is the silo equipped with a silo level monitoring system?			
If YES, Type of Level Indicator: Point Continuous Other (Specify):			
TBD			
Is the silo equipped with a power/control panel with a high level indicator?			

Page 2 of 5

Form: AP-1908

Page 3	3 of 5
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Section H: Control Device Information	
Is an air pollution control device used? YES	1 NO
If an air pollution control device is used, complete the foll	owing:
Is a cyclone collector used?	V NO
If yes, complete form AP-1208 and attach to this application.	
Is a baghouse used?	NO
If yes, complete form AP-0808 and attach to this application.	
Is any other control device used? YES	<u>√</u>] NO
If yes, attach a copy of the control device manufacturer's specific.	ation sheets.
If any other control device is used, complete the following	
Describe control device:	
Pollutants Controlled: HAPs TACs PM	\square PM ₁₀ \square Metals \square Other (Specify):
Control Device Manufacturer:	
Control Device Model:	
Control Device Serial Number:	
Control Device Design Capacity:	
Control Device Removal or Destruction Efficiency:	
Section I: Stack Information	
Stack Height Above Grade: 30 feet	Stack Exit Diameter: feet
	(Provide stack dimensions if rectangular stack.)
Stack Cap present: 125 100	orizontal Downward Venting
Check all that apply) [] Other (Specify).	Steel Frit Con Flow Poter ACEM
Stack Exit Gas Temperature:	Stack EXIL Gas Flow Rate, ACFM
Distance to Nearest Property Line: feet	1
Describe Nearest Obstruction:	
Height of Nearest Obstruction: feet	Distance to Nearest Obstruction: feet
Are stack sampling ports provided? YES N	0

Form: AP-1908

Section J: Monitoring Int	ormation		
Will emissions data be recor	ded by a continuous emission	monitoring system (CEMS)	YES 🗸 NO
If yes, attach a copy of the contin	nuous emission monitoring system	manufacturer's specification shee	ts.
If yes, complete the following	g information:		
Pollutants Monitored:	VOC HAPs TAC	S PM PM ₁₀	$NO_x \square SO_2 \square Metals$
Describe the continuous emi	ssion monitoring system:		
Manufacturer:			
Model:			
Serial Number:			
Will multiple emission unite	s be monitored at the same poi	int? YES NO	
If Yes, Emission Units Moni	tored:		
Will more than one emission	unit be emitting from the com	bined point at any time?	YES NO
Emission Units Emitting Sin	nultaneously:		
Section K: Visible Emission	ons Monitoring Information		
Proposed Technique Used to	Monitor Visible Emissions:	Opacity Monitor (CC	M)
		Manual (Method 9)	
		✓ Manual (Method 22)	ĺ
		Other (Describe):	
If an opacity monitor (COM) is used, complete the following	ng information:	
Describe the continuous opa	city monitoring system:		
Manufacturer:			
Model:			
Serial Number:			
Proposed Frequency of Opac	city Monitoring:		
Section L: Monitoring an	d Alarm Information		
Are there any alarms associ	ated with this silo?	YES V NO	
If there are more than three ala	rms, attach additional copies of thi	s page as needed.	Deep the Alaym Initiate
Operating Parameter	Describe Alarm Trigger	Monitoring Device or	Does the Alarm Initiate
Monitored		Alarm Type	an Automateu Response:
Opacity	Method 9 or other visual	Visual	
	inspection method	Automotic	Desende.
		(Remote Monitoring)	
		(Remote Monitoring)	
Throughput	Monthly throughput		Describe:
	records	Automatic	176301100.
]	(Remote Monitoring)	
		Other	
		Visual	T YES TNO
		Auditory	Describe:
		Automatic	
1		11	1
		(Remote Monitoring)	

Form: AP-1908

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Section M: Additional Information

Attach potential emissions calculations with your application. If there are no emission calculations provided with the application, the LMAPCD will calculate the potential emission rates for this equipment. This will result in a delay in the issuance of the permit. The potential emission rates shall be based on operation at maximum equipment capacity. The annual potential emissions shall be based on 8,760 operating hours per year. All potential emission calculations shall represent pre-control emissions.

Is there any additional information pertinent to this application? YES V NO If yes, describe below:



Form: AP-0808

Baghouse

Mail Application To: Louisville Metro APCD 850 Barret Avenue Louisville, KY 40204

www.louisvilleky.gov/apcd

(502) 574-6000 FAX: (502) 574-5137

Application For Permit To Construct, Reconstruct, Install, Modify, or Operate Process or Process Equipment

Section A: Owner/Operator Informa	ation neur On The Permit:			_		
Lewis ville Cop & Flootrie Mill	Crock Concreting	Ctatio	~~~			
Louisville Gas & Eleculo - Ivill Owner's Business Name (only if different	from Business Name of Ow	otatit mer/On	DII erator):			
Louisville Gas & Electric	nom Business Name of Ow	nei/Op	cratory.			
Section B: Equipment Location		Section	C: Permit Ma	ulling Addres	e e	
Equipment Location Address:		Permit a	and Corresponden	ce information	:	
14660 Dixie Highway		□ C 220 We	heck here if same est Main Street	as equipment	location a	nddress.
Street Address 402		Street A	ddress		кv	40202 1377
City State Zin	Code	LOUISVI	lle		State	$\frac{40202}{\text{Zin Code}} = \frac{1077}{1077}$
Responsible Official Name: Ralph Bo	wling	Contact	Name: Rebec	ca Cash	State	ли соце
Responsible Official Title: VP Power	Production	Contact	Title: Enviror	nmental Er	nginee	r
Phone: (502)627-4121]	Phone:	(502)627-46	633		
Fax: (502)627-4030]	Fax:				
E-Mail: Ralph.Bowling@lge-ku.com			_{E-Mail:} Rebecca.Cash@lge-ku.com			
Section D: Application Type			Duta - E Countra	ting Madifian	diam In at	
Reason for Submitting Application (Select	an mai apply):		Date of Construc	non, mounica	mon, msu	anation of Operation.
✓ New Construction /Installation	Change of Ownership		(MM/DD/YYY	Y) Coo Ci	ila Annl	instian
Modification	Change of Location		Estimated Start I	Date: See Si		
Reconstruction	Administrative Change		Actual Start Date			
Operation			In accordance w	with District re	gulations	2.03, Section 1, you
			facility unless a (LMAPCD). Ple application. Inc issuing a permit equipment.	a permit has ase complete a complete applic to construct a	been iss ill request cations m and opera	sued by the District ed information in this ay result in denial of ite process or process
Section E: Facility Business Informa	ition					
What type of business is being conducted at thi	s equipment location?					SIC Code
Electric Services						49
Section F: Authorization/Signature I	hereby certify that all information	containe Title	d herein and informati	on submitted with	this applica	tion is true and correct.
VP Power Production						
Print Name: Ralph Bowling	2	Date:	6/9/11			
LMAPCD Application Tracking #:	Assigned Engineer:	Perm	it No(s):	Plant 1D #:		NAICS Code:

Form:

Form: AP-0808	Page 2 of 5
Section G: Equipment Information	
Manufacturer: TBD	
Model: TBD	
Serial Number:	
Is the baghouse insulated? VES NO	
Design Minimum Operating Temperature: °F	
Design Maximum Operating Temperature: °F	
Are temperature controls provided? YES NO	
If YES, describe the temperature controls:	
Air Flow Through Baghouse: ☐ Forced ✓ Induced ☐ Other Specify:	
Direction of Flow Through Filters: Inside Out	
Particulate Removal Efficiency: 99 %	

Attach the manufacturer's specification sheet for the baghouse and particle size removal efficiency curve and basis of determination. Section H: Compartment Information

Number of Filters (Bags) Per Compartment: TBD Can the Compartments be Isolated for Replacement or Repair? YES NO

Number of Compartments: TBD

	• present		
Section 1: Gas Stream Information			
Maximum Inlet Volumetric Gas Flow Rate:	acfm at	feet	
Maximum Outlet Volumetric Gas Flow Rate:	acfm at	feet	
Dew Point at maximum Moisture Content of Gas:	°F		
pH of Gas Handled:	ne de la fair de la constante de la fair de l		
Dust Characteristics: Sticky Wet	Corrosive 🖌 Dry	Other(Specify):	

		a def mentione for an annual sector de la constante					
Section J: C	Contaminant	Informa	tion				

Percent of Each Contaminant in the Waste Gas and Removal Efficiency If more than five contaminants are present, attach additional copies of this page as needed. **Contaminant Name Contaminant CAS Number** Removal **Percent** of Waste Gas Efficiency Antimony Compounds 7440-36-0 0.000105 99 Arsenic Compounds 7440-38-2 0.002396 99 7440-43-9 Cadmium Compounds 0.000598 99 7440-47-3 99 **Chromium Compounds** 0.17737 7440-02-0 Nickel Compounds 0.011513 99

Baghouse

Form: AP-0808

Baghouse

Page 2 of 5 cont.

Section G: Equipment Information			
Manufacturer:			
Model:			
Serial Number:			
Is the baghouse insulated? U YES] NO		
Design Minimum Operating Temperature:	° F	······································	
Design Maximum Operating Temperature	* * F	······································	······································
Are temperature controls provided?	YES LI NO		
If YES, describe the temperature controls:			
Air Flow Through Paghouses [] Fores	ad		
An Flow Through Baghouse.	ed		
	r Specify:		
	speeny.		
		Breese	
Direction of Flow Through Filters:	Inside Out		
	Outside In		
Particulate Removal Efficiency: 9/	2		
Attach the manufacturer's specification sheet for the	o baghouse and particle size removal efficiency cury	e and basis of determin	ation.
Section H: Compartment Information			
Number of Compartments:			
Number of Filters (Bags) Per Compartmen	it:		
Can the Compartments be Isolated for Rep	lacement or Repair? VES NO	**************************************	
Section I: Gas Stream Information			
Maximum Inlet Volumetric Gas Flow Rate	e: acfm at feet		
Maximum Outlet Volumetric Gas Flow Ra	ite: acfm at feet		
Dew Point at maximum Moisture Content	of Gas: ° F	Name and a second film that is the second	
pH of Gas Handled:			
Dust Characteristics: Sticky We	t 🗇 Corrosive 🗖 Dry 🗇 Othe	er(Specify):	
Section I: Contaminant Information			
Percent of Each Contaminant in the Waste	Gas and Removal Efficiency		
If more than five contaminants are present, atta	ch additional copies of this page as needed.		
Contaminant Name	Contaminant CAS Number	Percent of	Removal
		Waste Gas	Efficiency
Cobalt Compounds	7440-48-4	0.000861	99
Lead Compounds	7439-92-1	0.019009	99
Manganese Compounds	7439-96-5	0.032000	99
Mercury Compounds	7439-97-6	0.000011	99
Selenium Compounds	7782-49-2	0.000229	99

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Baghouse

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Section K:Fabric Filter (Bag) Information
Fabric Type: Felted Membrane Ceramic Cartridge
Woven PTFE Membrane Felted-Woven
Sintered Metal Other (Specify):
Fabric Material: TBD
Maximum Continuous Filter Operating Temperature: TBD ° F
Clean Fabric Permeability: TBD scfm/ft ² at ΔP TBD inches of water
Fabric Filter (Bag) Diameter or Width: TBD inches
Fabric Filter (Bag) Length: TBD inches
Effective Area Per Filter: TBD square inches
Minimum Effective Air to Cloth Ratio: TBD inches
Maximum Effective Air to Cloth Ratio: TBD inches
Design Pressure Drop Across Baghouse: TBD inches water
Describe determining factor fabric filter changing/replacement:
Manufacturers recommendations and pressure drop across unit.
Attach the manufacturer's specification sheet for the fabric filters (bag).
Section L: Filter Cleaning Information
Filter Cleaning Method: 🗌 Manual Cleaning 📄 Bag Collapse 📃 Reverse Air Jet
Mechanical Shakers Sonic Cleaning Mulse Jet
Pneumatic Shakers [] Reverse Air Flow [] Other (Specify):
Air Pressure: psi
Describe how air is supplied to system:
Describe how filter cleaning is initiated:
Timer Other (Specify):
Is the hopper heated?
Is there a hopper withrater? VES V NO
Describe how collected material is treated or disposed of:
The ship with a still and the state of the form and the first state of the form and find the state of the form
Fly ash is either mixed with scrubber waste to form gypsum that is transferred off-site for beneficial reuse, mixed in with landfill waste or sold as fill or raw material substitute material in the comput or other related
industry.

Form: AP-0808

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1			12.2.2	

Page	4	of	5
1 46		· · ·	~

Section N: Stack Informa	tion		
Stack Height Above Grade:	TBD feet		
Stack Exit Diameter:	feet		
(Provide stack dimensions if rectai	ngular stack.)		
La e Steels Con Propert?			
Stack Cap Fresent?		origontal Dovumun	d Vonting
(Check all that apply)	\Box Venical \Box Π		u – venting
(Check un mai apply)	_ Other (Speeny).		
Stack Exit Gas Temperature:	۴	Stack Exit Gas Flow Rate:	ACFM
Distance to Nearest Property	Line: feet		
Describe nearest obstruction			
Height of Nearest Obstruction	n: feet	Distance to Nearest Obstruc	tion: feet
		<u> </u>	
Are stack sampling ports pr	ovided? 🗌 YES 🗌 N	0	
Section O: Monitoring an	d Alarm Information		
Are there any alarms associa	ated with this baghouse?	LI YES VI NO	
If YES, complete the followir	ıg.		
If there are more than three alar	ms, attach additional copies of th	is page as needed.	The set of a flar way Tourist at a
Operating Parameter	Describe Alarm Trigger	Monitoring Device or	Does the Alarm Initiate
		Visual	\square YES \square NO
			Describe:
		(Remete Monitoring)	
		Auditory	Describe:
		Automatic	
		(Remote Monitoring)	
		U Other	
		U Visual	YES NO
		Auditory	Describe:
		Automatic	
1		(Damete Monitoring)	
		(Remote Monitoring)	

Baghouse

Form: AP-0808

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Section P: Additional Information

Attach potential emissions calculations with your application. If there are no emission calculations provided with the application, the LMAPCD will calculate the potential emission rates for this equipment. This will result in a delay in the issuance of the permit. The potential emission rates shall be based on operation at maximum equipment capacity. The annual potential emissions shall be based on 8,760 operating hours per year. All potential emission calculations shall represent pre-control emissions.

Is there any additional information pertinent to this application?	$\overline{\mathbf{N}}$	YES	NO
If yes, describe below:			

The bin vent controls particulate emissions from the ash storage silo.

APPENDIX C

EMISSIONS SUPPORTING INFORMATION

	*********	Past A	ctual Emissio	n Totals (tons	;)		
	PM	\mathbf{PM}_{10}	PM _{2.5}	SO ₂	H_2SO_4	CO2 _c	Mercury
Baseline							
Unit 1	670.8	476.3	342.1	4,073.5	203.7		0.040
Unit 2	624.5	443.4	318.5	4,981.9	249.1		0.039
Unit 3	630.1	447.4	321.4	9,742.9	487.1		0.055
Unit 4	765.6	543.6	390.5	9,441.4	472.1		0.066
Facility Total	2,691.0	1,910.6	1,372.4	28,239.7	1,412.0		0.200
	I.	Suture Projec	ted Potential	to Emit Total	ls (tons)		
	PM	PM_{10}	PM _{2.5}	SO2	H_2SO_4	CO2 _e	Mercury
Units 1-4 Boilers	1,298.05	921.61	662.00	8,462.77	296.20		0.1079
FGD Emissions Increase						46,545.22	
Limestone Conveyors	0.12	0.06	0.01				
Lime Silo	0.05	0.02	0.00				
PAC Silos	0.02	0.01	0.00				
Ash Silo	0.02	0.01	0.00				
Haul Roads	0.23	0.06	0.00				
Facility Total	1,298.48	921.76	662.02	8,462.77	296.20	46,545.22	0.1079
	Past Acti	al to Future	Projected Ac	tual Emission	Increase (ton:	s)	
	РМ	PM ₁₀	PM _{2.5}	SO ₂	H ₂ SO ₄	CO2 _e	Mercury
Future Projected Actual							
- Past Actual	(1,392.5)	(988.9)	(710.4)	(19,777)	(1,115.79)	46,545.22	(0.092)
Allowable Increase	25	15	10	40	7	75,000.0	
Net Out?	Yes	Yes	Yes	Yes	Yes	Yes	

Table C-1. Summary of Project Emissions Increases

Potential-In-Emit
Pollutants
Criteria
Combustion
Ceal
3
able

					_	_			
Distingution	Controlled	Anntal Facissions	(tons)	£W.	54.3	80X	1.6.7	2:96:2	
ed Andreament on a statistical for a statistical		Uncontrolled	(tons)	547.7	847.7	1,155.2	1,380.8	4,231.4	
AP BO		Emission	(h/ton)	1.33	1.33	1,33	1.33		
2	Controlled	Annual T	(tots)	0.022	0.022	6203	0.035	0.1079	
ALE LANE (LEU		Uncontrolled Emissions	(tens)	0.216	0.216	302.0	0.352	1.079	
æ	 - -	Factor	(IN/MINIU)	1.60E-05	1.6015-05	1.6015405	1.60E-05		
ing. White	Controlled	Annusl Freiseiene	(tons)	132.6	1,32,8	180.7	216.0	662.0	
a inductive Serie multifice Mexico attaine		Uncontrolled Emissions	(tatts)	39,007.206	39,407.206	53,156.011	838.36.858	082,707,401	
A12 (1),10)		Emission	(lh/ton)	61.20	61.20	61.20	61.20		
uniter Levenint	Controlled	Annual Facility	(tens)	134.0	134.0	251.6	30617	921.6	
ethele become		Uncontrolled	(tons)	6rt rug rs	54,304,149	24,001.505	88,453.274	271.063.077	
n Silar An		Enctor	(lb/ton)	85.20	112,231	85.20	R5.20		
ind T	Controlled	Annual Emissione	(tetts)	26460	260.0	P'rsi	423.6	1.298.0	
New John Lin		Uncontrolled	(tons)	76,484,717	76,484.717	104,227,472	124.5K2.075	381.778.981	
(Q.)		Endsion F	(lh/ton)	120,000	120,000	120.000	000/021		
, A	Cantraled	Annel	(tons)	1.205.1	1.2011	1.040.1	2,761,6	8.462.8	
Aber Louis A		Uncontrolled	(tons)	1177,148	84.771	115,519	138,078	177.361,624	
		Emission	(Ib/ton)	133	133	Ξ	133		
		The state of the second	CULINITY OF	1004-620-72	27,024,600	36,827,040	14,019,000	134,895,240	
		Bachterrie		477.142	1.274.745	1,737,125	2.076,368	6.362.98.0	
			L. A.	Unit	Cast 2	Unit 3	Unit-4	Total	

Table C-3. FGD CO₂ Emissions

Coal Heating Value Btu/lb Existing SO2 removal capacity Proposed SO2 removal capacity Average %S in Coal Lb Limestone/ton SO2 Removed

10,600 90.00% 98.00% 3.50 3600.00

Unit (100/02) 0 MCI 3,085 1,274,745,28 MC2 3,085 1,274,745,28	2.076.367.92	5.025	MC3 MC4
Unit (tort/nr) Coal (tort/nr) MC1 3,085 1,274,745.28	1,274,745.28	3,085	MC2
Unit (MMBin/in) Coal (ton/yr)	1.274,745.28	3,085	MCI
	Coal (ton/yr)	Input (MMBht/hr)	(Omrt)

Total CO2 Emissions Emissions from Increase	JICOD (Constyle) (Constyle)					570,178.95 46.545.22	407.760.49 33.286.57	398,875,43 32,561.26	387.973.54 31.671.31	372,477.68 30,406.34	380,769.00 31,083.18
Increased Limestone Throughput	(ulysuo))					105,784.6	75,651.3	74,002.9	71,980.2	69,105.3	70,643.6
10tal Limestone Throughput	((tons/yr))					1,295,861.26	926.728.40	906.535.07	881,758.04	846,540.17	865.384.08
Net SO2 Removed	(fons/yre)					33,851.1	24.208.4	23.680.9	23.033.7	22.113.7	22,606.0
Proposed SO2 Removed	(ex/stro))					414,675.6	296,553.1	290,091.2	282,162.6	270,892.9	276.922.9
Existing SO2 Removed	- (((nrs/()/t)) 250,486.4	268,112,4	281,651.8	280,193.3	276,375.2	380,824.5	272.344.7	266,410.3	259,128.9	248.779.2	254,317.0
SO2 to RED	(tons/(y.u)) 275.950.8	296,008.7	310,235.0	304,427.3	303,508.4	423,138.4	302,605.2	296.011.5	287.921.0	276.421.3	282.574.4
Coal Uhroughput	(tons/yre) 4.469.488	4,819,015	4,819,014	4,747,794	4,819,374	6,362,983	4.550,454	4,451,300	4.329.639	4,156,711	4,249,239
	10afe 2006	2007	2008	2009	2010	PTE	2011	2012	2013	2014	2015

2011-2015 data is based on projected generation rates.

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	ante

Notes: PAC and lime will be delivered by truck. Based on consumption rates, 58 loads per week are anticipated for a total of 3,016 loads per year with a distance of 2 miles inside facility for a total of 6,032 vehicle 1 miles traveled (VMT).

Additional load to landfill estimated at 18,820 lbs per hour including additional ash from PJFF, PAC and lime. Assuming an average 24 ton truck, 3,453 loads would be required with an average of 0.5 miles per load. This would increase the haut roads by 1,726 VMT.

Table	C-5.	Baseline	Emissions	for	Boiler	Unit 1	

	Pollutant (tons)												
Month-Year	$\mathrm{SO_2}^1$	NO _X ¹	\mathbb{PM}^2	PM_{10}^{2}	PM _{2.5} ²	$H_2SO_4^{-3}$	Lead ¹	CO ₂ ¹	IIg ⁴				
January-07	369.3	356.5	66.1	46.9	33.7	18.5	0.019	202.503	0.0038				
February-07	408.8	317.5	60.0	42.6	30.6	20.4	0.017	183.858	0.0034				
March-07	472.4	345.2	66.0	46.8	33.6	23.6	0.019	202,038	0.0038				
April-07	375.7	332.6	65.1	46.2	33.2	18.8	0.019	199,350	0.0037				
May-07	323.5	306.1	62.7	44.5	32.0	16.2	0.018	191,970	0.0036				
June-07	274.7	234.8	49.9	35.5	25.5	13.7	0.015	152,952	0.0029				
July-07	323.7	268.4	56.5	40.1	28.8	16.2	0.016	172,894	0.0032				
August-07	463.7	302.5	63.8	45.3	32.5	23.2	0.018	195.344	0.0036				
September-07	198.9	181.2	38.4	27.2	19.6	9.9	0.011	117,454	0.0021				
October-07	275.2	254.1	54.6	38.8	27.8	13.8	0.017	167,244	0.0034				
November-07	363.8	292.8	62.7	44.5	32.0	18.2	- 0.018	192.046	0.0035				
December-07	378.0	288.7	62.2	44.2	31.7	18.9	0.018	190,650	0.0036				
January-08	481.5	317.5	65.6	46.6	33.5	24.1	0.019	200,971	0.0038				
February-08	319.6	265.0	56.0	39.8	28.6	16.0	0.018	171,525	0.0035				
March-08	449.1	277.9	58.9	41.8	30.1	22.5	0.018	180,495	0.0035				
April-08	334.0	281.8	57.5	40.8	29.3	16.7	0.017	176,008	0.0034				
May-08	250.7	216.9	47.5	33.7	24.2	12.5	0.015	145,372	0.0030				
June-08	366.5	284.8	60.9	43.2	31.0	18.3	0.019	186,448	0.0037				
July-08	321.8	279.0	58.8	41.8	30.0	16.1	0.018	180,180	0.0036				
August-08	280.4	229.1	49.1	34.9	25.1	14.0	0.016	150,466	0.0031				
September-08	307.4	256.4	55.7	39.5	28.4	15.4	0.017	170.575	0.0034				
October-08	112.7	92.8	19.9	14.1	10.2	5.6	0.006	60,964	0.0012				
November-08	272.2	198.1	41.5	29.4	21.1	13.6	0.013	126.953	0.0025				
December-08	423.4	298.2	62.3	44.2	31.8	21.2	0.019	190.695	0.0037				
January-09													
24-Month Rolling													
Average (tons/yr)	4.073.5	3,238.9	670.8	476.3	342.1	203.7	0.2	2,054,476	0.040				

1. SO_2 , NO_X , and CO_2 emissions tracked via CEMS data.

2. Pollutant emissions based on emission factors developed from previous stack testing data.

3. H_2SO_4 emissions assumed to be 5% of all SO_2 emissions.

4. Emissions based on emission factors for Bituminous Coal in AP-42 Section 1.1, Table 1.1-18.

4. Emissions based on emission factors for Bituminous Coal in AP-42 Section 1.1, Table 1.1-19.

Table	C-6.	Baseline	Emissions	for	Boiler	Unit	2

	Pollutant (tons)								
Month-Year	SO ₂ ¹	NO _X ¹	PM ²	PM ₁₀ ²	$PM_{2.5}^{2}$	$H_2SO_4^{-3}$	Lead ⁴	CO ₂ ¹	Hg ⁴
January-07	415.8	323.7	49.3	35.0	25.1	20.8	0.018	194,409	0.0036
February-07	438.5	287.8	43.2	30.6	22.0	21.9	0.016	170,339	0.0031
March-07	581.8	319.3	48.5	34.4	24.7	29.1	0.017	191,427	0.0034
April-07	459.9	333.3	52.6	37.3	26.8	23.0	0.018	207,472	0.0036
May-07	401.2	298.7	48.3	34.3	24.7	20.1	0.017	190,739	0.0033
June-07	422.3	283.8	46.0	32.7	23.5	21.1	0.016	181,478	0.0032
July-07	362.2	258.3	42.9	30.4	21.9	18.1	0.015	169,132	0.0030
August-07	535.3	296.2	49.3	35.0	25.2	26.8	0.018	194,659	0.0035
September-07	365.2	269.8	45.4	32.3	23.2	18.3	0.016	179,318	0.0032
October-07	243.0	184.2	31.0	22.0	15.8	12.2	0.011	122.412	0.0022
November-07	159.0	114.3	19.0	13.5	9.7	8.0	0.007	74,957	0.0013
December-07	458.9	311.1	52.3	37.1	26.7	22.9	0.019	206,351	0.0037
January-08	591.7	327.7	69.2	49.1	35.3	29.6	0.019	215,068	0.0038
February-08	434.8	284.4	60.2	42.7	30.7	21.7	0.017	187.130	0.0034
March-08	557.1	302.3	65.9	46.8	33.6	27.9	0.018	205,034	0.0036
April-08	427.0	319.9	б4.4	45.7	32.8	21.3	0.018	200,198	0.0036
May-08	359.9	248.8	55.2	39.2	28.1	18.0	0.016	171.609	0.0031
June-08	479.3	281.8	61.1	43.4	31.2	24.0	0.017	190.115	0.0034
July-08	283.8	208.8	45.3	32.2	23.1	14.2	0.013	140.788	0.0026
August-08	411.9	286.6	61.2	43.4	31.2	20.6	0.018	190.194	0.0035
September-08	369.9	239.3	51.5	36.6	26.3	18.5	0,015	160,184	0.0029
October-08	477.9	309.6	б5.4	46.4	33.4	23.9	0.019	203,351	0.0037
November-08	375.3	266.4	58.1	41.2	29.6	18.8	0.017	180,550	0.0034
December-08	351.9	302.8	63.6	45.2	32.5	17.6	0.019	197.826	0.0038
January-09									
24-Month Rolling Average									
(tons/yr)	4,981.9	3,329.5	624.5	443.4	318.5	249.1	0.2	2,162,370	0.039

1. SO₂, NO_X, and CO₂ emissions tracked via CEMS data.

2. Pollutant emissions based on emission factors developed from previous stack testing data.

3. H_2SO_4 emissions assumed to be 5% of all SO_2 emissions.

4. Emissions based on emission factors for Bituminous Coal in AP-42 Section 1.1, Table 1.1-18.

4. Emissions based on emission factors for Bituminous Coal in AP-42 Section 1.1, Table 1.1-19.

Table C-7. 1	Baseline	Emissions	for	Boiler	Unit 3
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	Pollutant (tons)								
Month-Year	SO ₂ ¹	NO _X ¹	\mathbf{PM}^2	PM ₁₀ ²	PM _{2.5} ²	H ₂ SO ₄ ³	Lead ⁴	CO ₂ ¹	Hg ⁴
January-07	990.1	615.7	73.6	52.2	37.5	49.5	0.028	321,212	0.0055
February-07	862.7	524,9	60,0	42.6	30.6	43.1	0.022	261,909	0.0043
March-07	716.5	384.1	47.3	33.6	24.1	35.8	0.017	206,536	0.0034
April-07	63.6	33.1	5.7	4.1	2.9	3,2	0.002	24,984	0.0004
May-07	742.7	73.0	58.3	41,4	29.7	37.1	0.023	254,664	0.0045
June-07	831.4	70.9	65.4	46.5	33.4	41,6	0,024	285,660	0.0047
July-07	988.6	67.2	73.1	51.9	37.3	49.4	0.026	319,083	0.0051
August-07	1,008.5	61.9	73.8	52.4	37.6	50,4	0.027	322,236	0.0053
September-07	842.0	64.1	64.1	45.5	32.7	42.1	0.024	279,973	0.0047
October-07	844.3	492.7	63.8	45.3	32.5	42.2	0.026	278,374	0.0052
November-07	799.5	477.1	61.7	43.8	31.5	40.0	0.026	269,505	0.0052
December-07	751.2	449.7	58.2	41.3	29.7	37.6	0.026	254,197	0.0051
January-08	792.0	412.6	43.1	30.6	22.0	39.6	0.024	238,887	0.0047
February-08	520.2	306.6	30.3	21.5	15.5	26.0	0.016	168,106	0.0033
March-08	1,012.4	512.2	49.4	35.1	25.2	50.6	0.025	274,011	0.0050
April-08	798.4	504.8	46.8	33.3	23.9	39.9	0.024	259,812	0.0048
May-08	821.4	67.4	49.5	35.1	25.2	41.1	0.026	274,491	0.0051
June-08	852.9	48.6	49.9	35.4	25.5	42.6	0.026	276,782	0.0050
July-08	879.1	61.3	48.7	34.6	24.9	44.0	0.025	270,260	0.0050
August-08	1,057.3	59.1	50.5	35.9	25.8	52.9	0.026	280,311	0.0051
September-08	860.0	70.9	46.5	33.0	23.7	43.0	0.025	257,780	0.0049
October-08	795.0	431.6	45.6	32.4	23.2	39.7	0.024	252,798	0.0047
November-08	887.4	501.2	49.3	35.0	25.2	44.4	0.027	273,620	0.0053
December-08	768.5	462.1	45.4	32.3	23.2	38.4	0.024	252,057	0.0047
January-09									
24-Month Rolling									
Average (tons/yr)	9,742.9	3,376.3	630,1	447.4	321.4	487.1	0.3	3,078,624	0.055

1. SO_2 , NO_X , and CO_2 emissions tracked via CEMS data.

2. Pollutant emissions based on emission factors developed from previous stack testing data.

3. H_2SO_4 emissions assumed to be 5% of all SO_2 emissions.

4. Emissions based on emission factors for Bituminous Coal in AP-42 Section 1.1, Table 1.1-18.

4. Emissions based on emission factors for Bituminous Coal in AP-42 Section 1.1, Table 1.1-19.
Table C-8. Baseline Emissions for Boiler Unit 4

	Pollutant (tons)								
Month-Year	SO ₂ ¹	NO _X ¹	PM ²	PM_{10}^{2}	PM _{2.5} ²	H ₂ SO ₄ ³	Lead ⁴	CO_2^{-1}	Hg ⁴
January-07	887.8	615.4	76.4	54.2	39.0	44.4	0.033	548,422	0.0065
February-07	777.4	506.1	60.9	43.2	31.0	38.9	0.025	277,526	0.0050
March-07	601.2	389.1	50.5	35.9	25.8	30.1	0.021	230.331	0.0042
April-07	815.4	589.7	74.0	52.6	37.8	40.8	0.032	337.612	0.0064
May-07	777.5	63.7	70.7	50.2	36.1	38.9	0.031	322,422	0.0062
June-07	739.3	54.1	66.6	47.3	34.0	37.0	0.031	303,681	0.0061
July-07	765.9	53.1	66.1	46.9	33.7	38.3	0.032	301,217	0.0063
August-07	898.2	51.8	67.8	48.1	34.6	44.9	0.033	309,169	0.0065
September-07	742.3	51.8	65.4	46.4	33.4	37.1	0.030	298,281	0.0059
October-07	711.4	512.4	62.2	44.2	31.7	35.6	0.027	283,558	0.0053
November-07	731.7	500.2	59.8	42,4	30.5	36.6	0.025	272,632	0.0050
December-07	936.0	567.9	66.8	47.4	34.1	46.8	0.028	304,454	0.0055
January-08	1,060.3	617.1	73.2	52.0	37.3	53.0	0.031	333,946	0.0061
February-08	752.7	574.9	62.8	44.6	32.0	37.6	0.026	286,277	0.0052
March-08	830.5	513.4	56.4	40.0	28.8	41.5	0.024	257,179	0.0047
April-08	102.1	104.6	10.5	7.5	5.4	5.1	0.004	47,938	0.0009
May-08	734.4	70.9	64.6	45.9	33.0	36.7	0.027	294,613	0.0054
June-08	970.8	77.4	66.5	47.2	33.9	48.5	0.029	303,166	0.0056
July-08	930.5	80.3	63.9	45.4	32.6	46.5	0.029	291,471	0.0057
August-08	940.7	66.3	72.7	51.6	37.1	47.0	0.031	331,705	0.0060
September-08	738.0	67.0	71.0	50.4	36.2	36.9	0.030	323,577	0.0058
October-08	826.7	656.1	70.1	49.8	35.8	41.3	0.029	319,688	0.0057
November-08	850.7	597.6	68.5	48.6	34.9	42.5	0.030	312,329	0.0060
December-08	761.3	553.2	63.9	45.4	32.6	38.1	0.029	291,380	0.0058
January-09									
24-Month Rolling									
Average (tons/yr)	9,441.4	3,967.0	765.6	543.6	390.5	472.1	0.3	3,491.287	0.066

1. SO_2 , NO_X , and CO_2 emissions tracked via CEMS data.

2. Pollutant emissions based on emission factors developed from previous stack testing data.

3. H_2SO_4 emissions assumed to be 5% of all SO_2 emissions.

4. Emissions based on emission factors for Bituminous Coal in AP-42 Section 1.1, Table 1.1-18.

4. Emissions based on emission factors for Bituminous Coal in AP-42 Section 1.1, Table 1.1-19.