

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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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

Louisville Gas and Electric Company State Regulation and Rates 220 West Main Street P.O. Box 32010 Louisville, Kentucky 40232 www.lge-ku.com

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## MILL CREEK GENERATING STATION CONSTRUCTION PERMIT APPLICATION

## LOUISVILLE GAS & ELECTRIC COMPANY LOUISVILLE, KENTUCKY

Prepared by:

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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 SO<sub>2</sub> and NO<sub>2</sub> National Ambient Air Standards (NAAQS), the proposed new Clean Air Transport Rule (CATR), the proposed new Utility Boiler MACT (EGU MACT), the CO<sub>2</sub> 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
  - Hydrated Lime Injection (Previously permitted but not constructed)
  - 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<sub>X</sub>), particulate matter (PM), particulate matter less than 10 and 2.5 microns in aerodynamic diameter (PM<sub>10</sub> and PM<sub>2.5</sub>), carbon monoxide (CO), volatile organic compounds (VOC), sulfuric acid mist (H<sub>2</sub>SO<sub>4</sub>), sulfur dioxide (SO<sub>2</sub>), 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 <sub>2 5</sub>	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
$CO_2e$	46,545.2		46,545.2	75,000	No
Hg	0.0264	0.2000	-0.1736		

TABLE 1-1.	PSD	PERMITTING	APPLICABILITY

## **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<sub>2.5</sub>, for which Jefferson County has been designated nonattainment.<sup>1</sup>

#### 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.

<b>Control Equipment</b>	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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<sup>&</sup>lt;sup>1</sup> 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 SO<sub>2</sub> NAAQS, under which LMAPCD is expected to declare Jefferson County a non-attainment area for the 1-hour SO<sub>2</sub> NAAQS and will require SO<sub>2</sub> 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 SO<sub>2</sub> removal efficiency from the current approximate 90 percent removal rate to the 98+ percent SO<sub>2</sub> 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 SO<sub>2</sub> emissions from both units. FGD is the best available control technology currently available for SO<sub>2</sub> reduction. Also, the planned FGD will be able to comply consistently with the EGU MACT HCl emissions limitations (measuring SO<sub>2</sub> 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 SO<sub>2</sub> emissions reductions greater than 98 percent. FGD is the best available control technology currently available for SO<sub>2</sub> reduction. The new FGD's SO<sub>2</sub> scrubbing capabilities (compared to its current FGD) will increase the amount of limestone required and byproduct produced proportionally to the additional capture of SO<sub>2</sub>. 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 SO<sub>2</sub> 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 SO<sub>2</sub> 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 SO<sub>2</sub> 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 SO<sub>2</sub> 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<sub>x</sub>") 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<sub>x</sub> allowances will be consumed. Having the ability to bring these two units to lower operating levels while still having high degrees of NO<sub>x</sub> 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<sub>x</sub> 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 (SO<sub>3</sub>) 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% SO<sub>2</sub> 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 SO<sub>2</sub> 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 CaSO<sub>3</sub>•1/2H<sub>2</sub>O into calcium sulfate dihydrate (CaSO<sub>4</sub>•2H<sub>2</sub>O), 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 SO<sub>2</sub> 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 CO<sub>2</sub> 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% CaCO<sub>3</sub> 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 SO<sub>2</sub> 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.<sup>2</sup>

<sup>&</sup>lt;sup>2</sup> 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 SO<sub>2</sub> allowances for each ton of SO<sub>2</sub> emitted. Possession of the SO<sub>2</sub> allowances is not required until after the end of the year in which the SO<sub>2</sub> 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.notifsymery.gov/ujed
Section A: Owner/Operator Information	
Business Name of Owner /Operator To Appear On The P	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	<ul> <li>Check here if same as equipment location address.</li> <li>220 West Main Street</li> </ul>
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	n 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

			et e recente transferenza por por						
Da	te of	Cons	Inuction	, Modi	ification	, Instal	lation	or Oper	ation:

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.

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 Thereby certify that all information	on contained herein and information	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: 69/11					
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

Section G: Equipment Information							
Manufacturer: TBD							
Model: TBD							
Serial Number:							
Is the baghouse insulated?  YES	7 NO	in the second second reprint of the second request of the factor and second second second second second second					
Design Minimum Operating Temperature:							
Design Maximum Operating Temperature		4000 - V., 001					
Are temperature controls provided?	YES 🔽 NO	han fa dhalan da ann an Anna ann an Anna ann an Anna ann an Anna an Anna an Anna an Anna an Anna a a Anna					
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 %	, 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 Compartment	nt: TBD						
Can the Compartments be Isolated for Rep	lacement or Repair? VES 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 <b>feet</b>						
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	<b>Contaminant CAS Number</b>	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	0.017737	99				
Nickel Compounds	7440-02-0	0.011513	99				

## Baghouse

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### Form: AP-0808

Baghouse

# Page 2 of 5 cont.

Section G: Equipment Information					
Manufacturer:					
Model:			-		
Serial Number:					
3	] NO				
Design Minimum Operating Temperature:					
Design Maximum Operating Temperature					
Are temperature controls provided?	YES ONO				
If YES, describe the temperature controls:					
Air Flow Through Baghouse:	ed				
🗌 🗆 Induc					
□ Othe	r Specify:				
Direction of Flow Through Filters:	Inside Out				
-	Outside In				
Particulate Removal Efficiency: %	· · · · · · · · · · · · · · · · · · ·		-		
Attach the manufacturer's specification sheet for the Section H: Compartment Information	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 Reg					
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:	et 🗆 Corrosive 🗆 Dry 🗆 Oth	er(Specify):			
Section J: Contaminant Information					
Percent of Each Contaminant in the Waste	Gas and Removal Efficiency				
If more than five contaminants are present, atta					
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	Mercury Compounds 7439-97-6 0.000011 99				
Selenium Compounds	7782-49-2	0.000229	99		

#### Form: AP-0808

	Baghouse
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## 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: TBDscfm/ft² at $\Delta P$ TBDinches of waterFabric Filter (Bag) Diameter or Width: TBDinches
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
Pncumatic Shakers Reverse Air Flow Other (Specify):
Air Pressure: psi
Air Pressure:     psi       Describe how air is supplied to system:
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
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 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
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
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 Manual Timer Timer Manual Timer Manual Timer
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         Other (Specify):       Timer       Other (Specify):         Section M: Hopper Information       Is the hopper heated?       YES / NO         Is there a hopper vibrator?       YES / NO
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         Image: Timer       Pressure Drop         Other (Specify):       Other (Specify):         Section M: Hopper Information         Is the hopper heated?       YES
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         Other (Specify):       Timer       Other (Specify):         Section M: Hopper Information       Is the hopper heated?       YES / NO         Is there a hopper vibrator?       YES / NO
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: <ul> <li>Manual</li> <li>Pressure Drop</li> <li>Other (Specify):</li> </ul> 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
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: <ul> <li>Manual</li> <li>Pressure Drop</li> <li>Other (Specify):</li> </ul> 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

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Baghouse

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Section N: Stack 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?	YES NO		
Stack Configuration:		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			
Describe nearest obstruction			
Height of Nearest Obstruction	on: feet	Distance to Nearest Obstruc	tion: feet
Are stack sampling ports pr	rovided? 🗌 YES 🗌 N	0	
Section O: Monitoring an			
Are there any alarms associ	······································	YES NO	
If YES, complete the following			an a
	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
		Monitoring Device or Alarm Type	Does the Alarm Initiate an Automated Response?
Operating Parameter Monitored		Monitoring Device or	
Operating Parameter Monitored Pressure drop across		Monitoring Device or Alarm Type	an Automated Response?
Operating Parameter Monitored		Monitoring Device or Alarm Type	an Automated Response?         ✓       YES       NO         Describe:       Response will be dependent
Operating Parameter Monitored Pressure drop across		Monitoring Device or Alarm Type Visual Auditory	an Automated Response?         ✓       YES       NO         Describe:       Response will be dependent upon the type of alarm and
Operating Parameter Monitored Pressure drop across		Monitoring Device or Alarm Type Visual Auditory Automatic	an Automated Response?         ✓       YES       NO         Describe:       Response will be dependent
Operating Parameter Monitored Pressure drop across		Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring)	an Automated Response?         ✓       YES       NO         Describe:       Response will be dependent upon the type of alarm and
Operating Parameter Monitored Pressure drop across		Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring) Other Visual	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		Monitoring Device or Alarm Type         ✓       Visual         Auditory       Automatic (Remote Monitoring)         Other       Visual	an Automated Response?         ✓       YES       NO         Describe:       Response will be dependent upon the type of alarm and current operating conditions.         □       YES       NO
Operating Parameter Monitored Pressure drop across		Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory Automatic	an Automated Response?         ✓       YES       NO         Describe:       Response will be dependent upon the type of alarm and current operating conditions.         □       YES       NO
Operating Parameter Monitored Pressure drop across		Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory Auditory Automatic (Remote Monitoring)	an Automated Response?         ✓       YES       NO         Describe:       Response will be dependent upon the type of alarm and current operating conditions.         □       YES       NO
Operating Parameter Monitored Pressure drop across		Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory Automatic (Remote Monitoring) Other	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		Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory Automatic (Remote Monitoring) Other Visual Visual Visual	an Automated Response?         ✓       YES       NO         Describe:       Response will be dependent upon the type of alarm and current operating conditions.         □       YES       NO         Describe:       NO         □       YES       NO         Describe:       NO
Operating Parameter Monitored Pressure drop across		Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory Automatic (Remote Monitoring) Other Visual Automatic (Remote Monitoring) Other Visual Automatic	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		Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory Automatic (Remote Monitoring) Other Visual Automatic (Remote Monitoring) Other Automatic (Remote Monitoring) Automatic	an Automated Response?         ✓       YES       NO         Describe:       Response will be dependent upon the type of alarm and current operating conditions.         □       YES       NO         Describe:       NO         □       YES       NO         Describe:       NO
Operating Parameter Monitored Pressure drop across		Monitoring Device or Alarm Type Visual Auditory Automatic (Remote Monitoring) Other Visual Auditory Automatic (Remote Monitoring) Other Visual Automatic (Remote Monitoring) Other Visual Automatic	an Automated Response?         ✓       YES       NO         Describe:       Response will be dependent upon the type of alarm and current operating conditions.         □       YES       NO         Describe:       NO         □       YES       NO         Describe:       NO

#### 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?	$\checkmark$	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, Install, Modify, or Operate Process or Process Equipment

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

Section A: Owner/Operator Information	
Business Name of Owner /Operator To Appear On The Permit:	
Louisville Gas & Electric - Mill Creek Generatir	ng 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	220 West Main Street
Street Address Louisville Ky 40272	Street Address Louisville KY 40202 _ 1377
LouisvilleKY40272CityStateZip 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:
<sub>E-Mail:</sub> <u>Ralph.Bowling@lge-ku.com</u>	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: April 2015 Operation
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
	ation 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: 6911
LMARCD: Application Tracking #: Assigned Engineer: Use Only	Permit No(s):         Plant ID #:         NAICS Code:

#### Form: AP-0808

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

Manufacturer: TBD				
Model: TBD				
Serial Number:				
Is the baghouse insulated? VES NO				
Design Minimum Operating Temperature: <sup>°</sup> F				
Design Maximum Operating Temperature: ° F				
Are temperature controls provided? YES V 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 %				
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 / 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 NameContaminant CAS NumberPercent ofRemovalWaste GasEfficiency				
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				
Nickel Compounds 7440-02-0 0.011513 99				

## Baghouse

## Form: AP-0808

Page 2 of 5 cont.

Baghouse

Section G: Equipment Information			
Manufacturer:			
Model:			
Serial Number:			
3	□ NO		
Design Minimum Operating Temperature			······
Design Maximum Operating Temperature			
Are temperature controls provided?			
If YES, describe the temperature controls:			
Air Flow Through Baghouse: □ Forc	od		
□ Indu			
	er Specify:		
	, speen ji		
Direction of Flow Through Filters:	Inside Out		
ſ	1 Outside In		
	/		
Particulate Removal Efficiency: % Attach the manufacturer's specification sheet for the	6	and basis of determine	ation
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	ate: acfm at feet		
Dew Point at maximum Moisture Content	of Gas: °F		
pH of Gas Handled:			
Dust Characteristics: 🗆 Sticky 🗆 We	et 🗆 Corrosive 🗆 Dry 🗆 Othe	er(Specify):	
Section J: Contaminant Information			
Percent of Each Contaminant in the Waste	Gas and Removal Efficiency		
If more than five contaminants are present, atta	-		
Contaminant Name	Contaminant CAS Number	Percent of	Removal
Containmant I (unit		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

#### Form: AP-0808

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			31.001	

Page	3	of	5
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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):
Sintered Metal Other (Specify):
Fabric Material: TBD
Maximum Continuous Filter Operating Temperature: TBD °F
Clean Fabric Permeability: TBD scfm/ft <sup>2</sup> at $\Delta P$ 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
<ul> <li>Mechanical Shakers</li> <li>Sonic Cleaning</li> <li>Pulse Jet</li> <li>Pneumatic Shakers</li> <li>Reverse Air Flow</li> <li>Other (Specify):</li> </ul>
Theamatic snakers Reverse An How Other (speeny).
Air Pressure: <b>psi</b>
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.
### Form: AP-0808

Baghouse

Page 4 of 5	Page	4	of	5
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Section N: Stack Informa	ttion		
Stack Height Above Grade:	Exits Brough FGD Stark feet		
Stack Exit Diameter:	feet		
(Provide stack dimensions if recta	ingmar siack.)		
Is a Stack Cap Present?	YES NO		
Stack Configuration:		orizontal 🗌 Downwar	d – Venting
(Check all that apply)	Other (Specify):		
Stack Exit Gas Temperature	: "F	Stack Exit Gas Flow Rate:	ACFM
Guor DAI Gus Tomporatare	·		
D' to be block Denot	. Lines Foot		
Distance to Nearest Property Describe nearest obstruction			
Height of Nearest Obstruction		Distance to Nearest Obstruc	tion: feet
Thought of Fredrost O bon dots			
Are stack sampling ports p		0	
Section O: Monitoring an		YES □ NO	
Are there any alarms associ			
If YES, complete the followi	<i>ng.</i> arms, attach additional copies of th	is page as peoded	
Operating Parameter	Describe Alarm Trigger	Monitoring Device or	Does the Alarm Initiate
Monitored	EPESCHISC Man III ETIGGET	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)	upon the type of alarm and current operating conditions.
		□ Other	content operating contents
		🔲 Visual	🔲 YES 🔲 NO
		Auditory	Describe:
		Automatic	
		(Remote Monitoring)	
		☐ Other	
		Visual	☐ YES ☐ NO
		Auditory	Describe:
		Automatic	
		(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.



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

construct, Install, s Equipment	(502) 574-6000 FAX: (502) 574-5137 www.louisvilleky.gov/apcd

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	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				
LouisvilleKY40272CityStateZip 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					
E-Mail: Ralph.Bowling@lge-ku.com					
Section D: Application Type Reason for Submitting Application (Select all that apply):					
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 Change	Actual Start Date:				
Operation 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 informat Signature of Responsible Official:	ion contained herein and information submitted with this application is true and correct.				
Kalal Brench	VP Power Production				
Print Name: Ralph Bowling	Date: 6/9/11				
Application Tracking #: Assigned Engineer:	Permit No(s):     Plant ID #:     NAICS Code:				

#### Form: AP-0808

Pollution	Control	District			

Section G: Equipment Information					
Manufacturer: TBD					
Model: TBD					
Serial Number:					
Is the baghouse insulated?  YES	NO	n taav sema tina ini kana atabili kalanan ing ang ang ang ang ang ang ang ang ang a			
Design Minimum Operating Temperature	: <sup>°</sup> F				
Design Maximum Operating Temperature	: °F				
Are temperature controls provided?	YES INO				
If YES, describe the temperature controls:					
Air Flow Through Baghouse: Forced Induced Other Specify:					
Direction of Flow Through Filters: Inside Out					
······································	<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	nt: TBD				
Can the Compartments be Isolated for Replacement or Repair? YES NO					
Section I: Gas Stream Information					
Maximum Inlet Volumetric Gas Flow Rat	e: acfm at fe	et			
Maximum Outlet Volumetric Gas Flow R	ate: acfm at fe	et			
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	e Gas and Removal Efficiency				
If more than five contaminants are present, atta					
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

Page 2 of 5

#### Form: AP-0808

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 <sup>2</sup> at $\Delta P$ 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
Pneumatic 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:
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

Page 4 of 5

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? [	YES NO		
Stack Configuration:		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			
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			
Are there any alarms associ		YES NO	
If YES, complete the following	ng.		
	rms, attach additional copies of th	is page as needed.	
<b>Operating Parameter</b>	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)	upon the type of alarm and current operating conditions.
		Other	
		Visual	YES NO
		☐ Auditory	Describe:
		Automatic	
		(Remote Monitoring)	
		☐ Other	
		U Visual	☐ YES <b>∏</b> NO
		Auditory	Describe:
		Automatic	
		(Remote Monitoring)	
		Other	

### 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?	$\mathbf{V}$	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

(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 Permit:					
Louisville Gas & Electric - Mill Creek Generati	•				
Owner's Business Name (only if different from Business Name o	f Owner/Ope	erator):			
Louisville Gas & Electric					
Section B: Equipment Location		C: Permit Ma			
Equipment Location Address:		nd Correspondence heck here if same			ldress.
14660 Dixie Highway	220 We	st Main Street			
Street Address Louisville <u>KY</u> 40272 -	Street A Louisvil			KY	40202 _ 1377
City State Zip Code	City			State	Zip Code
Responsible Official Name: Kalph Bowling	_ Contact	Name: Rebec	ca Cash		
Responsible Official Title: VP Power Production	_ Contact	Title: Enviror	mental E	ngineer	
Phone: (502)627-4121	Phone:	(502)627-46	33		
Fax: (502)627-4030	Fax:				
E-Mail: Ralph.Bowling@lge-ku.com	_ E-Mail:	E-Mail: Rebecca.Cash@lge-ku.com			
Section D: Application Type Reason for Submitting Application (Select all that apply):		Data of Construe	tion Modifie	ation Inco	llation or Operation:
				anon, 115.a	nation of Operation.
New Construction /Installation Change of Ownership		(MM/DD/YYY)	-	mber 201	4 Operation
Modification Change of Location		Estimated Start I	Date:		
Reconstruction Administrative Change	e	Actual Start Date			······································
Operation		may not constru facility unless a (LMAPCD). Plea application. Inc	act, install, n a permit has ase complete applied omplete appli	nodify, or been issuall requested beations mathematications	2.03, Section 1, you operate an affected ucd by the District information in this y result in denial of e process or process
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 inform	nation containe	d herein and information	on submitted with	h this applicat	ion is true and correct.
Signature of Responsible Official:	Title:				
Kalah Bowh					
Print Name: Ralph Bowling	Date:	6/9/1	1		
Application Tracking #: Assigned Engineer:	Permi	it No(s):	Plant ID #:		NAICS Code:

### Form: AP-0808

- 4			

Section G: Equipment Information			
Manufacturer: TBD			
Model: TBD			
Serial Number:			
Is the baghouse insulated?  YES	NO		
Design Minimum Operating Temperature			
Design Maximum Operating Temperature			
Are temperature controls provided?	YES 7 NO	· · · · · · · · · · · · · · · · · · ·	
If YES, describe the temperature controls			······································
Air Flow Through Baghouse: ☐ Force ✓ Indu ☐ Othe			
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 cu	rve 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 Rep	placement or Repair? 🗸 YES 🔲 NO	0	
Section I: Gas Stream Information			
Maximum Inlet Volumetric Gas Flow Rat	e: acfm at fee	et	
Maximum Outlet Volumetric Gas Flow R	ate: acfm at fee	et	19 7 7 19 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Dew Point at maximum Moisture Content	of Gas: °F		
pH of Gas Handled:			
Dust Characteristics: Sticky We	et 🔝 Corrosive 🖌 Dry 🚺 Ot	her(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
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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### Form: AP-0808

# Page 2 of 5 cont.

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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			
Design Maximum Operating Temperature			
Are temperature controls provided?	JYES 🗆 NO		
If YES, describe the temperature controls			
Air Flow Through Baghouse: Indu Othe			
Direction of Flow Through Filters:	<ul><li>Inside Out</li><li>Outside In</li></ul>		
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

#### 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 <sup>2</sup> at $\Delta P$ 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: Annual Cleaning Bag Collapse Reverse Air Jet
Mechanical Shakers Sonic Cleaning 🗹 Pulse Jet
Pneumatic 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:
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:
Describe now conected material is freated of disposed of.
The dust collected in the fabric filter discharge hoppers will be fluidized and removed by the Fly Ash
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
The dust collected in the fabric filter discharge hoppers will be fluidized and removed by the Fly Ash
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
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

#### Form: AP-0808

Baghouse

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Section N: Stack Information	
Stack Height Above Grade: Exits through FGE Stack feet	
Stack Exit Diameter: feet	
(Provide stack dimensions if rectangular stack.)	
Is a Stack Cap Present? YES NO	
	rd – Venting
( <i>Check all that apply</i> ) 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: feet Distance to Nearest Obstruct	tion: feet
Are stack sampling ports provided?  YES NO	
Section O: Monitoring and Alarm Information	
Are there any <b>alarms</b> associated with this baghouse?  YES  NO	i para da com ingen para sensari da como de la como de 
If YES, complete the following.	
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?
Pressure drop across Will be programmed Visual	VES NO
baghouse. based upon the L Auditory	Describe:
manufacturer's 🛛 🗖 Automatic	Response will be dependent upon the type of alarm and
recommendation. (Remote Monitoring)	current operating conditions.
🗖 Other	
	TYES NO
Auditory	Describe:
Automatic	
(Remote Monitoring)	
☐ Other	
U Visual	🗌 YES 🔲 NO
Auditory	Describe:
Automatic	
Automatic (Remote Monitoring)	

#### 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	Cons	stru	ct, Reca	onstruct,	Install,
Modify,	or	Operate	Pr	ocess	or l	Process	Equipm	ent

Section A: Owner/Operator Information				
Business Name of Owner /Operator To Appear On The Permit:				
Louisville Gas & Electric - Mill Creek Generating S				
Owner's Business Name (only if different from Business Name of	Owner/Operator):			
Louisville Gas & Electric				
Section B: Equipment Location	Section C: Permit Mailing Add			
Equipment Location Address:	Permit and Correspondence informa		address	
14660 Dixie Highway	220 West Main Street		andreas.	
Street Address Louisville <u>KY</u> 40272	Street Address Louisville	KY	40202 1377	
City State Zip Code	City	State	Zip Code	
Responsible Official Name: Ralph Bowling	Contact Name: Rebecca Cas	h		
Responsible Official Title: VP Power Production	Contact Title: Environmental	Enginee	r	
Phone: (502)627-4121	(	· ••••••••••••••••••••••••••••••••••••		
Fax: (502)627-4030	Fax: (502)627-2550			
<sub>E-Mail:</sub> Ralph.Bowling@lge-ku.com	E-Mail: Rebecca.Cash@lg	je-ku.com	]	
Section D: Application Type				
Reason for Submitting Application (Select all that apply):	Date of Construction, Mod	fication, Inst	allation or Operation:	
New Construction /Installation Change of Ownership	(MM/DD/YYYY)	101.00	45.0	
Modification Change of Location	Estimated Start Date: Apr	ni/iviay 20	15 Operation	
Reconstruction Administrative Change	Actual Start Date:			
Operation	In accordance with Distric	t regulations	2.03, Section 1, you	
	may not construct, install facility unless a permit	has been is	sued by the District	
	(LMAPCD). Please comple application. Incomplete a	oplications m	ay result in denial of	
	issuing a permit to constru- equipment.	ict and opera	te process or process	
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 information Signature of Responsible Official:	tion contained herein and information submitted Title:	with this applica	tion is true and correct.	
A de Koun	VP Power Productio	n		
Print Name: Date: Gall				
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				a Manantari wa muuna kakao wa kakao waxaa kata ka kata kata ka kata ka ka kata ka kata ka kata ka kata ka kata	
Model: TBD Serial Number: TBD				••••••••••••••••••••••••••••••••••••••	
		heet for the Scrubber a	nd any Domoval Efficie	nev coloulations	
	aminant Informat		nu any Keniovai Efficie	ency calculations.	
			Vanar Dressure Co	lubility in the Scrubb	ing Lignor and
Removal Efficience		in the waste Gas,	vapor riessure, so	subling in the Scrubb.	ing Liquor, and
		attach additional copie	s of this page as needed		
Contaminant	CAS Number	Concentration in Waste Gas	Vapor Pressure	Solubility in Scrubbing Liquor	Removal Efficiency
SO2		3-3.5 % by Weight	psi at ° F	<ul> <li>☐ Insoluble</li> <li>☐ Slightly Soluble</li> <li>☑ Ilighly soluble</li> <li>☐ Miscible</li> <li>☐ Not Applicable</li> </ul>	98 %
HCI		% by Weight	psi at ° F	<ul> <li>☐ Insoluble</li> <li>☐ Slightly Soluble</li> <li>☑ Highly soluble</li> <li>☑ Miscible</li> <li>☑ Not Applicable</li> </ul>	98 %
		% by Weight	psi at ° F	<ul> <li>Insoluble</li> <li>Slightly Soluble</li> <li>Highly soluble</li> <li>Miscible</li> <li>Not Applicable</li> </ul>	%
		% by Weight	psi at ° F	<ul> <li>Insoluble</li> <li>Slightly Soluble</li> <li>Highly soluble</li> <li>Miscible</li> <li>Not Applicable</li> </ul>	%
		% by Weight	psi at ° F	<ul> <li>Insoluble</li> <li>Slightly Soluble</li> <li>Highly soluble</li> <li>Miscible</li> <li>Not Applicable</li> </ul>	%
		% by Weight	psi at ° F	<ul> <li>Insoluble</li> <li>Slightly Soluble</li> <li>Highly soluble</li> <li>Miscible</li> <li>Not Applicable</li> </ul>	%
Section I: Gas Sti	ream Information				
Maximum Inlet Vo	olumetric Gas Flow	Rate: 695,086	acfm at 330	°F	
Maximum outlet V	olumetric Gas Flov	v Rate: 577,347	acfm at 128	°F	

inches water

Scrubber

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#### Form: AP-0908

Section J: Scrubbing Liquor Inform	mation					
Scrubbing Liquor Components						
	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 🖌 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	n					
Scrubber Type: 🖌 Spray Tower	Ionizing Fluidized Be	d Scrubber Venturi				
Packed Bed	Tray Tower 🖌 Other (Speci	fy):				
Scrubber Height: fe	et					
Scrubber Inside Diameter: fe	eet					
Does the scrubber use packing?	YES 🖌 NO					
If YES, complete the following informa	tion.					
Packing Type: Berl Saddle	Pall Ring					
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 🔄 Bafiles						
Plates Other (Specify):						
Type of Perforation: V 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		0	
If YES, complete the following	<i>ig.</i>		
Describe the mist eliminator			
Section L: Stack Informa	tion		
Stack Height Above Grade:			
Stack Exit Diameter: 15.5	feet		
(Provide stack dimensions if recta	ngular stack.)		
Is a stack cap present?	YES 🖌 NO		
Stack Configuration:		orizontal Downwar	d – Venting
(Check all that apply)	Other (Specify):		
Stack Exit Gas Temperature		Stack Exit Gas Flow Rate: 2	,067,979 ACFM
Distance to Nearest Property			
Describe nearest obstruction			
Height of Nearest Obstruction	on: feet	Distance to Nearest Obstruct	tion: feet
Are stack sampling ports pr		0	
Section M: Monitoring an			
Are there any alarms associ		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.	
<b>Operating Parameter</b>	Describe Alarm Trigger	Monitoring Device or	Does the Alarm Initiate
Monitored		Alarm Type	an Automated Response?
Recycle Pump Amps	> 10 Amps	☑ Visual	YES NO
nooyoo i unip minpa	10100	Auditory	Describe:
		□ Automatic	Valves and the mist eliminator
		(Remote Monitoring)	are on automatic control with
		Other	manual capability.
Reaction Tank pH	> 4.0 pH	Visual	YES NO
		Auditory	Describe:
		Automatic	
		(Remote Monitoring)	
		Other	
Stack Exit Temperature	100 F < T < 170 F	✓ Visual	YES NO
		☐ Auditory	Describe:
		Automatic	
		(Remote Monitoring)	
	i l	□ Other	1

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, II	astall,
Modify,	or (	Operate	Pr	ocess	or Pre	ocess	Equi	pmei	ıt

Section A: Owner/Operator Information							
Business Name of Owner /Operator To Appear On The Permit:							
Louisville Gas & Electric - Mill C	reek Generating Stat	ion					
Owner's Business Name (only if different	from Business Name of Ow	ner/Operator):					
Louisville Gas & Electric							
Section B: Equipment Location		Section C: Pern					
Equipment Location Address:	F	Permit and Corresp				ddress	
14660 Dixie Highway		220 West Main Stre		, as oquipmone			
Street Address Louisville <u>KY</u> 402	72	Street Address Louisville			KY	40202 1377	
City State Zip	Code Code	City			State	Zip Code	
Responsible Official Name: Ralph Bo	wling	Contact Name: R	ebec	cca Cash		-	
Responsible Official Title: VP Power	Production	Contact Title: Er	viror	nmental E	nginee	r	
Phone: (502)627-4121	F	Phone: (502)62					
Fax: (502)627-4030		Fax: (502)627					
E-Mail: Ralph.Bowling@lge-ku	.com E	E-Mail: Rebecca.Cash@lge-ku.com					
Section D: Application Type							
Reason for Submitting Application (Select					ation, insu	llation or Operation:	
New Construction /Installation	Change of Ownership	(MM/DD/YYYY)					
Modification	Change of Location	Estimated Start Date: November 2014 Operation					
Reconstruction	Administrative Change	Actual Start Date:					
Operation	may not facility u (LMAPCI applicatio	constr nless D). Ple n. Inc permit	uct, install, m a permit has ase complete a complete appli	nodify, or been iss all request cations m	2.03, Section 1, you operate an affected sued by the District ed information in this ay result in denial of te process or process		
Section E: Facility Business Information: What type of business is being conducted at the						SIC Code	
Electric Services	s equipment kieddon;					49	
Section F: Authorization/Signature	hereby certify that all information		aformati	ion submitted with	n this applica	tion is true and correct.	
Signature of Responsible Official:		Title: VP Pow	ver P	roduction			
Print Name! Ralph Bowling		Date:	60	9(11			
LMAPCD Application Tracking #: Use Only	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

	ment Information				
Manufacturer: TBD				·····	
Model: TBD					
Serial Number: TBI	)				
Attach the Manufact	urer's Specification S	heet for the Scrubber a	nd any Removal Efficie	ency calculations.	
Section H: Cont	aminant Informat	ion			
Removal Efficience	у		-	olubility in the Scrubb	ing Liquor, and
If more than six cont		attach additional copie	s of this page as neede		
Contaminant	CAS Number	Concentration in Waste Gas	Vapor Pressure	Solubility in Scrubbing Liquor	Removal Efficiency
SO2		3-3.5 % by Weight	psi at ° F	<ul> <li>Insoluble</li> <li>Slightly Soluble</li> <li>✓ Highly soluble</li> <li>Miscible</li> <li>Not Applicable</li> </ul>	98 %
HCI		% by Weight	psi at ° F	<ul> <li>Insoluble</li> <li>Slightly Soluble</li> <li>Highly soluble</li> <li>Miscible</li> <li>Not Applicable</li> </ul>	98 %
		% by Weight	psi at ° F	<ul> <li>Insoluble</li> <li>Slightly Soluble</li> <li>Highly soluble</li> <li>Miscible</li> <li>Not Applicable</li> </ul>	%
		% by Weight	psi at ° F	<ul> <li>Insoluble</li> <li>Slightly Soluble</li> <li>Highly soluble</li> <li>Miscible</li> <li>Not Applicable</li> </ul>	%
		% by Weight	psi at ° F	Insoluble Slightly Soluble Highly soluble Miscible Not Applicable	%
		% by Weight	psi at ° F	<ul> <li>Insoluble</li> <li>Slightly Soluble</li> <li>Highly soluble</li> <li>Miscible</li> <li>Not Applicable</li> </ul>	%

°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		
	attach additional copies of this page as neede	
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: Operational Informatio		
SUGULAR OPUALULAI INUI MALU	/11	
		ed Scrubber Venturi
Scrubber Type: Spray Tower Packed Bed		
Scrubber Type: 🖌 Spray Tower Packed Bed	Ionizing Fluidized Bo	
Scrubber Type: Spray Tower Packed Bed Scrubber Height: f	IonizingFluidized BTray Tower✓Other (Spec	
Scrubber Type: Spray Tower Packed Bed Scrubber Height: f	Ionizing     Fluidized Be       Tray Tower     ✓       Other (Spec	
Scrubber Type: Spray Tower Packed Bed Scrubber Height: f Scrubber Inside Diameter: f	Ionizing     Fluidized Bo       Tray Tower     ✓       Other (Spec       feet       YES     ✓       NO	
Scrubber Type: Spray Tower Packed Bed Scrubber Height: f Scrubber Inside Diameter: f Does the scrubber use packing?	Ionizing     Fluidized Bo       Tray Tower     ✓       Other (Spec       feet       YES     ✓       NO	
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 of the packing Type:       Berl Saddle         Packing Type:       Berl Saddle	Ionizing       Fluidized Be         Tray Tower       ✓         Tray Tower       ✓         Geet       ✓         YES       ✓         NO       Alion.         Pall Ring       Tellerette	
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:         Packing Type:       Berl Saddle         Intalox Saddle       Raschig Ring	Ionizing       Fluidized Bo         Tray Tower       ✓         Tray Tower       ✓         feet       ✓         YES       ✓         NO       ✓         ation.       ✓         Pall Ring       Tellerette         Marbles       ✓	
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	Ionizing       Fluidized Bo         Tray Tower       ✓         Tray Tower       ✓         feet       ✓         YES       ✓         NO       A         ation.       ✓         Pall Ring       Tellerette         Marbles       Other (Specify):	
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 of the scrubber use packing?       f         Packing Type:       Berl Saddle         Intalox Saddle       Raschig Ring         Lesig Ring       Lesig Ring         Packing Size:       inch	Ionizing       Fluidized Bo         Tray Tower       ✓         Tray Tower       ✓         feet       ✓         YES       ✓         NO       A         ation.       ✓         Pall Ring       Tellerette         Marbles       Other (Specify):	
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:       inch	Ionizing       Fluidized Bo         Tray Tower       ✓         Tray Tower       ✓         feet       ✓         YES       ✓         NO       A         ation.       ✓         Pall Ring       Tellerette         Marbles       Other (Specify):	
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 of the scruber use packing informating information of the scruber use packing in	Ionizing       Fluidized Base         Tray Tower       ✓       Other (Specific test)         feet       ✓       NO         ation.       Pall Ring       Tellerette         Marbles       Other (Specify):	
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 of the scrub of the scrub of the following information of the scrub of t	Ionizing       Fluidized Base         Tray Tower       ✓       Other (Spectreet         feet       ✓       NO         Ation.       ✓       NO         Cation.       ✓       Pall Ring         Tellerette       Marbles         Other (Specify):         Image: Specify of the state of the sta	
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 of the scruber use packing informating information of the scruber use packing in	Ionizing       Fluidized Book         Tray Tower       ✓       Other (Spectrometer)         feet       ✓       NO         ation.       Pall Ring       Tellerette         Marbles       Other (Specify):       NO         r baffles?       ✓       YES       NO         ✓       YES       NO       NO         ✓       Trays       Baffles       NO	
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 of the scrubber use packing?       f         Packing Type:       Berl Saddle Intalox Saddle Raschig Ring       f         Packing Size:       inch         Packing Material:       feet         Height of Packing:       feet         Does the scrubber use trays, plates, o       Type of Impactor/Impingement:	Ionizing       Fluidized Base         Tray Tower       ✓       Other (Spec         feet       ✓       NO         ation.       ✓       NO         Pall Ring       Tellerette       Marbles         Other (Specify):       ✓       NO         r baffles?       ✓       YES       NO         ✓       Trays       Baffles         Plates       Other (Specify):	
Scrubber Type:       ✓       Spray Tower Packed Bcd         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         Height of Packing:       feet         Does the scrubber use trays, plates, o       Type of Impactor/Impingement:         Type of Perforation:       ✓	Ionizing       Fluidized Base         Tray Tower       ✓       Other (Specific Specific S	
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 of the scrubber use packing?       f         Packing Type:       Berl Saddle Intalox Saddle Raschig Ring       f         Packing Size:       inch         Packing Material:       feet         Height of Packing:       feet         Does the scrubber use trays, plates, o       Type of Impactor/Impingement:	Ionizing       Fluidized Base         Tray Tower       ✓       Other (Specific test)         feet       ✓       NO         ation.       Pall Ring       Tellerette         Marbles       Other (Specify):       Marbles         Other (Specify):       Marbles         Trays       Baffles         Plates       Other (Specify):         Adjustable Trays       Caps	

Scrubber

Page 3 of 5

## Scrubber Page 4 of 5

#### Form: AP-0908

Configuration:			
	Co - Current		
	Other (Specify):		
Will a mist eliminator be in		)	
If YES, complete the following			
Describe the mist eliminator	:		
Section L: Stack Informa	Han		
	<ul> <li>Notes that the second se Second second secon</li></ul>		
Stack Height Above Grade:			
Stack Exit Diameter: 19.5	feet		
(Provide stack dimensions if recta	ngular stack.)		
la o stook aan measant?	YES / NO		
Is a stack cap present?			
Stack Configuration:		orizontal Downward	d – Venting
(Check all that apply)	Other (Specify):		
Stack Exit Gas Temperature		Stack Exit Gas Flow Rate: 1,	348,885 ACFM
L. L.			
Distance to Nearest Property	Line: 765 feet		
Describe nearest obstruction			
Height of Nearest Obstruction		Distance to Nearest Obstruct	tion: 145 feet
reight of mealest Obstraction		Sistemes to i tourobi Obbiluo	
		L	
Are stack sampling ports p		J	
Section M: Monitoring an			
Are there any alarms associ		V YES NO	
If YES, complete the following			
	rms, attach additional copies of thi		1
<b>Operating Parameter</b>	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	> 10 Amps	□ Auditory	Describe:
		□ Automatic	
		(Remote Monitoring)	1
		□ Other	
		☑ Visual	YES NO
Reaction Tank pH	> 4.0 pH	Auditory	Describe:
		Automatic	120301100.
		(Remote Monitoring)	
		Other	
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	$\square$	NO
If yes, describe below:	لمستسما		L	

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 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 Ov	vner/Op	erator):				
Louisville Gas & Electric							
Section B: Equipment Location			a C: Permit Ma				
Equipment Location Address:			and Corresponden Check here if same			addrace	
14660 Dixie Highway		220 We	st Main Street				
Street Address Louisville <u>KY</u> 402	72	Street A Louisvi			KY	40202	1377
City State Zip	o Code	City		*****	State	Zip Cod	
Responsible Official Name: Ralph Bo	owling	Contact	Rebec	ca Cash		-	
Responsible Official Title: VP Powe	r Production	Contact	Title: Enviror	nmental E	nginee	r	
Phone: (502)627-4121			(502)627-46				
Fax: (502)627-4030			502)627-255				
E-Mail: Ralph.Bowling@lge-ku	I.com	<sub>E-Mail:</sub> 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) Estimated Start Date: November 2014 Operation					
Modification	Change of Location		Estimated Start I	Date: NOVe	mber 20	014 Ope	ration
Reconstruction	Administrative Change		Actual Start Date		**************************************		
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
			may not constru facility unless (LMAPCD). Plea	a permit has ase complete	been is	sued by the	he District
			application. Inc issuing a permit	omplete appl	ications m	av result in	n denial of
			equipment.	to constituct			or process
Section E: Facility Business Inform What type of business is being conducted at the	ation					1	SIC Code
Electric 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 Pr	roduction			
Print Name: Ralph Bowling	\ \	Date:	619	(11			
Application Tracking #:	Assigned Engineer:	Perm	iit No(s):	Plant ID #:		NAICS C	ode:
Use Only							

Pressure Drop Across Scrubber: 12.0

#### Form: AP-0908

Manufacturer: TBD	ment Information				
Model: TBD					
Serial Number: TBD	)				
		neet for the Scrubber a	nd any Removal Efficie	ency calculations.	
	aminant Informati				
Concentration of	Each Contaminant	in the Waste Gas	Vapor Pressure So	lubility in the Scrubbi	ing Liquor, and
Removal Efficienc		in nie 1, usto 040,	1 apos 11000aro, 50	naonny in the coraco.	ing inquoi, and
		attach additional copic	s of this page as needed	1.	
Contaminant	CAS Number	Concentration in Waste Gas	Vapor Pressure	Solubility in Scrubbing Liquor	Removal Efficiency
SO2		3-3.5 % by Weight	psi at ° F	<ul> <li>Insoluble</li> <li>Slightly Soluble</li> <li>Highly soluble</li> <li>Miscible</li> <li>Not Applicable</li> </ul>	98 %
HCI		% by Weight	psi at ° F	<ul> <li>Insoluble</li> <li>Slightly Soluble</li> <li>Highly soluble</li> <li>Miscible</li> <li>Not Applicable</li> </ul>	98 %
		% by Weight	psi at ° F	<ul> <li>Insoluble</li> <li>Slightly Soluble</li> <li>Highly soluble</li> <li>Miscible</li> <li>Not Applicable</li> </ul>	%
		% by Weight	psi at ° F	<ul> <li>Insoluble</li> <li>Slightly Soluble</li> <li>Highly soluble</li> <li>Miscible</li> <li>Not Applicable</li> </ul>	%
		% by Weight	psi at ° F	<ul> <li>Insoluble</li> <li>Slightly Soluble</li> <li>Highly soluble</li> <li>Miscible</li> <li>Not Applicable</li> </ul>	%
		% by Weight	psi at ° F	<ul> <li>Insoluble</li> <li>Slightly Soluble</li> <li>Highly soluble</li> <li>Miscible</li> <li>Not Applicable</li> </ul>	%
Section I: Gas Stu	eam Information				
Maximum Inlet Vo	lumetric Gas Flow	Rate: 2,026,176	acfm at 350	°F	
	olumetric Gas Flov		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:		- <b>I I Farm</b>	<b></b>
		ŕ				
Section K: Operational Information	)n					
Scrubber Type: 🖌 Spray Tower Packed Bed	lonizi Tray	ng Fower		uidized B her (Spec	ed Scrubber vify):	Venturi
Scrubber Height:	feet					
Scrubber Inside Diameter:	feet			·		
Does the scrubber use <b>packing</b> ?	YES 1	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
	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:		r - Current					
	Co - Cu						
		Specify):	10		,		
Will a mist eliminator be in		YES 1	10				
<i>If YES, complete the followi</i> Describe the mist eliminator							
Describe the mist eliminator	Γ.						
	no. <b>1.</b> militari a contra la contra da segunda d		d siddaaa aa	and a state of the s	Selan Second		
Section L: Stack Informa							
Stack Height Above Grade:	600	feet					
Stack Exit Diameter: 24.0		feet					
(Provide stack dimensions if recta	mgular stad	:k.)					
Is a stack cap present?	YES	<b>N</b> O	****				
Stack Configuration:	Vertic		Iorizor	ital		Downwar	d – Venting
(Check all that apply)		(Specify):	10112.01	L L	<sup>*</sup>		
Stack Exit Gas Temperature		° F	Stac	k Exit Gas	Flo	w Rate: 1	,641,798 ACFM
Chief Exit Gus Temperature	. 100	1		n Din Gus	1 10		
Distance to Nearest Property	y Line:	feet					
Describe nearest obstruction	and the second s						
Height of Nearest Obstruction	on:	feet	Dist	tance to Ne	ares	t Obstruc	tion: feet
Are stack sampling ports p	rovided?	YES N	<u>VO</u>				
Section M: Monitoring a		n Information					
Are there any alarms assoc	and the second se		1	YES	1	NO	
If YES, complete the followi	ng.			······································		J	
If there are more than three ala	rms, attacl		his page	e as needed.			
<b>Operating Parameter</b>	Descri	ibe Alarm Trigger	N	Ionitoring	Dev	ice or	Does the Alarm Initiate
Monitored				Alarm	Тур	e	an Automated Response?
Recycle Pump Amps	> 10 Ar	nne		Visual			YES NO
Recycle I ump Amps	FION	nba		Auditory			Describe:
				Automatic			
				(Remote M	lonit	oring)	
				Other			
Reaction Tank pH	> 4.0 p	Н		Visual			YES NO
				Auditory			Describe:
			1	Automatic	<b>.</b> .	•	
				(Remote M	lonit	oring)	
				Other			
Stack Exit Temperature	100 F <	< T < 170 F		Visual			YES NO
				Auditory			Describe:
				Automatic			
				(Remote M	ionit	oring)	
				Other			

#### Form: AP-0908

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?	<b>V</b> 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/apcd

#### 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: L On-Site L Off-Site
If regeneration is conducted <b>on-site</b> , complete the following information. If it is conducted <b>off site</b> , proceed to Section K
Type of Regeneration: $\Box$ Steam $\Box$ Electric $\Box$ Hot Air $\Box$ 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	% moisture			
Maximum Outlet Volumetric Gas Flow Rate:			acfm at	°F and	l % mo	% moisture		
Design Range of Pressure Drop Across Bed: NA			inches water					
Residence Time:	minutes	3						
Section L: Contaminant In	oformation							
Will heat of adsorption poter	ntially lead to terr	perature exc	ursions?	YES 🗸 N	0			
If YES, describe how tempe	rature excursions	will be hand	led:					
Contaminant	CA	AS Number	1	cent Relative Saturation	Vapor Pressure	Removal Efficiency		
Mercury				%	psi	90 %		
				%	psi	%		
				<u>%</u> %	psi psi	<u>%</u>		
				%	psi	%		
Section M: Stack Informa								
Stack Height Above Grade:	Exits through FGD Sta	ack feet		Diameter:	, , ,	feet		
(Provide stack dimensions if rectangular stack)								
Is a stack cap present?	YES NO	)						
Stack Configuration:       Vertical       Image: Horizontal       Downward – Venting         (Check all that apply)       Other (Specify):       Image: Horizontal       Image: Horizontal								
Stack Exit Gas Temperature: °F Stack Exit Gas Flow Rate: ACFM								
Distance to Nearest Property Describe Nearest Obstruction	Line:	feet						
Height of Nearest Obstruction	n:	feet	Distance t	o Nearest Obstruc	ction:	feet		
Are stack sampling ports pr	ovided? 🗌 YI	ES 🗆 N	6		·····			
Section N: Monitoring an	d Alarm Inform	nation		n <u>e Unite</u> ri				
Are there any alarms associ			YE					
If there are more than three alan Operating Parameter	ms, attach addition Describe Alar			ded. ring Device or	Door the Al	arm Initiate		
Monitored	Describe Atar	m mgger	Al	arm Type	an Automate	ed Response?		
				ry	L YES I Describe:	J NO		
			⊔ Òther	ory natic ote Monitoring)	Describe:	I NO		
			☐ Visual □ Audito	ory	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 Appear On The Permit:						
Louisville Gas & Electric - Mill Creek Generating Station						
Owner's Business Name (only if different fr	om Business Name of Ov	wner/Operator):				
Louisville Gas & Electric		<b>^</b> /				
Section B: Equipment Location		Section C: Permi	it Mailing Addro	288		
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	2	Street Address Louisville		KY	40202 _ 1377	
$\frac{\text{Louisville}}{\text{City}} \qquad \frac{\text{KY}}{\text{State}} \frac{40272}{\text{Zip C}}$		City		KY State	Zip Code	
Responsible Official Name: Ralph Bov	vling	Contact Name: Re	ebecca Cash	14, 49 14 14 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Responsible Official Title: VP Power I	Production	Contact Title: Env	/ironmental E	ngineer		
Phone: (502)627-4121		Phone: (502)627	7-4633			
Fax: (502)627-4030		Fax: (502)627-2550				
<sub>E-Mail:</sub> Ralph.Bowling@lge-ku.o	com	E-Mail: Rebecca.Cash@lge-ku.com				
			******			
Section D: Application Type						
Reason for Submitting Application (Select a	Il that apply):	Date of Cor	nstruction, Modific	ation, Insta	lation or Operation:	
New Construction /Installation	hange of Ownership	(MM/DD/)				
Modification	hange of Location	Estimated Start Date: See baghouse application				
Reconstruction	dministrative Change	Actual Start	t Date:			
Operation		niay not co facility uni (LMAPCD) application.	onstruct, install, r less a permit has ). Please complete Incomplete appli	nodify, or been isst all requeste ications ma	2.03, Section 1, you operate an affected ted by the District d information in this y result in denial of e process or process	
Section E: Facility Business Informati What type of business is being conducted at this	ion equipment location?				I SIC Code	
Electric Services	equipment rocations				49	
Section F: Authorization/Signature The	neby certify that all information	contained herein and info	ormation submitted with	1 this application	on is true and correct.	
Signature of Responsible Official:		Title:				
Print Name	Print Name: Date: Date:					
Print Name: Ralph Bowling	$\mathcal{O}$	Le Le	19/11			
LMARCD Application Tracking #: Use Only	Assigned Engincer:	Permit No(s):	Plant 1D #:		NAICS Code:	

#### Form: AP-1908

Section G: Equipment Information	]				
Manufacturer: TBD					
Model: TBD					
Serial Number: TBD					
Silo Type: 🖌 Tower Silo	Bunker Silo O	ther (Specify):			
Number of Compartments in Silo: 1					
Material Stored in Silo: Powdered Activated Carbon (PAC)					
If there are more than three materials stor	red in the silo, attach ad	lditional copies of this pa			
Material	Materia	al 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 (MSI	DS) for <u>each</u> material st	ored in the silo.			
Silo Storage Capacity: 94	tons				
Silo Loading Method: Pneumatic  Vacuum Hydraulic Other (Specify): Mechanical					
Maximum Rate of Silo Loading:	tons/hour	Maximum Unloadin	ng Rate: tons/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	t prevents overfilling	g? YES	NO		
Is the silo equipped with a system that Describe the overfilling prevention s	-	g? YES	NO		
	-	g? YES	NO		
Describe the overfilling prevention s	/stem:		NO		
Describe the overfilling prevention s	vstem: nonitoring system?		NO		
Describe the overfilling prevention s TBD Is the silo equipped with a silo level of	ystem: nonitoring system?	YES	NO		

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?  YES NO
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: $\square$ HAPs $\square$ TACs $\square$ PM $\square$ PM <sub>10</sub> $\square$ 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 1: Stack Information
Stack Height Above Grade: TBD       feet       Stack Exit Diameter: (Provide stack dimensions if rectangular stack.)       feet
Is a stack cap present? YES NO
Stack Configuration: Vertical Horizontal Downward - Venting
(Check all that apply)
Stack Exit Gas Temperature:     ° 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
Are stack sampling ports provided? YES NO

.
### 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 V NO				
		manufacturer's specification shee	ts.	
If yes, complete the following	n information:			
Pollutants Monitored:	VOC HAPs TAC	$Cs \square PM \square PM_{10} \square$	$NO_x \square SO_2 \square Metals$	
Describe the continuous emis	ssion monitoring system:			
Manufacturer:				
Model:				
Serial Number:				
Will multiple emission 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 Sim	ultaneously:			
	ons Monitoring Information			
Proposed Technique Used to Monitor Visible Emissions:       □ Opacity Monitor (COM)         ✓ Manual (Method 9)       □ Manual (Method 22)         □ Other (Describe):       □ Other (Describe):				
If an opacity monitor (COM)	) is used, complete the following	ng information:		
Describe the continuous opac				
Manufacturer:				
Model:				
Serial Number:				
Proposed Frequency of Opac	ity Monitoring:			
Section L: Monitoring and Alarm Information				
Are there any alarms associated with this silo?				
If there are more than three alarms, attach additional copies of this page as needed.				
<b>Operating Parameter</b>	Describe Alarm Trigger	Monitoring Device or	Does the Alarm Initiate	
Monitored		Alarm Type	an Automated Response?	
		Uisual	YES NO	
		Auditory	Describe:	
		Automatic		
		(Remote Monitoring)		
		Other		
		Visual	YES NO	
		Auditory	Describe:	
		Automatic		
		(Remote Monitoring)		
		Other		
		Other Visual	YES NO	
		Other Visual Auditory	Describe:	
		Other Visual Auditory Automatic	harmond kernend	
		Other Visual Auditory	harmond kronomd	

### 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 Inf	ormation					
Business Name of Owner /Operator T						
Louisville Gas & Electric -	Mill Creek Generating	Station				
Owner's Business Name (only if diffe	erent from Business Name of Ov	wner/Operator):				
Louisville Gas & Electric						
Section B: Equipment Location		Section C: Po				
Equipment Location Address:		Permit and Con	-			11
14660 Dixie Highway		<ul> <li>Check here if same as equipment location address.</li> <li>220 West Main Street</li> </ul>				
Street Address	40272	Street Address			KY	40202 _ 1377
Louisville <u>KY</u> City State	40272 Zip Code	Louisville City			State	Zip Code
			Pohor	rca Caeh	State	ZIP Code
Responsible Official Name: Ralph	Downing	Contact Name:	Treper		-	
Responsible Official Title: VP PO	wer Production	Contact Title:	Enviror	nmental Er	nginee	r
Phone: (502)627-4121		Phone: (502)	)627-46	633		
Fax: (502)627-4030		Fax:				
		E-Mail: Rebecca.Cash@lge-ku.com				
Section D: Application Type	l					
Reason for Submitting Application (S	elect all that apply):	Date o	f Construc	ction, Modifica	tion. Insta	illation or Operation:
New Construction /Installation	Change of Ownership		DD/YYY			
Modification	Change of Location	Estima	ited Start I	Date: See S	ilo Appl	ication
Reconstruction	Administrative Change	Actual	Start Date	e:		
Operation		may n facility (LMA applica	ot constru- unless a PCD). Ple ution. Inc g a permit	uct, install, m a permit has ase complete a complete applie	odify, or been iss Ill request cations m	2.03, Section 1, you operate an affected sued by the District ed information in this ay result in denial of te process or process
Section E: Facility Business Info	irmation					
What type of business is being conducted Electric Services	at this equipment location?					SIC Code 49
Section F: Authorization/Signati	ure I hereby certify that all information	n contained herein a	nd informati	on submitted with	this applica	tion is true and correct.
Signature of Responsible Official:		Title:				
Kalah Bowh		VP Power	Product	tion		
Print Name: Ralph Bowling	K	Date:	e1911	1		
LMAPCD Application Trackin	Assigned Engineer:	Permit 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				
Design Maximum Operating Temperature		nterene and a first alternation to be denoted as a sub-sub-sub-sub-sub-sub-sub-sub-sub-sub-	Mandall (p i terra e razza angelera a permanana angelera ina angelera ina angelera angelera angelera angelera a	
Are temperature controls provided?	YES 🔽 NO	******		
If YES, describe the temperature controls	: <u></u>			
Air Flow Through Baghouse: Ford Indu				
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 II: 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	t of Gas: °F			
pH of Gas Handled:				
Dust Characteristics: Sticky W	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, att				
Contaminant Name	<b>Contaminant CAS Number</b>	Percent of	Removal	
		Waste Gas	Efficiency	
Powdered Activated Carbon		100	99	
	1			
	· · · · · · · · · · · · · · · · · · ·			
	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
Woven       PTFE Membrane       Felted-Woven         Sintered Metal       Other (Specify):       Felted-Woven         Fabric Material: TBD       Maximum Continuous Filter Operating Temperature: TBD       Felted-Woven
Sintered Metal       Other (Specify):         Fabric Material: TBD         Maximum Continuous Filter Operating Temperature: TBD
Fabric Material: TBD       Maximum Continuous Filter Operating Temperature: TBD
Maximum Continuous Filter Operating Temperature: TBD ° F
Clean Fabric Permeability: TBD scfm/ft <sup>2</sup> at $\Delta P$ 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
<ul> <li>Mechanical Shakers</li> <li>Sonic Cleaning</li> <li>Pulse Jet</li> <li>Pneumatic Shakers</li> <li>Reverse Air Flow</li> <li>Other (Specify):</li> </ul>
Pheumatic Shakers Reverse An Flow Other (specify).
Air Pressure: psi
Describe how air is supplied to system:
Describe how filter cleaning is initiated: Annual Pressure Drop
Timer Other (Specify):
Section M: Hopper 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 fee	et	
Stack Exit Diameter:	fee	et	
(Provide stack dimensions if recta	ngular stack.)		
Is a Stack Cap Present?	TYES □ NO		
Stack Configuration:	Vertical	Horizontal Downwar	d – Venting
(Check all that apply)	Other (Specify):		d venting
Stack Exit Gas Temperature:	۴F	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
A		NO	
Arc stack sampling ports pr Section O: Monitoring an		NO	
Are there any alarms associa		YES INO	
If YES, complete the following			
If there are more than three alar	-	f this page as needed.	
Operating Parameter	Describe Alarm Trigg		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	
		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 C	Owner/Operator):	
Louisville Gas & Electric		
Section B: Equipment Location	Section C: Permit Mailing Address	
Equipment Location Address:	Permit and Correspondence information: Check here if same as equipment location address.	
14660 Dixie Highway	220 West Main Street	
Street Address Louisville KY 40272	Street Address Louisville KY 40202 1377	
Louisville         KY         40272           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		
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:	
New Construction /Installation Change of Ownership	(MM/DD/YYYY)	
Modification Change of Location	Estimated Start Date: See Baghouse Application	
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	
	ion contained herein and information submitted with this application is true and correct	
Signature of Besponsible Official	VP Power Production	
Print Name: Ralph Bowling	Date: 69/11	
LMAPCD Application Tracking #: Assigned Engineer:	Permit No(s): Plant ID #: NAJCS Code:	

(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		
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: 40 tons/hour Maximum Unloading Rate: 40 tons/hour				
Is the silo equipped with a pressure-va	cuum relief valv	ve? 🔽 YES 🔲	NO	
If yes, describe the pressure relief valve settings:				
TBD				
Is the silo equipped with a system that	prevents overfilli	ng? YES	NO	
Describe the overfilling prevention sys	tem:			
TBD				
Is the silo equipped with a silo level m	onitoring system	1? YES 🗌	NO	
If YES, Type of Level Indicator:	Point Cor	ntinuous 🗌 Other (S	Specify):	
TBD				
Is the silo equipped with a power/contr	ol panel with a h	igh level indicator?	YES NO	

Page 2 of 5

### Form: AP-1908

Section H: Control Device Information
Is an air pollution control device used? 📝 YES 🔄 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: $\square$ HAPs $\square$ TACs $\square$ PM $\square$ PM <sub>10</sub> $\square$ 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 Exit Diameter: feet
(Provide stack dimensions if rectangular stack.)
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:
Height of Nearest Obstruction: feet Distance to Nearest Obstruction: feet
Arc 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	A subjective of the state of			
	ded by a continuous emission			
	nuous emission monitoring system	manufacturer's specification she	ets.	
If yes, complete the following				
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 Ycs, 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				
	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				
Manufacturer:				
Model:				
Scrial Number:				
Proposed Frequency of Opac	ity Monitoring:			
Section L: Monitoring an				
Are there any alarms associa		YES NO		
	ms, attach additional copies of thi			
<b>Operating Parameter</b>	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 Other		
		Visual	YES NO	
		Auditory	Describe:	
		Automatic		
		(Remote Monitoring)		
		Other		

#### Form: AP-1908

Page 5 of 5

Charles Bills A different Tark and the
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? VES NO
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 Info						
Business Name of Owner /Operator T						
Louisville Gas & Electric -	•	<u> </u>				
Owner's Business Name (only if diffe	rent from Business Name of C	)wner/Op	erator):			
Louisville Gas & Electric						
Section B: Equipment Location			n C: Permit Ma			
Equipment Location Address:			and Corresponden			
14660 Dixie Highway	i		Check here if same est Main Street	as equipment foc	ation addre	88.
Street Address	10070	Street A		k.	V 4(	0202 _ 1377
Louisville <u>KY</u> City State	40272 Zip Code	Louisv City	ille		- Company	ip Code
			Debee		ale Zi	p Code
Responsible Official Name: Ralph	Dowling	Contact	Name: Rebec	ca Cash		
Responsible Official Title: VP Por	wer Production	Contact	Title: Enviror	nmental Eng	ineer	
Phone: (502)627-4121		Phone:	(502)627-46	333		
Fax: (502)627-4030		Fax:				
E-Mail: Ralph.Bowling@lge	-ku.com		Rebecca.C	ash@lge-ku	.com	
			Mantanaphranachanach for an dair g Minister an Ann an Anna an Anna an Anna	anna a guilte a stàiteachta ait fhailseachta a bhaile a stàite a stàite a stàite a stàite a stàite a stàite a s	···· = ····	
Section D: Application Type		l				
Reason for Submitting Application (S	elect all that apply):		Date of Construc	tion, Modification	n, Installatio	on or Operation:
New Construction /Installation	Change of Ownership		(MM/DD/YYY			
Modification	Change of Location		Estimated Start I	Date: See Silo	Applicati	on
Reconstruction	Administrative Change		Actual Start Date	2.		
Operation			may not constru facility unless a (LMAPCD). Ple application. Inc	ith District regul act, install, modi a permit has be ase complete all re omplete application to construct and	fy, or open en issued equested in ons may re	rate an affected by the District formation in this sult in denial of
Section E: Facility Business Info						SIC Code
What type of business is being conducted Electric Services	at this equipment location?					49
Section F: Authorization/Signati	IFC I bereby certify that all informati	ດາງ ຄອກໃຈເບັດ	d herein and informatio	on submitted with this	application is	l
Signature of Responsible Official	•	Title:			<u></u>	
Kalsh Bowh		VP	Power Product	ion		
Print Name: Ralph Bowling	X	Date:	Le[9/1	1		
LMARCD Application Trackin	g #: Assigned Engineer:	Perm	it No(s):	Plant ID #:	NAI	ICS Code:

### Form: AP-0808

Section G: Equipment Information					
Manufacturer: TBD					
Model: TBD					
Serial Number:					
Is the baghouse insulated?  YES	] NO				
Design Minimum Operating Temperature:					
Design Maximum Operating Temperature					
Are temperature controls provided?	YES V NO				
If YES, describe the temperature controls:		······································			
Air Flow Through Baghouse: ✓ Forc Induce Othe					
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: acfm at feet					
Maximum Outlet Volumetric Gas Flow Rate: acfin at feet					
Dew Point at maximum Moisture Content of Gas: °F					
pH of Gas Handled:		an the first of the second			
Dust Characteristics: Sticky We	t Corrosive 🖌 Dry 🗌 Oth	er(Specify):			
Dust Characteristics. Sticky	t L Corrosive [✓] Dry Dth	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					
Contaminant Name	Contaminant CAS Number	Percent of Waste Gas	Removal Efficiency		
Calcium Hydroxide	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 <sup>2</sup> at $\Delta P$ 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				
Pneumatic Shakers Reverse Air Flow Other (Specify):				
Air Pressure: <b>psi</b>				
Describe how air is supplied to system:				
Describe how filter cleaning is initiated: Manual Pressure Drop				
Timer Other (Specify):				
Section M: Hopper Information				
Is the hopper heated? YES VO				
Is there a hopper vibrator? YES V NO				
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

Baghouse
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Page 4 of 5

Stack Height Above Grade:       TED       feet         Stack Exit Diameter:       feet         (Provide stack dimensions if rectangular stack.)       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         Distance to 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?       YES       NO       Joes the Alarm Initiate and Alarm Trigger         Monitored       Describe Alarm Trigger       Monitoring Device or Automated Response?       Does the Alarm Initiate and Automated Response?         Monitored       Usual       YES       NO       Describe:       NO         Describe       Auditory       Describe:       NO       Describe:       NO         Operating Parameter       Describe Alarm Trigger       Monitoring       Visual       YES       NO         Other <th>Section N: Stack Informa</th> <th>tion</th> <th></th> <th></th>	Section N: Stack Informa	tion			
(Provide stack dimensions (freetangular stack)         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       Exercise 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 stack sampling ports provided?       YES       NO       Section O:       Does the Alarm Initiate         Operating Parameter       Describe Alarm Trigger       Monitoring Device or Alarm Type       Does the Alarm Initiate         Monitored       Image: Second Context of C	Stack Height Above Grade:	TBD fect			
Is a Stack Cap Present?       YES       NO         Stack Configuration:       Vertical       Image: 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 there any alarms associated with this baghouse?       YES       NO         Jf YES, complete the following.       If there are more than three alarms, attach additional copies of this page as needed.       Does the Alarm Initiate an Automated Response?         Operating Parameter       Describe Alarm Trigger       Monitoring Device or Audomated Response?       Does the Alarm Initiate an Automated Response?         Monitored       Quistual       YES       NO       Describe:       NO         Quistual       Quistual       YES       NO       Describe:       NO         Quistual       Quistual       YES       NO       Describe:       NO         Quistual       Quistual       Quistual       YES       NO       Describe:       NO					
Stack Configuration:       Vertical       Horizontal       Downward – Venting         (Check all that apply)       Other (Specify).       Stack Exit Gas Flow Rate:       ACFM         Stack Exit Gas Temperature:       "F       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?       YES       NO       Jesseribe Alarm Initiate an Automated Response?         If there are more than three alarms, attach additional copies of this page as needed.       Does the Alarm Initiate an Automated Response?         Visual       Quescribe:       Auditory       Qescribe:       NO         Auditory       Quescribe:       Auditory       Describe:       NO         Quescribe:       Auditory       Qescribe:       NO       Describe:       NO         Operating Parameter       Visual       YES       NO       Describe:       NO       Describe:       NO         Other       Other       Visual       YES       NO       Descri	(Provide stack dimensions if recta	ngular stack.)			
Stack Configuration:       Vertical       Horizontal       Downward – Venting         (Check all that apply)       Other (Specify).       Stack Exit Gas Flow Rate:       ACFM         Stack Exit Gas Temperature:       "F       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?       YES       NO       Jesseribe Alarm Initiate an Automated Response?         If there are more than three alarms, attach additional copies of this page as needed.       Does the Alarm Initiate an Automated Response?         Visual       Quescribe:       Auditory       Qescribe:       NO         Auditory       Quescribe:       Auditory       Describe:       NO         Quescribe:       Auditory       Qescribe:       NO       Describe:       NO         Operating Parameter       Visual       YES       NO       Describe:       NO       Describe:       NO         Other       Other       Visual       YES       NO       Descri					
Stack Configuration:       Vertical       Horizontal       Downward – Venting         (Check all that apply)       Other (Specify).       Stack Exit Gas Flow Rate:       ACFM         Stack Exit Gas Temperature:       "F       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?       YES       NO       Jesseribe Alarm Initiate an Automated Response?         If there are more than three alarms, attach additional copies of this page as needed.       Does the Alarm Initiate an Automated Response?         Visual       Quescribe:       Auditory       Qescribe:       NO         Auditory       Quescribe:       Auditory       Describe:       NO         Quescribe:       Auditory       Qescribe:       NO       Describe:       NO         Operating Parameter       Visual       YES       NO       Describe:       NO       Describe:       NO         Other       Other       Visual       YES       NO       Descri					
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         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?       YES       NO       Jesseribe Alarm Initiate an Automated Response?         If there are more than three alarms, attach additional copies of this page as needed.       Does the Alarm Initiate an Automated Response?         Operating Parameter       Describe Alarm Trigger       Monitoring Device or Alarm Initiate an Automated Response?       YES         Monitored       Visual       YES       NO         Auditory       Oescribe:       NO       Describe:       NO         Auditory       YES       NO       Describe:       NO       Describe:       NO         Opticating Parameter       Visual       YES       NO       Describe:       NO       Describe:       NO         Other       Visual	Is a Stack Cap Present?	TYES TNO			
(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         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?       YES       NO       J       J         If there are more than three alarms, attach additional copies of this page as needed.       Does the Alarm Initiate an Automated Response?       Monitoring         Operating Parameter       Describe Alarm Trigger       Monitoring       Other       Describe:       NO         Auditory       Auditory       Describe:       Auditory       Describe:       NO         Other       Visual       YES       NO       Describe:       NO         Automatic       (Remote Monitoring)       Other       Describe:       NO         Other       Visual       YES       NO       Describe:       NO         Auditory       Careet Monitoring)       Other       NO       Describe:       NO         Other </td <td>-</td> <th>□ Vertical □ ŀ</th> <td>Iorizontal Downwar</td> <td>d – Venting</td>	-	□ Vertical □ ŀ	Iorizontal Downwar	d – Venting	
Distance to Nearest Property Line:       feet         Describe nearest obstruction:       feet         Height of Nearest Obstruction:       feet         Are stack sampling ports provided?       YES         YES       NO         Section O:       Monitoring and Alarm Information         Are there any alarms associated with this baghouse?       YES         If there are more than three alarms, attach additional copies of this page as needed.       Does the Alarm Initiate an Automated Response?         Operating Parameter       Describe Alarm Trigger       Monitoring Device or Alarm Type       Does the Alarm Initiate (Remote Monitoring)         Other       Visual       YES       NO         Describe:       Auditory       Describe:       NO         Auditory       Other       Visual       YES       NO         Auditory       Other       Visual       YES       NO         Other       Visual       YES       NO       Describe:         Automatic       Remote Monitoring)       Other       NO       Describe:       NO         Dother       Visual       YES       NO       Describe:       NO       Describe:       NO         Other       Visual       YES       NO       Describe:       NO </td <td>-</td> <th></th> <td></td> <td></td>	-				
Distance to Nearest Property Line:       feet         Describe nearest obstruction:       feet         Height of Nearest Obstruction:       feet         Are stack sampling ports provided?       YES         YES       NO         Section O:       Monitoring and Alarm Information         Are stack sampling ports provided?       YES         If there any alarms associated with this baghouse?       YES         If there are more than three alarms, attach additional copies of this page as needed.       Does the Alarm Initiate an Automated Response?         Operating Parameter       Describe Alarm Trigger       Monitoring Device or Alarm Type       Does the Alarm Initiate an Automated Response?         Wisual       YES       NO         Auditory       Describe:       NO         Other       Visual       YES       NO         Auditory       Describe:       NO       Auditory         Auditory       Describe:       NO       NO         Auditory       Describe:       NO       NO         Other       Visual       YES       NO         Other       Visual       YES       NO         Other       NO       Automatic       NO         Automatic       Remote Monitoring)       NO <td></td> <th>0.75</th> <td></td> <td></td>		0.75			
Describe nearest obstruction:       feet         Height of Nearest Obstruction:       feet         Are stack sampling ports provided?       YES         YES       NO         Section O:       Monitoring and Alarm Information         Are there any alarms associated with this baghouse?       YES         If 'PES, complete the following.       If there are more than three alarms, attach additional copies of this page as needed.         Operating Parameter       Describe Alarm Trigger       Monitoring Device or Alarm Trype       an Automated Response?         Monitored       Visual       YES       NO         Auditory       Describe:       Automatic (Remote Monitoring)       Other         Visual       YES       NO       Describe:       NO         Auditory       Other       Describe:       NO         Auditory       Other       Describe:       NO         Automatic       (Remote Monitoring)       Other       Describe:         Automatic       Quantity       YES       NO         Describe:       Automatic       NO       Describe:         Automatic       (Remote Monitoring)       Other       NO         Describe:       Automatic       NO       Describe:	Stack Exit Gas Temperature	E F	Stack Exit Gas Flow Rate:	ACFM	
Describe nearest obstruction:       feet         Height of Nearest Obstruction:       feet         Are stack sampling ports provided?       YES         YES       NO         Section O:       Monitoring and Alarm Information         Are there any alarms associated with this baghouse?       YES         If 'PES, complete the following.       If there are more than three alarms, attach additional copies of this page as needed.         Operating Parameter       Describe Alarm Trigger       Monitoring Device or Alarm Trype       an Automated Response?         Monitored       Visual       YES       NO         Auditory       Describe:       Automatic (Remote Monitoring)       Other         Visual       YES       NO       Describe:       NO         Auditory       Other       Describe:       NO         Auditory       Other       Describe:       NO         Automatic       (Remote Monitoring)       Other       Describe:         Automatic       Quantity       YES       NO         Describe:       Automatic       NO       Describe:         Automatic       (Remote Monitoring)       Other       NO         Describe:       Automatic       NO       Describe:					
Height of 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?       YES       NO       If YES, complete the following.         If there are more than three alarms, attach additional copies of this page as needed.       Does the Alarm Initiate an Automated Response?         Operating Parameter Monitored       Describe Alarm Trigger       Monitoring Device or Alarm Type       Does the Alarm Initiate an Automated Response?         If visual       YES       NO       Describe:       NO         Auditory       Other       Describe:       NO         Auditory       Other       Visual       YES       NO         Describe:       Auditory       Describe:       NO       Describe:         Auditory       Other       Other       Describe:       NO         Other       Visual       YES       NO       Describe:         Auditory       Other       NO       Describe:       NO         Auditory       Other       Visual       YES       NO         Auditory       Auditory       Describe:       NO         Auditory					
Are stack sampling ports provided?       YES       NO         Section O: Monitoring and Alarm Information       Are there any alarms associated with this baghouse?       YES       NO         Are there any alarms associated with this baghouse?       YES       NO       Visual       Does the Alarm Initiate an Automated Response?         If there are more than three alarms, attach additional copies of this page as needed.       Does the Alarm Initiate an Automated Response?         Operating Parameter Monitored       Describe Alarm Trigger       Monitoring Device or Alarm Type       Does the Alarm Initiate an Automated Response?         Monitored       Image: Visual       Image: YES       Image: NO         Auditory       Describe:       Image: NO       Describe:         Automatic       (Remote Monitoring)       Image: Other       Image: NO         Image: Auditory       Image: Image: Auditory       Describe:       Image: Image: Image: Auditory         Image: Auditory       Image: Imag		-		-	
Section O: Monitoring and Alarm Information         Are there any alarms associated with this baghouse?       YES       NO         If YES, complete the following.       If there are more than three alarms, attach additional copies of this page as needed.       Does the Alarm Initiate an Automated Response?         Operating Parameter Monitored       Describe Alarm Trigger       Monitoring Device or Alarm Type       Does the Alarm Initiate an Automated Response?         Visual       YES       NO         Auditory       Describe:       Automatic (Remote Monitoring)         Other       Visual       YES       NO         Auditory       Describe:       NO       NO         Auditory       Oescribe:       NO       NO         Auditory       Other       Describe:       NO         Auditory       Describe:       NO       NO         Auditory       Describe:       NO       NO         Auditory       Describe:       NO       NO         Other       Visual       YES       NO         Other       Visual       YES       NO         Automatic       Remote Monitoring)       Other       NO         Auditory       Describe:       NO       Auditory       Describe:         Auditor	Height of Nearest Obstruction	on: feet	Distance to Nearest Obstruc	tion: feet	
Section O: Monitoring and Alarm Information         Are there any alarms associated with this baghouse?       YES       NO         If YES, complete the following.       If there are more than three alarms, attach additional copies of this page as needed.       Does the Alarm Initiate an Automated Response?         Operating Parameter Monitored       Describe Alarm Trigger       Monitoring Device or Alarm Type       Does the Alarm Initiate an Automated Response?         Visual       YES       NO         Auditory       Describe:       Automatic (Remote Monitoring)         Other       Visual       YES       NO         Auditory       Describe:       NO       NO         Auditory       Oescribe:       NO       NO         Auditory       Other       Describe:       NO         Auditory       Describe:       NO       NO         Auditory       Describe:       NO       NO         Auditory       Describe:       NO       NO         Other       Visual       YES       NO         Other       Visual       YES       NO         Automatic       Remote Monitoring)       Other       NO         Auditory       Describe:       NO       Auditory       Describe:         Auditor					
Section O: Monitoring and Alarm Information         Are there any alarms associated with this baghouse?       YES       NO         If YES, complete the following.       If there are more than three alarms, attach additional copies of this page as needed.       Does the Alarm Initiate an Automated Response?         Operating Parameter Monitored       Describe Alarm Trigger       Monitoring Device or Alarm Type       Does the Alarm Initiate an Automated Response?         Wisual       YES       NO         Auditory       Describe:       NO         Automatic       (Remote Monitoring)       Does the Alarm Initiate an Automated Response?         Visual       YES       NO         Auditory       Describe:       NO         Automatic       (Remote Monitoring)       NO         Auditory       Describe:       NO         Auditory       Describe:       NO         Auditory       Describe:       NO         Auditory       Describe:       NO         Other       Visual       YES       NO         Other       Visual       YES       NO         Automatic       (Remote Monitoring)       NO       Auditory         Other       Auditory       Describe:       NO         Auditory       YES	Are stack sampling ports pr	ovided? 🗌 YES 🗌 N	10		
If YES, complete the following.         If there are more than three alarms, attach additional copies of this page as needed.         Operating Parameter Monitored       Describe Alarm Trigger       Monitoring Device or Alarm Type       Does the Alarm Initiate an Automated Response?         U Visual       YES       NO         Auditory       Describe:       Automatic (Remote Monitoring)       Describe:         Visual       YES       NO         Auditory       Describe:       NO         Automatic       Visual       YES       NO         Auditory       Describe:       NO       Describe:       NO         Auditory       Other       Describe:       NO       Describe:       NO         Auditory       Other       Other       Describe:       NO       Describe:       NO         Other       Other       Other       NO       Describe:       NO       Describe:       NO         Other       Visual       YES       NO       Describe:       NO       Describe:       NO         Auditory       Auditory       YES       NO       Describe:       NO       Describe:       NO					
If there are more than three alarms, attach additional copies of this page as needed.         Operating Parameter Monitored       Describe Alarm Trigger       Monitoring Device or Alarm Type       Does the Alarm Initiate an Automated Response?         I       Visual       I       YES       NO         Auditory       Describe:       Automatic (Remote Monitoring)       Describe:       NO         Other       Other       Visual       YES       NO         Auditory       Describe:       NO       Describe:       NO         Other       Other       NO       Describe:       NO         Other       Other       Describe:       NO         Auditory       Describe:       NO       Describe:       NO         Auditory       Other       Describe:       NO       Describe:       NO         Other       Other       Visual       YES       NO         Other       NO       Auditory       Describe:       NO         Auditory       Auditory       Describe:       NO         Auditory       Auditory       Describe:       NO         Auditory       Cescribe:       NO       Describe:	Are there any alarms associated with this baghouse?  YES  NO				
Operating Parameter Monitored       Describe Alarm Trigger       Monitoring Device or Alarm Type       Does the Alarm Initiate an Automated Response?         U Visual       YES       NO         Auditory       Describe:       Automatic (Remote Monitoring)       Describe:         Other       Visual       YES       NO         Auditory       Describe:       NO         Auditory       Describe:       NO         Other       Visual       YES         Auditory       Describe:       NO         Automatic       (Remote Monitoring)       Describe:         Visual       YES       NO         Auditory       Describe:       NO	If YES, complete the followir	ıg.			
Monitored       Alarm Type       an Automated Response?         I       Visual       YES       NO         Auditory       Describe:       Automatic       Describe:         Automatic       (Remote Monitoring)       Other       Image: Visual       Image: VES       NO         Auditory       Other       Image: Visual       Image: VES       NO       Describe:       Image: VES       NO         Auditory       Image: Visual       Image: VES       NO       Describe:       Image: VES       NO         Auditory       Image: VES       Image: VES       NO       Describe:       Image: VES       <					
Image: Section of the section of th		Describe Alarm Trigger			
Auditory       Describe:         Automatic       (Remote Monitoring)         Other       Other         Visual       YES         Automatic       (Remote Monitoring)         Auditory       Describe:         Auditory       Describe:         Automatic       (Remote Monitoring)         Other       Other         Automatic       (Remote Monitoring)         Other       Other         Visual       YES         Other       NO         Auditory       Describe:         Auditory       Describe:         Auditory       Describe:         Auditory       Describe:         Auditory       Describe:         Auditory       Describe:         Automatic       (Remote Monitoring)         Automatic       (Remote Monitoring)	Monitored				
Automatic         (Remote Monitoring)         Other         Visual         Auditory         Automatic         (Remote Monitoring)         Automatic         (Remote Monitoring)         Other         Visual         Visual         Visual         Visual         Other         Visual         Other					
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Other         Visual       YES         Auditory       Describe:         Automatic       (Remote Monitoring)         Other       Other         Visual       YES         Visual       YES         Other       Other         Visual       YES         Auditory       Describe:         Auditory       Describe:         Auditory       Describe:         Automatic       Remote Monitoring)					
Image: Second state of the					
Auditory Describe: Automatic (Remote Monitoring) Other Visual YES NO Auditory Describe: Auditory Describe:	······				
Automatic (Remote Monitoring) Other Visual Auditory Auditory Automatic (Remote Monitoring)					
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Other         Visual         Auditory         Auditory         Automatic         (Remote Monitoring)					
Image: Constraint of the second system     I					
Auditory Describe: Automatic (Remote Monitoring)				T YES T NO	
Automatic (Remote Monitoring)					
(Remote Monitoring)				200100,	
			☐ Other		

#### 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? 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 F	ermit:			
Louisville Gas & Electric - Mill Creek Generating Station				
Owner's Business Name (only if different from Business	Name of Owner/0	Operator):		
Louisville Gas & Electric				
Section B: Equipment Location	Secti	on C: Permit Ma	ailing Address	
Equipment Location Address:		it and Corresponden Check here if same		at a state of the second
14660 Dixie Highway		Vest Main Street	e as equipment loca	ation address.
Street Address Louisville KY 40272	Stree	Address wille	ĸ	Y 40202 1377
Louisville         KY         40272           City         State         Zip Code	City		Sta	Y 40202 1377 ate Zip Code
Responsible Official Name: Ralph Bowling	Conta	act Name: Rebea	ca Cash	
Responsible Official Title: VP Power Production	on Conta	et Title: Enviro	nmental Engi	ineer
Phone: (502)627-4121		. (502)627-46		
Fax: (502)627-4030		(502)627-255		
E-Mail: Ralph.Bowling@lge-ku.com	E-Ma	il: <u>Rebecca.C</u>	ash@lge-ku	.com
Section D: Application Type				
Reason for Submitting Application (Select all that apply)	:	Date of Construc	tion, Modification	n, Installation or Operation:
New Construction /Installation Change of Ow	*	(MM/DD/YYY	·	A
Modification Change of Los		Estimated Start I	Date: Fall 201	4
Reconstruction Administrative	e Change	Actual Start Date	e:	
Operation		may not constr facility unless (LMAPCD). Ple application. Inc	uct, install, modil a permit has bee ase complete all re complete application	ations 2.03, Section 1, you fy, or operate an affected en issued by the District equested information in this ons may result in denial of operate process or process
Section E: Facility Business Information What type of business is being conducted at this equipment loc	ation?			SIC Code
Electric Services				49
Section F: Authorization/Signature I hereby certify that	t all information conta	ined herein and informati	on submitted with this	application is true and correct.
Signature of Responsible Official:	Tit	e: VP Power P	roduction	
Print Name	Da	· ·		
Print Name: Ralph Bowling		691	11	
LMAPCD Application Tracking #: Assigned Er	igineer: Per	mit 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				
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:  Pncumatic  Vacuum Hydraulic Other (Specify): Mechanical				
Maximum Rate of Silo Loading: 79.5 tons/hour Maximum Unloading Rate: 79.5 tons/hour				
Is the silo equipped with a pressure-vacuum relief valve? VES NO				
If yes, describe the pressure relief valve settings:				
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?				

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#### Form: AP-1908

Page 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.	
	✓ NO
If yes, attach a copy of the control device manufacturer's specific	
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.)
Is a stack cap present? YES NO	
	orizontal Downward - Venting
(Check all that apply) Other (Specify): Stack Exit Gas Temperature: ° F	Stack Exit Gas Flow Rate: ACFM
Stack Exit Gas Temperature: ° F	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		
	ded by a continuous emission		
If yes, attach a copy of the contin	nuous emission monitoring system	manufacturer's specification shee	ts.
If yes, complete the following			
Pollutants Monitored:	VOC HAPs TAC	S PM PM <sub>10</sub>	$NO_x \square SO_2 \square Metals$
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			
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	PM)
		Manual (Method 9)	
		✓ Manual (Method 22)	
		Other (Describe):	
	) is used, complete the following	ng information:	
Describe the continuous opa	city monitoring system:		
Manufacturer:			
Model:			
Serial Number:			
Proposed Frequency of Opac			
Section L: Monitoring an			
Are there any alarms associ	ated with this silo?	YES NO	
	rms, attach additional copies of thi	s page as needed.	Does the Alarm Initiate
Operating Parameter	Describe Alarm Trigger	Monitoring Device or	an Automated Response?
Monitored		Alarm Type	YES NO
Opacity	Method 9 or other visual	Auditory	Describe:
	inspection method	Automatic	Describe.
		(Remote Monitoring)	
		Other	
		Visual	YES NO
Throughput	Monthly throughput	Auditory	Describe:
	records	Automatic	Deserved.
	]	(Remote Monitoring)	
		Other	
			YES NO
		Auditory	Describe:
		Automatic	
		11 1	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

Application For Permit To Construct, Reconstruct, Install, 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         Permit and Correspondence information:         Otheck here if same as equipment location address.         20 West Main Street         Street Address         Louisville       KY         Gity       KY       40272       Contact Name:         Responsible Official Name:       Relph Bowling         Contact Title:       Provironmental Engineer	177
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.         Street Address       Street Address         Louisville       KY         City       State         Responsible Official Name:       Ralph Bowling	
Louisville Gas & Electric         Section B: Equipment Location         Equipment Location Address:       Permit and Correspondence information:         14660 Dixie Highway       Check here if same as equipment location address.         Street Address       Street Address         Louisville       KY       40272         City       State       Zip Code         Responsible Official Name:       Ralph Bowling       Contact Name:       Rebecca Cash	77
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.         Street Address       Street Address         Louisville       KY         City       State         Responsible Official Name:       Ralph Bowling	177
Equipment Location Address:       Permit and Correspondence information:         14660 Dixie Highway       Check here if same as equipment location address.         Street Address       220 West Main Street         Louisville       KY       40272         City       State       Zip Code         Responsible Official Name:       Ralph Bowling       Contact Name:	177
14660 Dixie Highway       Image: Street Address         Street Address       Image: Street Address         Louisville       Image: Street Address         City       State         Responsible Official Name:       Ralph Bowling	177
14660 Dixle Highway       220 West Main Street         Street Address       Street Address         Louisville       KY       40272         City       State       Zip Code         Responsible Official Name:       Ralph Bowling       Contact Name:	177
LouisvilleKY40272LouisvilleKY4020213CityStateZip CodeCityStateZip Code2ip CodeResponsible Official Name:Ralph BowlingContact Name:Rebecca Cash13	177
City     State     Zip Code     City     State     Zip Code       Responsible Official Name:     Ralph Bowling     Contact Name:     Rebecca Cash     Zip Code	
Responsible Official Name: Ralph Bowling Contact Name: Rebecca Cash	
VP Power Production Environmental Engineer	
Responsible Official Title: Contact Title:	and the second
Phone: (502)627-4121 Phone: (502)627-4633	
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 Opera	tion:
Image: New Construction /Installation       Change of Ownership       (MM/DD/YYYY)         Image: Observe of the American Structure       Change of Ownership       (MM/DD/YYYY)	
Modification       Change of Location       Estimated Start Date:       See Silo Application	
Reconstruction   Administrative Change   Actual Start Date:	
Operation In accordance with District regulations 2.03, Section I may not construct, install, modify, or operate an af	, you
facility unless a permit has been issued by the D	istrict
(LMÁPCD). Please complete all requested information i application. Incomplete applications may result in der	ial of
issuing a permit to construct and operate process or pre- equipment.	ocess
Section E: Facility Business Information	
What type of business is being conducted at this equipment location? SIC C	ode
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 Offigial:	cí.
VP Power Production	
Print Name: Ralph Bowling Date:	
LMANECID         Application Tracking #:         Assigned Engincer:         Permit No(s):         Plant 1D #:         NAICS Code:           Use Only         Only         Application Tracking #:         Assigned Engincer:         Permit No(s):         Plant 1D #:         NAICS Code:	

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

#### 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

	• parama		
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:	۴F		
pH of Gas Handled:			
Dust Characteristics: Sticky Wet	Corrosive 🖌 Dry	Other(Specify):	

		soft mentionen wersenen verscheiden				
Section J: C	Contaminant	Informat	ion			

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:			
	] NO		
Design Minimum Operating Temperature:			
Design Maximum Operating Temperature		n	······································
Are temperature controls provided?			
If YES, describe the temperature controls:			
Air Flow Through Baghouse: □ Force	ad		
□ Induc			
	r Specify:		
	speeny.		
		Tree	
Direction of Flow Through Filters:	Inside Out		
	Outside In		
	/		
Particulate Removal Efficiency: % Attach the manufacturer's specification sheet for the		a and basis of datarmin	ation
Section H: Compartment Information	Dagnouse and particle size removal enriency curv	e and basis of determin	
Number of Compartments:			
Number of Filters (Bags) Per Compartmen	ıt:		
Can the Compartments be Isolated for Rep		<u></u>	
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	**************************************	
pH of Gas Handled:		Managan da m	
Dust Characteristics: 🗆 Sticky 🛛 We	t 🗆 Corrosive 🗖 Dry 🗇 Othe	er(Specify):	
	-		
Section J: Contaminant Information			
Percent of Each Contaminant in the Waste	Gas and Removal Efficiency		
If more than five contaminants are present, atta			
Contaminant Name	Contaminant CAS Number	Percent of	Removal
Solitainan I (ante		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

### Form: AP-0808

Baghouse

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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 <sup>2</sup> at $\Delta P$ 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: Annual Cleaning Bag Collapse Reverse Air Jet
☐ Mechanical Shakers ☐ Sonic Cleaning ✓ Pulse Jet ☐ Pneumatic Shakers ☐ Reverse Air Flow ☐ Other (Specify):
Pneumatic Shakers Reverse Air Flow Other (Specify):
Air Pressure: psi
Describe how air is supplied to system:
Describe how filter cleaning is initiated:
Describe how filter cleaning is initiated:   Imanual   Imanual   Pressure Drop     Image: Timer   Image: Other (Specify):
Timer Other (Specify):
Timer Other (Specify): Section M: Hopper Information
□ Timer       □ Other (Specify);         Section M: Hopper Information         Is the hopper heated?       □ YES ✓ NO
□ Timer       □ Other (Specify);         Section M: Hopper Information         Is the hopper heated?       □ YES ☑ NO
□ 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:
□ Timer       □ Other (Specify):         Section M: Hopper Information         Is the hopper heated?       □ YES ☑ NO         Is there a hopper vibrator?       □ YES ☑ NO
□ 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:         Fly ash is either mixed with scrubber waste to form gypsum that is transferred off-site for beneficial reuse,
□ 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:         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 cement or other related
□ 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:         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 cement or other related

### Form: AP-0808

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112	ag	nn	226	1.1
12.7	61 Z.	шU	11.3	2
1	-		12.2.2	

Page	4	of	5
~ ~ <del>• • • •</del> •	•	~.	~

Section N: Stack Information	tion			
Stack Height Above Grade:	TBD	feet		
Stack Exit Diameter:		feet		
(Provide stack dimensions if rectai	ıgular stack.)			
La Staal: Can Propert?	YES NO			
Is a Stack Cap Present?			rizontal 🗌 Downwar	d – Venting
Stack Configuration:	Vertical [] Vertical [] Other (Specify):			u – venting
	_ Other (Speeny).			
Stack Exit Gas Temperature:	°F		Stack Exit Gas Flow Rate:	ACFM
		:		
Distance to Nearest Property	Line: feet	 +		
Describe nearest obstruction				
Height of Nearest Obstructio		:	Distance to Nearest Obstruc	tion: feet
Are stack sampling ports pr		D NC	)	
Section O: Monitoring an				
Are there any alarms associa		?	□ YES ☑ NO	
If YES, complete the following				
If there are more than three alar		· · · · · · · · · · · · · · · · · · ·		
Operating Parameter	Describe Alarm Tri	gger	Monitoring Device or	Does the Alarm Initiate
Monitored			Alarm Type	an Automated Response? ☐ YES ☐ NO
				Describe:
			Auditory	Describe.
			Automatic	
			(Remote Monitoring)	
			Other	
			Visual	YES NO
			Auditory	Describe:
			Automatic	
			(Remote Monitoring)	
			Other	
			🗌 Visual	YES NO
			Auditory	Describe:
			Automatic	
			(Remote Monitoring)	
			Other	

Baghouse

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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 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 <sub>2.5</sub>	$SO_2$	$H_2SO_4$	CO2 <sub>e</sub>	Mercury
Baseline			<b></b>				
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.	Future Projec	ted Potential	to Emit Total	ls (tons)		
	PM	$PM_{10}$	PM <sub>2.5</sub>	SO2	$H_2SO_4$	CO2 <sub>e</sub>	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 Act	ual to Future	Projected Ac	tual Emission	Increase (tons	)	
	PM	PM10	PM <sub>2.5</sub>	SO <sub>2</sub>	H <sub>2</sub> SO <sub>4</sub>	CO2 <sub>e</sub>	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	angeneren janzinaan änn for in
Net Out?	Yes	Yes	Yes	Yes	Yes	Yes	

#### Table C-1. Summary of Project Emissions Increases

Potential-tn-Emit
Pollutants
Criteria
Combustion
Ceal
3
able

Doctorical	Controlled		Emissions	(tons)	£.w	54.3	80.0X	16.7	296.2
APPENDED AND ADDRESS AND ADDRESS ADDRES		Annual Emission Uncontrolled	Emissions	(tons)	S47.7	847.7	1,155.2	1,380.8	4,231.4
APPECT		Emission	Factor	(lh/ton)	1.33	1.33	1.33	1.33	
	Controlted	Annual	Emissions	(tots)	1100	0.022	10203	0.035	0.1079
trun nor			Emissions 1	(tens)	0.216	0.216	502.0	0.352	1.079
B			Factor E	(Ib/AEMBtu)	1.60E-05	20:505-05	50-3091	60E-05	
	-				-			_	07
Han .	2		s   Emissions	(tons)	6 1 132.6	6 1 132.6	1 180.7	8 216.0	i0   662.0
A lighted to 65 similarities Mass anals		-	Emissions	(tens)	39,007.206	39,007.206	53,156.011	63.536.858	194,707,280
an Gifa		Emission	Factor	(Ih/ton)	61.20	61.20	61.20	61.20	
nuiter (a'Mhit		Annud	Emissions	(tens)	13d.0	154.0	251.6	3(4).7	921.6
R Febrer Ress multifice Mir- zyan		Emission Uncontrolled	Emissions	(tans)	6rt ruc'rs	54,304,149	\$05'100'fr.	88,453,274	271,063,077
an a		Emission	Factor	(lb/ton)	85.20	112,23	85.20	K5.20	
ima)	Controlled	Amual	Emissions	(tenst	260.0	1 (1097	17150	9227	1.295.0
VERTABLE		Uncontrolled	Emissions	(tons)	76,484,717	76,484.717	HM,227.472	124.582.075	381.778.981
A.		Emission 1	Factor	(Ih/ton)	120,0(X)	120,000	120.000	120,000	
	Contraded	Anneal	Emissions	(tines)	1,695.4	1,213,4	1.040.4	2,761,6	S.462.8
all and deals		Emission Uncontrolled	Emissions	(tons)	84,771	84,771	015,511	1,38,078	423,138,371
		Emission	Factor	(Ih/ton)	133	133	133	133	
			<b>Control</b> tent	ANNUAR -	1 (100-1-07)	27,024,600	36,827,040	44,019,00,44	134,895.240
			Contraction and the	(hun)	1.274,745	1.274,745	1,737,125	2,076,368	6.362.983
		T. Mar	100161	The The The	Una 1	Uan 2	Und 3	Uni-4	Total

Table C-3. FGD CO<sub>2</sub> 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

coal (tonlyr)	1,274,745.28	1.274,745.28	1,737,124.53	2.076.367.92	
Projected Heat Input (MMBhu/hr)	3,085	3,085	4,204	5.025	
Qmi	MCI	MC2	MC3	MC4	

Net CO2 Emissions Increase	(ttous/k/n)						46,545.22	33,286.57	32,561.26	31,671.31	30,406.34	31,083.18
Total CO2 Emissions from	INGED (COLEVAR)						570,178.95	407.760.49	398,875.43	387.973.54	372,477.68	380,769.00
Increased Limestone Throughput	(trug/gru))						105,784.6	75,651.3	74,002.9	71,980.2	69,105.3	70,643.6
Total Linnestone Throughput	(CONS/ND)						1,295,861.26	926.728.40	906.535.07	881,758.04	846,540.17	865.384.08
Net SO2 Removed	(a)/su(0))						33,851.1	24,208.4	23.680.9	23.033.7	22.113.7	22,606.0
Proposed SO2 Removed	(true/yre)						414,675.6	296,553.1	290,091.2	282,162.6	270,892.9	276.922.9
ાસ	(tons(y.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 FGD	(tons/yn)	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
Conl Throughput	(dy/suo))	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
	Date	2006	2007	2008	2009	2010	PTE	2011	2012	2013	2014	2015

2011-2015 data is based on projected generation rates.

		Total							0.4947		0.1820		0.0191		0.0180		0.4116	A STATE OF A	0.1027		4.3774		1.9780		0.1479	and a state of the	3.2658	A CONTRACTOR	5.4977		0.0019	South States Street	0.0393	0.0079
E-XXX	Fly Ash	Transfer Bins		19,579	4	8,760	0.1570	99.00	0.0154	0.0742	0.0073	0.0112	0.0011	1.65E-05	3.22E-03	3.76E-04	7.36E-02	9.39E-05	1.84E-02	4.00E-03	7.83E-01	1.81E-03	3.54E-01	1.35E-04	2.65E-02	2.98E-03	5.84E-01	5.02E-03	9.83E-01	1.73E-06	3.38E-04	3.59E-05	7.04E-03	1.42E-03
EXX	Ash	Storage Silo		19,579	e lease a fille search	8,760	0.1947	00.66	0.0191	0.0921	0.0090	0.0139	0.0014	2.04E-05	3.99E-03	1.66E-01	9.13E-02	1.16E-04	2.28E-02	4.96E-03	9.71E-01	2.24E-03	4.39E-01	1.68E-04	3.28E-02	3.70E-03	7.24E-01	6.23E-03	1,22E+00	2.14E-06	4.19E-04	4.46E-05	8.73E-03	1.76E-03
Nete:	(BAG	Storage silo		16,644	8	8,760	0.1947	99.00	0.0162	0.0921	0.0077	0.0139	0.0012																	Analysis of the second				0.00E+00
E+AN	A-M	Storage Silo		46,647	8	8,760	0.1947	99.00	0.0454	0.0921	0.0215	0.0139	0.0033				and a second																	0.00E+00
(E30)	Haul Road	Fugitives (see Note 1) Storage Silo		7,758	0	8,760	0.2942	80.00	0.2282	0.0722	0.0560	0.0000	0.0000					and the second	To the second second second							terrational characterization								0.00E+00
Ē	Limestone Ball Mill &	Grusher &	- TALINA	105,785	0	8,760	0.00016	0.00	0.0082	0.000074	0.0039	0.000011	0.0006																					0.00E+00
E-27	Limestone Communitie	to Limestone Storedo Dilo		105,785	0	8,760	0.00016	0.00	0.0082	0.000074	0.0039	0.000011	0.0006													Restored a second s								0,00E+00
(B-216	Freder Bell	LA to Conveyor	1 <u>13</u>	105,785	0	8,760	0.00016	0.00	0.0082	0.000074	0.0039	0.000011	0.0006						the second s															0.00E+00
	Limestone	Freder Belt Freder Belt	<u>.</u>	105,785	0	8,760	0.00016	00.0	0.0082	0.000074	0.0039	0.000011	0.0006																			A set of the set of th		0.00E+00
19245				105,785	0	8,760	0.00163	0.00	0.0860	0.000769	0.0407	0.000116	0.0062												All a logitari a constructiones a subsection of the second s								and the second se	0.00E+00
E-13	Gypsum	Plant Flyash Silo (6)	(B) onto	105,785	0	8,760	0.1947	99.50	0.0515	0.0921	0.0243	0.0139	0.0037	2.04E-05	1.08E-02	4.66E-04	2.47E-01	1.16E-04	6.16E-02	4.96E-03	2.62E+00	2.24E-03	1.19E+00	1.68E-04	8.86E-02	3.70E-03	1.96E+00	6.23E-03	3.29E+00	2.14E-06	1.13E-03	4.46E-05	2.36E-02	4.75E-03
	.mit) Resthementan Estimation			Total Increased Throughput (tons)	Total Number of New Units	Operating Hours	PM Emission Factor (Ib/ton)	Control Efficiency	PM Emissions (tons/yr)	PM10 Emission Factor (lb/ton)	PM10 Emissions (tons/yr)	PM2.5 Emission Factor (Ib/ton)	PM2.5 Emissions (tons/yr)	Antimony Emission Factor (Ib/ton)	Antimony Emissions (Ibs/yr)	Arsenic Emission Factor (Ib/ton)	Arsenic Emissions (Ibs/yr)	Cadmium Emission Factor (Ib/ton)	Cadmium Emissions (Ibs/yr)	Chromium Emission Factor (lb/ton)	Chromium Emissions (Ibs/yr)	Nickel Emission Factor (lb/ton)	Nickel Emissions (Ibs/yr)	Cobalt Emission Factor (lb/ton)	Cobalt Emissions (Ibs/yr)	Lead Emission Factor (lb/ton)	Lead Emissions (Ibs/yr)	Manganese Emission Factor (lb/ton)	Manganese Emissions (Ibs/yr)	Mercury Emission Factor (Ib/ton)	Mercury Emissions (Ibs/yr)	Selenium Emission Factor (Ib/ton)	Selenium Emissions (Ibs/yr)	HAPS Total (tons/yr)

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	Table C-5.	Baseline	Emissions	for	Boiler	Unit 1
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					Pollutant (tor	15)			
Month-Year	$SO_2^{-1}$	NO <sub>X</sub> <sup>1</sup>	PM <sup>2</sup>	$PM_{10}^{2}$	PM <sub>2.5</sub> <sup>2</sup>	$H_2SO_4^3$	Lead <sup>4</sup>	CO <sub>2</sub> <sup>1</sup>	IIg <sup>4</sup>
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.

Table C-6. Baseline Emissions for Boiler Unit 2	Table C-6.	Baseline	Emissions	for	Boiler	Unit 2	ł
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andre statement in a definition of each of the antiperson of each of the antiperson of the state	Pollutant (tons)								
Month-Year	SO <sub>2</sub> <sup>1</sup>	NO <sub>X</sub> <sup>1</sup>	PM <sup>2</sup>	PM <sub>10</sub> <sup>2</sup>	PM2.5 <sup>2</sup>	$H_2SO_4^{-3}$	Lead <sup>4</sup>	CO <sub>2</sub> <sup>1</sup>	llg <sup>4</sup>
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			ann a chun Aidhine Mar Caidheal na bhann an						
(tons/yr)	4,981.9	3,329.5	624.5	443.4	318.5	249.1	0.2	2,162,370	0.039

1. SO<sub>2</sub>, NO<sub>X</sub>, and CO<sub>2</sub> 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.

Table C-7. Baseline Emissions for Boiler Unit 3	Emissions for Boiler Unit 3	Baseline	Table C-7.
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	Pollutant (tons)									
Month-Year	$SO_2^{-1}$	NO <sub>X</sub> <sup>1</sup>	PM <sup>2</sup>	$PM_{10}^{2}$	$PM_{2.5}^{2}$	$H_2SO_4^{3}$	Lead <sup>4</sup>	CO <sub>2</sub> <sup>1</sup>	Hg <sup>4</sup>	
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.I	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							Charles Links			
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.

Table C-8. Baseline Emissions for Boiler Unit 4

	Pollutant (tons)								
Month-Year	SO <sub>2</sub> <sup>1</sup>	NO <sub>X</sub> <sup>1</sup>	PM <sup>2</sup>	$PM_{10}^{2}$	PM <sub>2.5</sub> <sup>2</sup>	H <sub>2</sub> SO <sub>4</sub> <sup>-3</sup>	Lead <sup>4</sup>	$CO_2^{-1}$	Hg <sup>4</sup>
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.