

LEONARD K. PETERS SECRETARY

ENERGY AND ENVIRONMENT CABINET OFFICE OF THE SECRETARY 500 MERO STREET 12TH FLOOR, CAPITAL PLAZA TOWER FRANKFORT, KY 40601 TELEPHONE: 502-564-3350 FACSIMILE: 502-564-3354

May 28, 2010

Mr. A. Stanley Meiburg Acting Regional Administrator U.S. EPA, Region 4 Sam Nunn Atlanta Federal Center 61 Forsyth Street, SW Atlanta, Georgia 30303

RE: Formal SIP Revision To Amend Kentucky's June 25, 2008 Regional Haze SIP

Dear Mr. Meiburg:

The Kentucky Energy and Environment Cabinet hereby submits to the U.S. Environmental Protection Agency (EPA) for approval a formal revision to Kentucky's State Implementation Plan (SIP). This SIP revision addresses the following issues that amend Kentucky's June 25, 2008, Regional Haze SIP: (1) E.ON U.S. Mill Creek Units 3 and 4, a change to indicate the proper BART Title V permit emission limits of 64.3 lb/hr and 76.5 lb/hr respectively for H_2SO_4 in place of a 0.015 lb/mmBtu limit and (2) East Kentucky Power Cooperative (EKPC) Cooper Units 1 and 2, based on March 18, 2009, revised EKPC BART determination modeling a substitution of dry flue gas desulfurization (DFGD) and fabric filtration (FF) emission controls for the wet FGD (WFGD) and wet electrostatic precipitator (WESP) controls.

A public hearing regarding this SIP revision was conducted on November 23, 2009, at the Division's main office in Frankfort, Kentucky. Documentation regarding this public hearing and the Cabinet's Statement of Consideration, which contains Cabinet responses to comments received during the public comment period, is provided in Appendix N of this SIP revision.

This SIP package includes a hard copy of the regional haze SIP narrative and appendices where changes have been made. In addition, a DVD containing all SIP narrative and appendix changes is included. The SIP revision is also available at the following Division website: http://www.air.ky.gov/regs/State+Implementation+Plan+Revisions.htm.

Your prompt consideration of this SIP revision is appreciated. If you have any questions regarding this matter, please contact Martin Luther at the Division for Air Quality at 502-564-3999.

Sincerely Yours, C.A. Lit , Deputy Secretary

Leonard K. Peters Secretary

LKP:mrl Enclosures c: Dick Schutt, EPA Region 4

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Regional Haze State Implementation Plan

For Kentucky's Class I Area



Prepared by Kentucky Energy and Environment Cabinet Kentucky Division for Air Quality

> Final June 2008 Amended May 2010

> > Kentucky Regional Haze SIP

Source	Class I Areas	BART Controls to Be Installed*	98 th Percentile Impact Before BART Controls (Change in dv)	98 th Percentile Impact with BART Controls (Change in dv)	BART Determination Control Visibility Improvement From 98 th Percentile value (Change in dv)
East Kentucky Power Cooperative (EKPC) Spurlock Station	Mammoth Cave (251 km)	EKPC per a consent decree and for BART will install a wet FGD and wet ESP at EKPC Spurlock Units 1 and 2 that will address condensible particulate emissions and other visibility impairing pollutants.		0.213	1.621
East Kentucky Power Cooperative (EKPC) Cooper Station	Mammoth Cave (130) km	EKPC per a consent decree and for BART will install a dry FGD and fabric filtration at		0.201	7.175
	Great Smoky Mountains National Park (162 km)	EKPC Cooper Units 1 and 2 that will	6.763	0.192	6.571
	Joyce Kilmer-Slickrock Wilderness (178 km)	address condensible particulate emissions	4.974	0.119	4.855
	Cohutta Wilderness Area (221 km)	and other visibility impairing pollutants.	3.363	0.080	3.283
	Shinning Rock (233 km)	impairing ponutants.	2.022	0.047	1.975
	Linville Gorge Wilderness Area (267 km)		1.885	0.047	1.838
TVA Paradise Fossil Steam Plant*	Mammoth Cave (63 km)	*Although not for BART, TVA previously indicated to KYDAQ its		0.606 0.606 <u>0.836</u> 2.048	0.679 0.679 <u>1.006</u> 2.364
	Mingo (283 km)	plans to install hydrated lime injection controls on TVA Paradise Units 1-3 to mitigate opacity due to SO3 emissions.	3.930 U1- 0.251 U2- 0.251 U3- <u>0.381</u> 0.883 0.865	2.048 0.116 0.116 0.166 0.398 0.398	1.882 0.135 0.135 0.215 0.485 0.467

Source	Class I Areas	BART Controls to Be Installed*	98 th Percentile Impact Before BART Controls (Change in dv)	98 th Percentile Impact with BART Controls (Change in dv)	BART Determination Control Visibility Improvement From 98 th Percentile value (Change in dv)
American Electric Power Big Sandy Plant (AEP)	Dolly Sods (291 km)	Per a consent decree and BART, AEP will	1.027	0.496	0.531
	James River Face (279 km)	install ammonia injection on Unit 1 and a FGD scrubber	1.052	0.457	0.595
	Linville Gorge (256 km)	on Unit 2 to address condensible particulate emissions	0.835	0.364	0.471
		and other visibility impairing pollutants.			
	Otter Creek (266 km)		1.285	0.558	0.697
E.ON U.S Mill** Creek Station	Mammoth Cave (90 km)	**E.ON U.S. for BART will install sorbent injection controls on the larger Units 3-4 to mitigate condensable particulate emissions.	2.265	1.440	0.825

*Since TVA had previously indicated to the KYDAQ its plans to install hydrated lime injection controls on TVA Paradise Units 1-3 to mitigate opacity due to SO3 emissions and that additional controls are not cost-effective at this time, the KYDAQ has determined BART to be no control for TVA Paradise Units 1-3. **Given the extra cost for the lesser additional dv improvement for Units 1 and 2, the Cabinet agreed that BART for Mill Creek is the installation of sorbent injection controls on the larger Units 3 and 4.

 Table 7.5.3-2 Kentucky BART Controls, Emission Limits, and Compliance Timeframes for BART-Subject Sources

Kentucky BART Subject Source	BART Controls To Be Installed	BART Emission Limits	Inclusion in Title V Permit	Timeframe for Compliance with BART Emission Limits\Controls
East Kentucky Power Cooperative (EKPC) Spurlock Units 1 and 2 and Cooper Units 1 and 2	Install wet FGD and wet ESP on Spurlock Units 1 and 2 and a dry FGD and fabric filtration on Cooper Units 1 and 2.	A 07/02/07 EKPC consent decree provides a filterable PM emission rate of 0.030 lb/MMBTU, which was utilized to demonstrate modeled visibility improvement.	Emission limits and controls will be included in the source's Title V Permit as appropriate or on renewal.	Expeditiously as practicable, but no later than 5 years after EPA approves Kentucky's Regional Haze SIP.
AEP Big Sandy Unit 1 Unit 2	Install ammonia injection controls on Unit 1 and a FGD on Unit 2.	Inorganic Condensible Particulate Limits (modeled as sulfates): 101.0 lb/hr (H2SO4) 127.0 lb/hr (H2SO4)	Emission limits and controls will be included in the source's Title V Permit as appropriate or on renewal.	Expeditiously as practicable, but no later than 5 years after EPA approves Kentucky's Regional Haze SIP. KYDAQ will work with AEP to install the FGD scrubber on AEP Big Sandy Unit 2 as expeditiously as practicable.
TVA Paradise* Unit 1 Unit 2 Unit 3	*Although not for BART, TVA previously indicated to KYDAQ its plans to install hydrated lime injection controls on TVA Paradise Units 1-3 to mitigate opacity due to SO3 emissions.	*NA	*Although not for BART, TVA has indicated that its planned SO3 controls for Paradise Units 1-3 will be included in its Title V Permit as appropriate or on renewal.	*Although not for BART, TVA in its BART Determination has indicated the SO3 controls will be in place on Paradise Units 1- 3 well before BART controls are required. Specifically, TVA has related to

 Table 7.5.3-2 Kentucky BART Controls, Emission Limits, and Compliance Timeframes for BART-Subject Sources

Kentucky BART Subject Source	BART Controls To Be Installed	BART Emission Limits	Inclusion in Title V	Timeframe for Compliance with
S	201100000		Permit	BART Emission
				Limits \Controls
				KYDAQ its
				proposed plan to
				have hydrated
				lime injection
				controls operating
				on all three TVA
				Paradise units
				possibly by the
				fall of 2010.
E.ON U.S.**	**Install sorbent	Inorganic	**Emission	**Expeditiously
Mill Creek	injection controls on	Condensible	limits and	as practicable, but
	larger Units 3 and 4	Particulate Limits	controls will	no later than 5
	to control SO3	(modeled as sulfates):	be included in	years after EPA
	emissions and		the source's	approves
Unit 3	continue to utilize	64.3 lb/hr (H2SO4)	Title V Permit	Kentucky's
Unit 4	existing ESPs to	76.5 lb/hr (H2SO4)	as appropriate	Regional Haze
	control PM emissions		or on renewal.	SIP.
	for Units 1 through 4.			

*Since TVA had previously indicated to the KYDAQ its plans to install hydrated lime injection controls on TVA Paradise Units 1-3 to mitigate opacity due to SO3 emissions and that additional controls are not cost-effective at this time, the KYDAQ has determined BART to be no control for TVA Paradise Units 1-3. **Given the extra cost for the lesser additional dv improvement for Units 1 and 2, the Cabinet agreed that BART for Mill Creek is the installation of sorbent injection controls on the larger Units 3 and 4.

7.6 Relative Contributions to Visibility Impairment: Geographic Areas of Influence for Kentucky's Class I Area

Once it was determined that SO2 emission reductions from EGU and non-EGU point sources in the VISTAS states would be the most effective sources to control to improve visibility at Kentucky's Class I area, the next step was to identify the specific geographic areas that most likely influence visibility in each Class I area, and then to identify the major SO2 point sources located in those geographic areas. An SO2 Area of Influence was defined for each Class I area to represent the geographic area containing sources that would likely have the greatest impact on visibility at that Class I area. All SO2 point sources within these Areas of Influence were identified and ranked by their 2018 emissions. The following sections contain a broad overview of the steps in the Area of Influence analyses. See Appendix H for a more detailed discussion of these analyses and plots for Kentucky's Class I area. The plots that follow are only for Kentucky's Class I area since KYDAQ's Q/d times RTMax area of influence analysis identified no Kentucky sources that contributed one percent or more to visibility impairment for any other Class I area examined by VISTAS.



Kentucky Energy and Environment Cabinet Kentucky Division for Air Quality

Appendix H.4 Kentucky Electric Generating Units (EGUs) Existing and Expected Emission Controls

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Kentucky EGU Existing and Expected Emission Control Information

(See Kentucky BART EGUs Identified in Blue and Kentucky EGUs on the MANE-VU 167 List Identified in Purple) (Future Kentucky EGU Emission Controls Highlighted in Red)

					MANE-VU								
Owner	Plant	Plant ID	Unit ID	KY BART EGU	167 List KY Sources	MWe Size*	County	NOx CONTROLS	Year NOx Control Online (In Operation)**	SO2 CONTROLS	Year SO2 Control Online (In Operation)**	PM10 CONTROLS	Year PM10 Control Online (In Operation)**
Duke Energy	EAST BEND	21-015-00029	2	BART	167	648	Boone	LNB/Selective Catalytic Reduction (SCR)	SCR-2002	Flue Gas Desulfurization Unit (FGD) - Scrubber	Pre-2002	ESP	Pre-2002
EKPC	COOPER	21-199-00005	1	BART	167	100	Pulaski	Low NOx Burner (LNB)	1993	DFGD***	For BART Before 2012	Cold side ESP/Fabric Filtration for BART***	1973/For BART on before 2012
EKPC	COOPER	21-199-00005	2	BART	167	220	Pulaski	LNB	1994	DFGD***	For BART Before 2012	Cold side ESP/Fabric Filtration for BART***	1973/For BART on before 2012
EKPC	DALE	21-049-00003	3			79	Clark	LNB	1997	NONE		Cold side ESP	1987
EKPC	DALE	21-049-00003	4			79	Clark	LNB	1996	NONE		Cold side ESP	1987
EKPC	DALE	21-049-00003	1 2				Clark	LNB LNB	2007	NONE		Cold side ESP Cold side ESP	1979 1979
EKPC	H L SPURI OCK	21-049-00003 21-161-00009	1	BART	167	340	Clark Mason	Modified Burner/SCR	2007	NONE WEGD***	Per Consent Decree\ for BART 2009	Cold side ESP Cold side ESP/WESP For BART***	2003/2009***
EKPC	H L SPURLOCK	21-161-00009	2	BART	167	585	Mason	LNB/SCR	1981/2002	WFGD***	Per Consent Decree\for BART 2008	Hot side ESP/WESP For BART***	1981/2008***
EKPC	J K SMITH	21-049-00027	SCT1	DAIL	107	110	Clark	Water Injection	1999	NONE	Ter Consent Decreend DATT 2000	NONE	130 1/2000
EKPC	J K SMITH	21-049-00027	SCT2			110	Clark	Water Injection	1999	NONE		NONE	
EKPC	J K SMITH	21-049-00027	SCT3			110	Clark	Water Injection	1999	NONE		NONE	
EKPC	J K SMITH	21-049-00027	SCT4			75	Clark	Dry low NOX	2001	NONE		NONE	
EKPC	J K SMITH	21-049-00027	SCT5			75	Clark	Dry low NOX	2001	NONE		NONE	
EKPC	J K SMITH	21-049-00027	SCT6			75	Clark	Dry low NOX	2004	NONE		NONE	
EKPC	J K SMITH	21-049-00027	SCT7			75	Clark	Dry low NOX	2004	NONE	0001	NONE	0001
EKPC HMPL	Gilbert HENDERSON I	21-101-00012	CFB 6	BART		268	Clark Henderson	SNCR/CFB none	2004	Flash dry absorber none	2004	Bag House Multiclone/ESP	2004
AFP	BIG SANDY	21-127-00003	BSU1	BART	167	260	Lawrence	Over Fire Air (OFA), LNB	1970's	Consent decree coal sulfur limit 1.75 lb/mmBTU		ESP/ammonia injection per BART****	On or before 2012****
AEP	BIG SANDY	21-127-00003	BSU2	BART	167	800	Lawrence	SCR, LNB	1960's	FGD-Scrubber - Per consent decree & BART	On or before Dec. 31, 2015****	ESP	
E.ON U.S.	E W BROWN	21-167-00001	1	Dratti		114	Mercer	INB	1993	Wet Flue Gas Desulfurization (WFGD)	Being Constructed - online 2009 per CAIR	Electrostatic Precipitator (ESP)	1973
E.ON U.S.	E W BROWN	21-167-00001	2	BART	167	180	Mercer	Low Nox Concentric Firing System (LNCFS) I	1994	Wet Flue Gas Desulfurization (WFGD)	Being Constructed - online 2009 per CAIR	Electrostatic Precipitator (ESP)	1975
E.ON U.S.	E W BROWN	21-167-00001	3	BART	167	446	Mercer	LNCFS III	1992	Wet Flue Gas Desulfurization (WFGD)	Being Constructed - online 2009 per CAIR	Electrostatic Precipitator (ESP)	1970s
E.ON U.S.	E W BROWN	21-167-00001	CT5			123	Mercer	Water Injection	2001			1	1
E.ON U.S.	E W BROWN	21-167-00001	CT6			170	Mercer	Water Injection (when burning fuel oil)	1999		1	1	1
E.ON U.S.	E W BROWN	21-167-00001	CT7			170	Mercer	Water Injection (when burning fuel oil)	1999		1		
E.ON U.S.	E W BROWN	21-167-00001	CT8			126	Mercer	Water Injection	1996		1		
E.ON U.S.	E W BROWN E W BROWN	21-167-00001 21-167-00001	CT9			126	Mercer	Water Injection	1995 1995				
E.ON U.S. E.ON U.S.	E W BROWN	21-167-00001	CT10 CT11			126 126	Mercer Mercer	Water Injection Water Injection	1995		1		
E ON U.S.	DIX DAM	21-107-00001	1			9	Mercer	This is a Hydro Station	1990	1		+	t
E.ON U.S.	DIX DAM		2			9	Mercer				1		
E.ON U.S.	DIX DAM		3			9	Mercer				1		
E.ON U.S.	GHENT	21-041-00010	1	BART		557	Carroll	LNCFS II/SCR	1994/2004	FGD-Scrubber	1994	ESP	1974
E.ON U.S.	GHENT	21-041-00010	2	BART		556	Carroll	LNCFS III	2000	WFGD	Being Constructed - online 2009 Per CAIR	ESP	1977
E.ON U.S.	GHENT	21-041-00010	3		167	557	Carroll	LNB & OFA/SCR	1998/2004	WFGD	Being Constructed - online 2007 Per CAIR	ESP ESP	1981
E.ON U.S. E.ON U.S.	GHENT GREEN RIVER	21-041-00010	4		167	556 76	Carroll Muhlenburg	LNB & OFA/SCR	1999/2004		Being Constructed - online 2008 Per CAIR	ESP	1984
E.ON U.S. E.ON U.S.	GREEN RIVER	21-177-00001 21-177-00001	1			/6	Muhlenburg	Green River Boilers 1, 2 and 3 produced steam to run Unit 1 and Unit 2. They were		FGD (Lime Venturi Scrubber) FGD (Lime Venturi Scrubber)			
E.ON U.S.	GREEN RIVER	21-177-00001	3				Muhlenburg	retired on 12/31/2003.		FGD (Lime Venturi Scrubber)			
E.ON U.S.	GREEN RIVER	21-177-00001	4			75	Muhlenburg	LNB	2002	TOD (Eine Venten Scrubber)		ESP	1973
E.ON U.S.	GREEN RIVER	21-177-00001	5			114	Muhlenburg	LNB	1995			ESP	1975
E.ON U.S.	HAEFLING	21-067-00067	CT1			21	Fayette						
E.ON U.S.	HAEFLING	21-067-00067	CT2			21	Fayette						
E.ON U.S.	HAEFLING	21-067-00067	CT3			21	Fayette						
E.ON U.S.	LOCK 7		1			1	Mercer	This is a Hydro Station					
E.ON U.S.	LOCK 7		2			1	Mercer Mercer						
E.ON U.S. E.ON U.S.	LOCK 7 PINEVILLE	21-013-00001	3			38	Bell	Retired Unit				ESP	1975
E.ON U.S.	TYRONE	21-239-00001	1			30	Woodford	Tyrone Boiler 1 and 2 produce steam to run Unit 1	1			Ear	19/5
E.ON U.S.	TYRONE	21-239-00001	2			0.	Woodford	Tytone bolier Fana 2 produce steam to fair one	1				
E.ON U.S.	TYRONE	21-239-00001	3			31	Woodford	Tyrone Boiler 3 and 4 produce steam to run Unit 2	2				
E.ON U.S.	TYRONE	21-239-00001	4				Woodford		1				
E.ON U.S.	TYRONE	21-239-00001	5			75	Woodford	LNB	2001	<u> </u>	<u> </u>	ESP	1974
E.ON U.S.	CANE RUN	21-111-0126	4			164	Jefferson	SLNB	1996	FGD-Scrubber	1976	ESP	1960s
E.ON U.S.	CANE RUN	21-111-0126	5	BART		209	Jefferson	CCVDAZ (LNB)	2003	FGD-Scrubber	1977	ESP	1960s
E.ON U.S. E.ON U.S.	CANE RUN	21-111-0126 21-111-0126	6 CT11	BART		272 16	Jefferson	LNCFS II	1995	FGD-Scrubber	1978	ESP	1960s
E.ON U.S. E.ON U.S.	CANE RUN MILL CREEK	21-111-0126 21-111-0127	<u>CT11</u>	BART		356	Jefferson Jefferson	LNCFS II	1996	FGD-Scrubber	1981****	ESP	1970s
E ON U.S.	MILL CREEK	21-111-0127	2	BART		356	Jefferson	I NCES II	1996	FGD-Scrubber	1982****	ESP	1970s
E.ON U.S.	MILL CREEK	21-111-0127	3	BART		463	Jefferson	DRB-XCL (LNB)/SCR	2002/2003	FGD-Scrubber	1978****	ESP/Sorbent injection per BART*****	1978/on or before 2012*****
E.ON U.S.	MILL CREEK	21-111-0127	4	BART	167	544	Jefferson	DRB-XCL (LNB)/SCR	2001/2003	FGD-Scrubber	1982****	ESP/Sorbent injection per BART*****	1982/on or before 2012*****
E.ON U.S.	OHIO FALLS	21-111	1			10	Jefferson	This is a Hydro Station				1	
E.ON U.S.	OHIO FALLS	21-111	2			10	Jefferson				1	1	1
E.ON U.S.	OHIO FALLS	21-111	3			10	Jefferson				1	1	1
E.ON U.S.	OHIO FALLS OHIO FALLS	21-111	4			10 10	Jefferson			1		1	
E.ON U.S. E.ON U.S.	OHIO FALLS	21-111 21-111	5			10	Jefferson Jefferson						
E.ON U.S. E.ON U.S.	OHIO FALLS	21-111	- 7			10	Jefferson				1	1	
E.ON U.S. E.ON U.S.	OHIO FALLS	21-111	- '8			10	Jefferson				1	1	
E.ON U.S.	PADDYS RUN	21-111	CT11			16	Jefferson					1	
E.ON U.S.	PADDYS RUN	21-111	CT12			33	Jefferson						
E.ON U.S.	PADDYS RUN	21-111	CT13			178	Jefferson			<u> </u>	<u> </u>		L
E.ON U.S.	TRIMBLE	21-223-00002	1			566	Trimble	ALNB & SCR	2002/2002	FGD-Scrubber	1990	ESP	1990
E.ON U.S.	TRIMBLE	21-223-00002	CT5			234	Trimble	DLNB	2002		1		
E.ON U.S.	TRIMBLE	21-223-00002	CT6			234	Trimble	DLNB	2002		1	1	1
E.ON U.S. E ON U.S.	TRIMBLE	21-223-00002	CT7 CT8			234 234	Trimble Trimble	DLNB	2004 2004	1		1	
	TRIMBLE TRIMBLE	21-223-00002 21-223-00002	CT8 CT9			234 234	Trimble	DLNB	2004 2004	1		1	1
		21-223-00002	CT10			234	Trimble	DLNB	2004		1		
E.ON U.S.			0110					Retired Unit	2004	1	1	+	t
E.ON U.S. E.ON U.S. E.ON U.S.	TRIMBLE	21-111	CT7			20	Jefferson						
E.ON U.S. E.ON U.S. E.ON U.S.	WATERSIDE WATERSIDE	21-111	CT8			20 25	Jefferson	Retired Unit					
E.ON U.S. E.ON U.S.	WATERSIDE			BART			Jefferson Jefferson			FGD-Scrubber		ESP	

Kentucky EGU Existing and Expected Emission Control Information

11/30/2007

(See Kentucky BART EGUs Identified in Blue and Kentucky EGUs on the MANE-VU 167 List Identified in Purple) (Future Kentucky EGU Emission Controls Highlighted in Red)

					MANE-VU								
				KY BART	167 List	MWe		NOx CONTROLS	Year NOx Control Online	SO2 CONTROLS	Year SO2 Control Online	PM10 CONTROLS	Year PM10 Control Online
Owner	Plant	Plant_ID	Unit ID	EGU	KY Sources	Size*	County		(In Operation)**		(In Operation)**		(In Operation)**
OMU	ELMER SMITH	21-059-00027	2	BART		280	Daviess	SNCR/LNB\OFA		FGD-Scrubber		ESP	
TVA	PARADISE	21-177-00006	1	BART				OFA/SCR	SCR - 2001	FGD-(Venturi Scrubber)	1982	Venturi Scrubber / Lime Injection******	1982 / Lime Injection Before 2012
TVA	PARADISE	21-177-00006	2	BART	167		Muhlenberg		SCR - 2001	FGD-(Venturi Scrubber)	1982	Venturi Scrubber / Lime Injection******	1982 / Lime Injection Before 2012
TVA	PARADISE	21-177-00006	3	BART	167		Muhlenberg		SCR - 2003	FGD-Scrubber	2006	ESP / Lime Injection*****	1970's / Lime Injection Before 2012
TVA	SHAWNEE	21-145-00006	1			175	McCracken	LNB				Baghouse	1970's
TVA	SHAWNEE	21-145-00006	2			175	McCracken					Baghouse	1970's
TVA	SHAWNEE	21-145-00006	3					LNB				Baghouse	1970's
TVA	SHAWNEE	21-145-00006	4			175	McCracken	LNB				Baghouse	1970's
TVA	SHAWNEE	21-145-00006	5			175	McCracken	LNB				Baghouse	1970's
TVA	SHAWNEE	21-145-00006	6			175	McCracken	LNB				Baghouse	1970's
TVA	SHAWNEE	21-145-00006	7			175	McCracken	LNB				Baghouse	1970's
TVA	SHAWNEE	21-145-00006	8			175	McCracken	LNB				Baghouse	1970's
TVA	SHAWNEE	21-145-00006	9			175	McCracken	LNB				Baghouse	1970's
TVA	SHAWNEE	21-145-00006	10			175	McCracken	AFBC Unit		Bubbling limestone bed		Baghouse	1980's
WKE	COLEMAN	21-091-00003	C1	BART		150	Hancock	LNB/Rotating Over-Fire Air (ROFA)	LNB-1990s, ROFA-2004	FGD-Scrubber	2006	ESP	1970s
WKE	COLEMAN	21-091-00003	C2	BART		150	Hancock	LNB/Advanced Over-Fire Air (AOFA)	LNB-1990s, AOFA-2004	FGD-Scrubber	2006	ESP	1970s
WKE	COLEMAN	21-091-00003	C3	BART		150	Hancock	LNB/AOFA	LNB-1990s, AOFA-2004	FGD-Scrubber	2006	ESP	1970s
WKE	D B WILSON	21-183-00069	W1			420	Ohio	LNB/SCR	LNB-1985, SCR-2003	FGD-Scrubber	1985 - 'Initial Start-up	ESP	1985 - Initial Start-up
WKE	HMP&L STATION	21-233-00001	H1	BART		150	Webster	LNB/SCR	LNB-1990s, SCR on 2004	FGD-Scrubber	1990s	ESP	1970s
WKE	HMP&L STATION	21-233-00001	H2	BART		160	Webster	LNB/SCR	LNB-1990s, SCR on 2004	FGD-Scrubber	1990s	ESP	1970s
WKE	R D GREEN	21-233-00052	G1	BART		230	Webster	LNB/Coal Reburn	LNB-1980s, Coal Re-burn in 2004	FGD-Scrubber	1980s	ESP	1980s
WKE	R D GREEN	21-233-00052	G2	BART		220	Webster	LNB/Coal Reburn	LNB-1980s, Coal Re-burn in 2004	FGD-Scrubber	1980s	ESP	1980s
WKE	ROBERT REID	21-233-00001	R1	BART		65	Webster	Fuel Oil, pellitized coal fines or petroleum coke	2004	none		Cyclone / ESP	1960s
WKE	ROBERT REID	21-233-00001	RT	******		65	Webster	Dual burners (fuel oil or gas)				none	
Percent of	Kentucky BART EG	Us With or To Hav	ve Emissio	n Controls t	o Date:			97%		90%		100%	
	Kentucky EGUs on					Date:		100%		93%		100%	

* 1.Note: "Size" column is for comparison purposes only. Companies used varying sources for reporting - gross, nameplate, etc.

** 2 Note: For emission controls brought online before 2000, if the online date is not readily available then the decade that the control became operational may be entered (such as 1990s, 1980s). In addition, if known, please indicate future NOx, SO2, and PM10 unit controls that are currently being constructed or planned and their projected online (in operation) date.

*** 3. Note: EKPC, per its BART Determination, plans to install for BART WFGDs and WESPs for Spuriock Units 1 & 2 and DFGDs and fabric filtration for Cooper Units 1 & 2. Some of these controls are related to a recent EKPC consent decree. For information, an EPA link to a EKPC consent decree is at: www.epa.gov/icompliance/resources/cases/civil/caa/easkentuckypower.html www.epa.gov/compliance/resources/cases/civil/caa/eastkentuckypower.html

**** 4.Note: Per a BART Determination and consent decree for AEP's Big Sandy Units 1 and 2, AEP plans to install ammonia injection on Unit 1 and a FGD Scrubber on Unit 2 to address condensible particulates for BART. Por the APC consent decree in FGD scrubber for Big Sandy Unit 2 is required by December 31, 2015. For information, an EPA link to a APP consent decree is at: www.epa.gov/compliance/resources/cases/civil/caa/americanelectricpower1007.html.

***** 5.Note: Per a BART Determination, E.ON U.S. plans to install sorbent injection on Mill Creek Units 3 and 4 to address condensible particulates for BART

****** 6.Note: TVA will install hydrated lime injection on Units 1-3 to address TVA Paradise stack condensibles per its TVA BART Determination.

******* 7.Note: WKE Reid Turbine is a Non-EGU auxiliary boiler only used during start-up that was exempted from BART modeling per EPA guidance.



Kentucky Energy and Environment Cabinet Kentucky Division for Air Quality

Appendix L Best Available Retrofit Technology (BART) Related Documentation

Appendix L Kentucky Regional Haze SIP

Source	Class I Areas	BART Controls to Be Installed*	98 th Percentile Impact Before BART Controls (Change in dv)	98 th Percentile Impact with BART Controls (Change in dv)	BART Determination Control Visibility Improvement From 98 th Percentile value (Change in dv)
East Kentucky Power Cooperative (EKPC) Spurlock Station	Mammoth Cave (251 km)	EKPC per a consent decree and for BART will install a wet FGD and wet ESP at EKPC Spurlock Units 1 and 2 that will address condensible particulate emissions and other visibility impairing pollutants.		0.213	1.621
East Kentucky Power Cooperative (EKPC) Cooper Station	Mammoth Cave (130) km	EKPC per a consent decree and for BART will install a dry FGD and fabric filtration at	7.376	0.201	7.175
	Great Smoky Mountains National Park (162 km)	EKPC Cooper Units 1 and 2 that will	6.763	0.192	6.571
	Joyce Kilmer-Slickrock Wilderness (178 km)	address condensible particulate emissions	4.974	0.119	4.855
	Cohutta Wilderness Area (221 km)	and other visibility impairing pollutants.	3.363	0.080	3.283
	Shinning Rock (233 km)	impairing ponutants.	2.022	0.047	1.975
	Linville Gorge Wilderness Area (267 km)		1.885	0.047	1.838
TVA Paradise Fossil Steam Plant**	Mammoth Cave (63 km)	**Although not for BART, TVA previously indicated to KYDAQ its		0.606 0.606 <u>0.836</u> 2.048	0.679 0.679 <u>1.006</u> 2.364
	Mingo (283 km)	- plans to install hydrated lime injection controls on TVA Paradise Units 1-3 to mitigate opacity due to SO3 emissions.	3.930 U1- 0.251 U2- 0.251 U3- <u>0.381</u> 0.883 0.865	2.048 0.116 0.116 0.166 0.398 0.398	1.882 0.135 0.135 <u>0.215</u> 0.485 0.467

Source	Class I Areas	BART Controls to Be Installed*	98 th Percentile Impact Before BART Controls (Change in dv)	98 th Percentile Impact with BART Controls (Change in dv)	BART Determination Control Visibility Improvement From 98 th Percentile value (Change in dv)
American Electric Power Big Sandy Plant (AEP)	Dolly Sods (291 km)	Per a consent decree and BART, AEP will	1.027	0.496	0.531
	James River Face (279 km)	install ammonia injection on Unit 1 and a FGD scrubber	1.052	0.457	0.595
	Linville Gorge (256 km)	on Unit 2 to address condensible particulate emissions	0.835	0.364	0.471
		and other visibility impairing pollutants.			
	Otter Creek (266 km)		1.285	0.558	0.697
E.ON U.S Mill*** Creek Station	Mammoth Cave (90 km)	***E.ON U.S. for BART will install sorbent injection controls on the larger Units 3-4 to mitigate condensable particulate emissions.	2.265	1.440	0.825

*Existing and expected EGU controls and EPA web links to EKPC and AEP consent decrees are available in Appendix L.8. **Since TVA had previously indicated to the KYDAQ its plans to install hydrated lime injection controls on TVA Paradise Units 1-3 to mitigate opacity due to SO3 emissions and that additional controls are not cost-effective at this time, the KYDAQ has determined BART to be no control for TVA Paradise Units 1-3. ***Given the extra cost for the lesser additional dv improvement for Units 1 and 2, the Cabinet agreed that BART for Mill Creek is the installation of sorbent injection controls on the larger Units 3 and 4.

 Table 9-2 Kentucky BART Controls, Emission Limits, and Compliance Timeframes for BART-Subject Sources

Kentucky BART	BART Controls To	BART Emission	Inclusion in	Timeframe for
Subject Source	Be Installed	Limits	Title V Permit	Compliance with BART Emission Limits\Controls
East Kentucky Power Cooperative (EKPC) Spurlock Units 1 and 2 and Cooper Units 1 and 2	Install wet FGD and wet ESP on Spurlock Units 1 and 2 and a dry FGD and fabric filtration on Cooper Units 1 and 2.	A 07/02/07 EKPC consent decree provides a filterable PM emission rate of 0.030 lb/MMBTU, which was utilized to demonstrate modeled visibility	Emission limits and controls will be included in the source's Title V Permit as appropriate or on renewal.	Expeditiously as practicable, but no later than 5 years after EPA approves Kentucky's Regional Haze SIP.
AEP Big Sandy Unit 1 Unit 2	Install ammonia injection controls on Unit 1 and a FGD on Unit 2.	improvement. Inorganic Condensible Particulate Limits (modeled as sulfates): 101.0 lb/hr (H2SO4) 127.0 lb/hr (H2SO4)	Emission limits and controls will be included in the source's Title V Permit as appropriate or on renewal.	Expeditiously as practicable, but no later than 5 years after EPA approves Kentucky's Regional Haze SIP.
				KYDAQ will work with AEP to install the FGD scrubber on AEP Big Sandy Unit 2 as expeditiously as practicable.
TVA Paradise* Unit 1 Unit 2 Unit 3	*Although not for BART, TVA previously indicated to KYDAQ its plans to install hydrated lime injection controls on TVA Paradise Units 1-3 to mitigate opacity due to SO3 emissions.	*NA	*Although not for BART, TVA has indicated that its planned SO3 controls for Paradise Units 1-3 will be included in its Title V Permit as appropriate or on renewal.	*Although not for BART, TVA in its BART Determination has indicated the SO3 controls will be in place on Paradise Units 1- 3 well before BART controls are required. Specifically, TVA has related to

 Table 9-2 Kentucky BART Controls, Emission Limits, and Compliance Timeframes for BART-Subject Sources

Kentucky BART Subject Source	BART Controls To Be Installed	BART Emission Limits	Inclusion in Title V Permit	Timeframe for Compliance with BART Emission
				Limits \Controls
				KYDAQ its
				proposed plan to
				have hydrated
				lime injection
				controls operating
				on all three TVA
				Paradise units
				possibly by the
				fall of 2010.
E.ON U.S.**	**Install sorbent	Inorganic	**Emission	**Expeditiously
Mill Creek	injection controls on	Condensible	limits and	as practicable, but
	larger Units 3 and 4	Particulate Limits	controls will	no later than 5
	to control SO3	(modeled as sulfates):	be included in	years after EPA
	emissions and		the source's	approves
Unit 3	continue to utilize	64.3 lb/hr (H2SO4)	Title V Permit	Kentucky's
Unit 4	existing ESPs to	76.5 lb/hr (H2SO4)	as appropriate	Regional Haze
	control PM emissions		or on renewal.	SIP.
	for Units 1 through 4.			

*Since TVA had previously indicated to the KYDAQ its plans to install hydrated lime injection controls on TVA Paradise Units 1-3 to mitigate opacity due to SO3 emissions and that additional controls are not cost-effective at this time, the KYDAQ has determined BART to be no control for TVA Paradise Units 1-3. **Given the extra cost for the lesser additional dv improvement for Units 1 and 2, the Cabinet agreed that BART for Mill Creek is the installation of sorbent injection controls on the larger Units 3 and 4.

9.2 Final BART Determinations

After reviewing the sources' BART modeling determinations and considering the statutory factors, KYDAQ staff has concluded that the controls proposed by all the five Kentucky EGU BART-Subject sources are reasonable and appropriate for addressing condensible particulates and their impacts on nearby Class I areas.

9.3 BART Subject Sources in Other States Within 300 km of Kentucky's Class I Area

The authority and responsibility for conducting BART analyses under the regional haze rule lies with the state in which the BART eligible source is located. Sources must conduct an analysis of their impact on any Class I area within 300 km of the source. At this time the VISTAS states are at various points in their processes for addressing BART. For information regarding BART sources outside of Kentucky within 300 km of Kentucky's Class I area, please refer to the governing state's regional haze SIP submittal as it becomes available.



Kentucky Energy and Environment Cabinet Kentucky Division for Air Quality

Appendix L.8 Kentucky Electric Generating Units (EGUs) Existing and Expected Emission Controls

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Kentucky EGU Existing and Expected Emission Control Information

(See Kentucky BART EGUs Identified in Blue and Kentucky EGUs on the MANE-VU 167 List Identified in Purple) (Future Kentucky EGU Emission Controls Highlighted in Red)

						MANE-VU						-		
	Owner	Plant	Plant ID	Unit ID	KY BART	167 List KY Sources	MWe Size*	County	NOx CONTROLS	Year NOx Control Online (In Operation)**	SO2 CONTROLS	Year SO2 Control Online (In Operation)**	PM10 CONTROLS	Year PM10 Control Online (In Operation)**
	Duke Energy	EAST BEND	21-015-00029		BART	167	648	Boone	LNB/Selective Catalytic Reduction (SCR)		Flue Gas Desulfurization Unit (FGD) - Scrubber	Pre-2002		Pre-2002
				1										1973/For BART on before 2012
			21-199-00005		BART	167	220					For BART Before 2012		
No. No. <td></td> <td></td> <td>21-049-00003</td> <td></td> <td></td> <td></td> <td>79</td> <td>Clark</td> <td>INB</td> <td></td> <td></td> <td></td> <td></td> <td></td>			21-049-00003				79	Clark	INB					
Instrume	EKPC	DALE	21-049-00003	1					LNB		NONE			1979
Bit M Bit M <th< td=""><td>EKPC</td><td></td><td>21-049-00003</td><td></td><td></td><td></td><td></td><td>Clark</td><td></td><td></td><td></td><td></td><td>Cold side ESP</td><td>1979</td></th<>	EKPC		21-049-00003					Clark					Cold side ESP	1979
Image: Normal Parties														
Dec. Dec. Dec. Dec. Dec. Dec. Dec. Dec.					BARI	167						Per Consent Decreeitor BART 2008	Hot side ESP/WESP For BAR 1	1981/2008***
No. Add m. Prob. Prof. Add m. Prof. Mode														
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Dec state							75							
Direct 1000000000000000000000000000000000000														
International problem Internatinternatin problem International problem	EKPC						75							
UNL UNLE UNLE UNLE Note: Note			21-043-00021									2004		2004
APP IDD SAUCY 20 - Lance Auty 100 Lance User Cold Sauce Cold Sauce<		HENDERSON I	21-101-00012		BART								Multiclone/ESP	
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			21-059-00027		BART						FGD-Scrubber		ESP	

Kentucky EGU Existing and Expected Emission Control Information

11/30/2007

(See Kentucky BART EGUs Identified in Blue and Kentucky EGUs on the MANE-VU 167 List Identified in Purple) (Future Kentucky EGU Emission Controls Highlighted in Red)

					MANE-VU								
				KY BART	167 List	MWe		NOx CONTROLS	Year NOx Control Online	SO2 CONTROLS	Year SO2 Control Online	PM10 CONTROLS	Year PM10 Control Online
Owner	Plant	Plant_ID	Unit ID	EGU	KY Sources	Size*	County		(In Operation)**		(In Operation)**		(In Operation)**
OMU	ELMER SMITH	21-059-00027	2	BART		280	Daviess	SNCR/LNB\OFA		FGD-Scrubber		ESP	
TVA	PARADISE	21-177-00006	1	BART			Muhlenberg		SCR - 2001	FGD-(Venturi Scrubber)	1982	Venturi Scrubber / Lime Injection******	1982 / Lime Injection Before 2012
TVA	PARADISE	21-177-00006	2	BART	167		Muhlenberg		SCR - 2001	FGD-(Venturi Scrubber)	1982	Venturi Scrubber / Lime Injection******	1982 / Lime Injection Before 2012
TVA	PARADISE	21-177-00006	3	BART	167	1,150	Muhlenberg	OFA/SCR	SCR - 2003	FGD-Scrubber	2006	ESP / Lime Injection******	1970's / Lime Injection Before 2012
TVA	SHAWNEE	21-145-00006	1			175	McCracken	LNB				Baghouse	1970's
TVA	SHAWNEE	21-145-00006	2			175	McCracken	LNB				Baghouse	1970's
TVA	SHAWNEE	21-145-00006	3				McCracken					Baghouse	1970's
TVA	SHAWNEE	21-145-00006	4			175	McCracken	LNB				Baghouse	1970's
TVA	SHAWNEE	21-145-00006	5			175	McCracken	LNB				Baghouse	1970's
TVA	SHAWNEE	21-145-00006	6			175	McCracken	LNB				Baghouse	1970's
TVA	SHAWNEE	21-145-00006	7			175	McCracken	LNB				Baghouse	1970's
TVA	SHAWNEE	21-145-00006	8			175	McCracken	LNB				Baghouse	1970's
TVA	SHAWNEE	21-145-00006	9			175	McCracken	LNB				Baghouse	1970's
TVA	SHAWNEE	21-145-00006	10			175	McCracken	AFBC Unit		Bubbling limestone bed		Baghouse	1980's
WKE	COLEMAN	21-091-00003	C1	BART		150	Hancock	LNB/Rotating Over-Fire Air (ROFA)	LNB-1990s, ROFA-2004	FGD-Scrubber	2006	ESP	1970s
WKE	COLEMAN	21-091-00003	C2	BART		150	Hancock	LNB/Advanced Over-Fire Air (AOFA)	LNB-1990s, AOFA-2004	FGD-Scrubber	2006	ESP	1970s
WKE	COLEMAN	21-091-00003	C3	BART		150	Hancock	LNB/AOFA	LNB-1990s, AOFA-2004	FGD-Scrubber	2006	ESP	1970s
WKE	D B WILSON	21-183-00069	W1			420	Ohio	LNB/SCR	LNB-1985, SCR-2003	FGD-Scrubber	1985 - 'Initial Start-up	ESP	1985 - Initial Start-up
WKE	HMP&L STATION	21-233-00001	H1	BART		150	Webster	LNB/SCR	LNB-1990s, SCR on 2004	FGD-Scrubber	1990s	ESP	1970s
WKE	HMP&L STATION	21-233-00001	H2	BART		160	Webster	LNB/SCR	LNB-1990s, SCR on 2004	FGD-Scrubber	1990s	ESP	1970s
WKE	R D GREEN	21-233-00052	G1	BART		230	Webster	LNB/Coal Reburn	LNB-1980s, Coal Re-burn in 2004	FGD-Scrubber	1980s	ESP	1980s
WKE	R D GREEN	21-233-00052	G2	BART		220	Webster	LNB/Coal Reburn	LNB-1980s, Coal Re-burn in 2004	FGD-Scrubber	1980s	ESP	1980s
WKE	ROBERT REID	21-233-00001	R1	BART		65	Webster	Fuel Oil, pellitized coal fines or petroleum coke	2004	none		Cyclone / ESP	1960s
WKE	ROBERT REID	21-233-00001	RT	******		65	Webster	Dual burners (fuel oil or gas)				none	
Percent o	f Kentucky BART EG	SUs With or To Hav	ve Emissio	on Controls 1	to Date:			97%		90%		100%	
Percent o	f Kentucky EGUs on	MANE-VU 167 Lis	t With or T	o Have Emi	ssion Controls to	Date:		100%		93%		100%	

* 1.Note: "Size" column is for comparison purposes only. Companies used varying sources for reporting - gross, nameplate, etc.

** 2 Note: For emission controls brought online before 2000, if the online date is not readily available then the decade that the control became operational may be entered (such as 1990s, 1980s). In addition, if known, please indicate future NOx, SO2, and PM10 unit controls that are currently being constructed or planned and their projected online (in operation) date.

*** 3. Note: EKPC, per its BART Determination, plans to install for BART WFGDs and WESPs for Spuriock Units 1 & 2 and DFGDs and fabric filtration for Cooper Units 1 & 2. Some of these controls are related to a recent EKPC consent decree. For information, an EPA link to a EKPC consent decree is at: www.epa.gov/icompliance/resources/cases/civil/caa/easkentuckypower.html www.epa.gov/compliance/resources/cases/civil/caa/eastkentuckypower.html

**** 4.Note: Per a BART Determination and consent decree for AEP's Big Sandy Units 1 and 2, AEP plans to install ammonia injection on Unit 1 and a FGD Scrubber on Unit 2 to address condensible particulates for BART. Per the AEP consent decree, the FGD scrubber for Big Sandy Unit 2 is required by December 31, 2015. For information, an EPA link to a AEP consent decree is at: www.epa.gov/compliance/resources/cr www.epa.gov/compliance/resources/cases/civil/caa/americanelectricpower1007.html.

***** 5.Note: Per a BART Determination, E.ON U.S. plans to install sorbent injection on Mill Creek Units 3 and 4 to address condensible particulates for BART

****** 6.Note: TVA will install hydrated lime injection on Units 1-3 to address TVA Paradise stack condensibles per its TVA BART Determination.

******* 7.Note: WKE Reid Turbine is a Non-EGU auxiliary boiler only used during start-up that was exempted from BART modeling per EPA guidance.



Kentucky Energy and Environment Cabinet Kentucky Division for Air Quality

Appendix L.11 BART Determination Modeling Submittals

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Amended May 2010

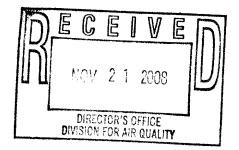
BART Determination Modeling Submittals



<u>CERTIFIED MAIL</u> <u>CERTIFICATION NUMBER 7006 2760 0005 5303 9375</u> <u>RETURN RECEIPT REQUESTED</u>

November 18, 2008

John Lyons, Director Kentucky Division for Air Quality 200 Fair Oaks Lane Frankfort, KY 40601



Re: Agreed Order entered into on October 20, 2008 File No. DAQ-29458-039

Dear Mr. Lyons:

Louisville Gas and Electric (LG&E) and the Kentucky Energy and Environment Cabinet entered into an Agreed Order on October 20, 2008 (File No. DAQ-29458-039). As specified in paragraph 1 of the order, LG&E is herein providing the Kentucky Division for Air Quality with information identifying emission rates utilized for the modeling conducted in conjunction with LG&E's September 24, 2007 submittal of Mill Creek Station's Best Available Retrofit Technology analysis. Additionally, this correspondence provides written explanation of the infeasibility of incorporating a sulfur trioxide (SO₃) emission limitation of 0.015 lb/mmBtu into the Mill Creek Station Title V permit.

As described in the submitted analysis, for the purpose of SO₃ emission determination, all H_2SO_4 particles determined from the CALPUFF modeling were assumed to be SO₃ emissions. As shown in "Table 7-1 CALPUFF Modeling Parameters" of the report, the baseline H_2SO_4 primary particle information are in units of grams per second (g/s), 25.39 g/s and 27.67 g/s for Mill Creek Units 3 and 4, respectively. When input into the CALPUFF model, they were converted to pounds per hour (lb/hr) values of 201.5 lb/hr and 219.6 lb/hr for Mill Creek Units 3 and 4, respectively. In determining the effectiveness of sorbent injection technology, a stack exit concentration of five (5) parts per million (ppm) SO₃ was used to evaluate the technology's effect on visibility impacts. For input into the CALPUFF model, five (5) ppm SO₃ equates to H_2SO_4 emission rates of 64.3 lb/hr and 76.5 lb/hr for Mill Creek Units 3 and 4, respectively. These values are displayed in Appendix D on pages D-4 and D-5 of the previously submitted analysis. The lb/hr values were the primary model input values utilized in our CALPUFF modeling. As such, these are the values that are appropriate for incorporation into Mill Creek Station's Title V permit.

For illustrative purposes only, the lb/hr values were converted to lb/mmBtu values in Table 7-4 of the September 24, 2007 submittal. While we apologize for the confusion which resulted from

including the value in our submittal, we wish to clarify that we never intended to suggest that it is appropriate for inclusion as an emission limit in our permit.

The 0.015 lb/mmBtu value provided in Table 7-4 is based on the design heat input (i.e., maximum) value for the two units. However, in the course of normal utility operations, the units operate at a wide range of heat inputs, some of which are substantially lower than the design heat input value. Although the SO₃ mitigation system proposed by LG&E can meet the specified lb/hr emissions values necessary to achieve BART, it is not capable of controlling H₂SO₄ emission to 0.015 lb/mmBtu at all heat input levels. Indeed, the measurement accuracy of H₂SO₄ emissions is questionable when operating at the level of lower heat inputs that would be encountered in the course of normal operations.

Consequently, adding a 0.015 lb/mmBtu limit to the permit would place severe constraints on our operational flexibility which could effectively preclude us from operating the unit at certain heat inputs. This would have major financial implications for us. In conclusion, it is not technically feasible for our proposed SO₃ mitigation system to meet the 0.015 lb/mmBtu H₂SO₄ target at all operating loads and we do not believe that the value reflects BART for our units.

Therefore, if the Division desires to incorporate specific BART emission limits into the Title V permit for Mill Creek, the appropriate values would be 64.3 and 76.5 lb/hr H₂SO₄ for Units 3 and 4 respectively. If you have any questions or require additional information, please contact me at (502) 627-4621 or Jason Wilkerson at (502) 627-4043.

Respectfully.

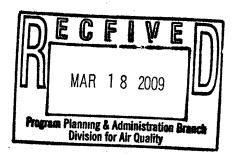
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Gary Revlett **Environmental Affairs** E.ON U.S.

Cc: Robin Thomerson, KDAQ [This page intentionally left blank.]

EAST KENTUCKY POWER COOPERATIVE

March 18, 2009



Martin Luther Program Planning & Administration Kentucky Division for Air Quality 200 Fair Oaks Lane, First Floor Frankfort, Kentucky 40601

RE: John Sherman Cooper Generating Station-Revised BART Analysis

Dear Mr. Luther:

As you know, Units 1 and 2 at the East Kentucky Power Cooperative, Inc. (EKPC) John Sherman Cooper Station (Cooper Station) are subject to the Best Available Retrofit Technology (BART) determination guidelines under 40 CFR Part 51. EKPC submitted its BART determination modeling and control strategy to the Division in a report dated July 23, 2007. The July 2007 submittal identified wet flue gas desulfurization (WFGD) and wet electrostatic precipitators (WESP) as BART for Cooper Units 1 and 2 and those controls were specified in Kentucky's June 2008 Regional Haze SIP. Since its July 2007 submittal and the submittal of the Regional Haze SIP, EKPC has determined, with the assistance of Burns & McDonnell Engineering Company, Inc., that Dry FGD and Fabric Filtration (DFGD/FF) will be at least as effective as WFGD/WESP for the Cooper Units. Therefore, EKPC is requesting that KDAQ amend the 2008 Regional Haze SIP to allow substitution of DFGD/FF at Cooper Station for the previously approved WFGD/WESP. Based upon our discussions with you and other representatives of KDAQ last fall, EKPC has prepared the enclosed analysis, including modeling, in support of this request.

After you have reviewed the enclosed submittal, EKPC looks forward to addressing any questions you may have. In order to comply with the obligations under the Consent Decree in the case styled, *United States v. East Kentucky Power Cooperative, Inc.*, Civ. Action No. 04-34-KSP (E.D. Ky.) (entered Sept. 27, 2007), EKPC must complete the retrofit of Unit 2 completed and operational by June 30, 2012.

Sincerely,

Mike Buikly bor ferry Puris

Jerry Purvis, Manager Environmental Affairs

JP:MB:jkr

Enclosure

c: John Lyons Sean Alteri Mike Binkley Jacqueline Quarles Chris Wathen, Kenvirons

4775 Lexington Road 40391 P.O. Box 707, Winchester, Kentucky 40392-0707 Tel. (859) 744-4812 Fax: (859) 744-6008 http://www.ekpc.coop

A Touchstone Energy Cooperative Appendix L.11 - 1 Kentucky Regional Haze SIP

I. INTRODUCTION

East Kentucky Power Cooperative, Inc. (EKPC) is a power generation and transmission utility that owns and operates several electric generating units (EGUs) in Kentucky. Some of the EGUs owned and operated by EKPC consist of coal-fired units that are subject to the Regional Haze rule and Best Available Retrofit Technology (BART) determination guidelines promulgated under 40 CFR Part 51. In response to EPA rulemaking and at the request of the Kentucky Division for Air Quality (KDAQ), EKPC previously evaluated BART for its subject EGUs and conducted modeling in accordance with the protocol approved by KDAQ. This work culminated in the submittal to KDAQ of the report entitled, Best Available Retrofit Technology (BART) Source Specific Modeling - East Kentucky Power Cooperative Hugh L. Spurlock Generating Station and John Sherman Cooper Generating Station, dated July 23, 2007 (2007 BART Submittal).¹

As set out in the 2007 BART Submittal, Cooper Units 1 and 2 are BART-eligible sources and are subject to BART since the 98th percentile visibility impacts predicted for both BART-eligible sources were above the exemption threshold of 0.5 deciviews (dv). At the time the 2007 BART Submittal was prepared, EKPC was in the midst of negotiating a Consent Decree with EPA to resolve certain allegations of noncompliance with Clean Air Act requirements, and it was anticipated that the negotiated resolution would require retrofitting the Cooper BART-eligible units with wet flue gas desulfurization systems (WFGDs) for SO₂ control and wet electrostatic precipitators (WESPs) for PM control. 2007 BART Submittal, at 4-3. Taking into consideration the anticipated Consent Decree, EKPC determined at the time that WFGD and WESP were BART for Cooper Units 1 and 2. KDAQ accepted EKPC's demonstration of BART and the associated regional haze modeling and utilized that information as a component of Kentucky's Regional Haze SIP, dated June 2008. SIP, Section 7.5.3 and Table 7.5.3-1.

As subsequently discussed with KDAQ, the Consent Decree as ultimately entered did not mandate WFGD and WESPs. Consent Decree, Paragraphs 64, 82. EKPC retained Burns & McDonnell Engineering Company, Inc. to assist with the retrofit project for Cooper Units 1 and 2, including evaluation of available control methodologies to satisfy the Consent Decree. As a result of this evaluation, EKPC has determined that the use of a dry flue gas desulfurization system (DFGD) combined with a pulse jet fabric filter (FF) for Cooper Units 1 and 2 meets or exceeds the performance of the WFGD/WESP previously proposed as BART.

As explained in detail herein, the anticipated total PM emission control achieved by the DFGD/FF control train is better than the previously approved WFGD/WESP, and the predicted visibility impacts are comparable.

¹ This request relates only to the BART-eligible sources at the John Sherman Cooper Generating Station. The 2007 BART Submittal is still applicable to the sources at the Spurlock Station.

Accordingly, EKPC is submitting this revised BART analysis in support of its request that KDAQ amend the June 2008 Regional Haze SIP to allow for the substitution of the DFGD/FF control train in place of the WFGD/WESP.

II. ANALYSIS

A. Control Technology Comparison

In the 2007 BART Submittal, EKPC determined that a WFGD/WESP control train capable of achieving 0.030 lb/mmBtu filterable PM and 0.052 lb/mmBtu total PM was BART for Cooper Units 1 and 2. EKPC is requesting that it be allowed to substitute a DFGD/FF control train capable of achieving 0.030 lb/mmBtu filterable PM and 0.045 lb/mmBtu total PM for the WFGD/WESP control train previously approved.

The previously approved WFGD/WESP technology utilizes a lime or limestone slurrybased scrubbing medium for SO₂ removal in the absorber, followed by a wet ESP, which provides removal of scrubber-generated PM as well as sulfuric acid mist. As discussed in the 2007 BART Submittal, WFGD/WESP can provide control of filterable PM to levels of 0.030 lb/mmBtu. Total PM emissions from the WFGD/WESP control train were estimated using the National Park Service (NPS) PM speciation spreadsheets (see Attachment A). At a filterable PM emission rate of 0.030 lb/mmBtu, the NPS speciation spreadsheet for PC boilers with WFGD/WESP estimates total PM emissions to be 0.052 lb/mmBtu. These values were used in the previous BART submittal.

The proposed DFGD/FF control train utilizes a pebble lime-based dry scrubber system in combination with a fabric filter for control of SO₂, PM, and sulfuric acid mist. The DFGD/FF can also attain filterable PM levels meeting the previously accepted 0.030 lb/mmBtu filterable PM emission rate. Condensable PM emissions from the DFGD/FF as specified by Burns & McDonnell Engineering Company, Inc. equate to 50% of the filterable emissions, providing a condensable PM emission rate of 0.015 lb/mmBtu for a total PM rate of 0.045 lb/mmBtu. Based upon this information, at equal filterable PM emission levels, the DFGD/FF actually provides better overall control for total PM than the approved WFGD/WESP, primarily due to lower sulfuric acid emissions. The NPS spreadsheet for WFGD/WESP determines sulfuric acid emissions (listed as inorganic condensable PM) to be 0.018 lb/mmBtu, while the NPS spreadsheet for DFGD/FF (Attachment A) determines sulfuric acid emissions to be 0.012 lb/mmBtu.

Table 1 provides a summary of PM emission rates for the two control options. Based on these rates, the proposed DFGD/FF is more effective at controlling PM emissions than the WFGD/WESP control train identified in the SIP.

Control Option	Filterable PM Emissions, lb/mmBtu	Total PM Emissions, lb/mmBtu
WFGD/WESP	0.030	0.052
DFGD/FF	0.030	0.045

Table 1Summary of PM Performance Levels

B. BART Modeling

28.4

Unit 2

In order to confirm and to demonstrate the equivalence of the DFGD/FF control train to the previously accepted WFGD/WESP control train, EKPC performed additional CALPUFF modeling to evaluate the visibility impacts in Class I areas from Cooper Units 1 and 2. PM emissions were speciated in the same manner as described in the 2007 BART Submittal, except that a maximum filterable PM limit of 0.030 and a total PM limit of 0.045 were input into the NPS speciation spreadsheets for dry-botttom PC boilers employing FGD and fabric filtration. Emissions were then calculated using the spreadsheets and a maximum continuous rate (heat input) (MCR) of 1,350 mmBtu/hr for Unit 1 and 2,400 mmBtu/hr for Unit 2.² The completed NPS spreadsheets for Cooper Units 1 and 2 are included in Attachment A. Table 2 summarizes the speciated emissions after retrofit.

PM Species Emission Rates, lb/hr						
SO₄	SOA	PMC	PMF	EC		
16.0	4.0	34.3	6.0	0.2		
		SO4 SOA	SO4 SOA PMC	SO4 SOA PMC PMF		

60.9

10.7

0.4

 Table 2

 Speciated PM Emission Rates for Modeling to Evaluate BART Controls

Stack parameters for the two Cooper units subject to the BART analysis are presented below in Table 3. The exit velocity and temperature parameters are different than those used in the previous modeling and reflect the use of the DFGD/FF control train.

7.1

Table 3Stack Parameters for Cooper Sources

Unit ID	UTM East, km	UTM North, km	Stack Height, m	Base Elevation, m	Stack Diameter, m	Exit Velocity, m/s	Stack Temp., K
Cooper Unit 1	714.228	4097.212	78.9	244	5.5	21	344.26
Cooper	714.220	4007.212	10.3	244	0.0	<u> </u>	344.20
Unit 2	714.228	4097.212	78.9	244	5.5	21	344.26

Having specified exhaust parameters and calculated the speciated emission rates, the CALPUFF model was run as described previously for Units 1 and 2 at Cooper for each

² The maximum continuous rating (MCR) for Cooper Units 1 and 2 used in the prior BART modeling were 1,080 mmBtu/hr and 2,089 mmBtu/hr, respectively. (These are the MCR ratings included in the description of these units in the Title V permit.) EKPC decided to use potential MCR values for Unit 1 of 1,350 mmBtu/hr and 2,400 mmBtu/hr for Unit 2 in calculating emissions for the BART modeling to ensure that the BART modeling will be valid at all operating conditions.

Class I area within 300 km. Table 4 shows the top eight 24-hour changes in light extinction (deciviews, dv) from the 20 % best days for each of the Class I areas subject to analysis after application of retrofit control for PM. Table 5 presents a summary of the results of the revised BART modeling for the Cooper sources and each Class I area, with the number of days and receptors in each Class I area where dv > 0.5. These tables demonstrate compliance with the Regional Haze Rule since the 98th percentile modeled values (8th highest) or the 22nd highest predictions over the three years modeled, whichever are higher, are below the exemption threshold of 0.5 dv in each Class I area. In fact, no days in any of the modeled Class I areas out of the three years modeled was predicted where the change in light extinction was greater than 0.5 dv. Table 6 shows a comparison of the 2007 BART Submittal to this submittal for the 98th percentile and maximum 24-hour change in light extinction in deciviews. As shown, with the exception of Linville Gorge, where the 98th percentile change in light extinction goes up slightly from 0.046 to 0.047, the visibility impacts decrease for both the 98th percentile and the maximum 24-hour.

Therefore, application of DFGD/FF controls to Cooper Units 1 and 2, with a filterable PM limit of 0.030 lb/mmBtu, mitigates any adverse visibility impact in Class I areas within 300 km of each source and fulfills the BART requirements.

Table 4Results of CALPUFF Modeling for BART Control AssessmentVisibility Impact Rankings

EKPC BART-Eligible		2001 Delta- Deciview	2002 Delta- Deciview	2003 Delta- Deciview
Sources	Class I Area	Ranks 1-8	Ranks 1-8	Ranks 1-8
		0.226	0.254	0.412
		0.183	0.249	0.345
		0.181	0.231	0.253
Cooper Station	Mammoth Cave NP	0.163	0.220	0.241
Units 1 & 2		0.148	0.215	0.201
		0.144	0.211	0.200
		0.142	0.209	0.188
		0.141	0.201	0.170
		0.262	0.389	0.385
		0.243	0.346	0.280
		0.241	0.237	0.252
Cooper Station	Great Smoky Mountains NP	0.236	0.213	0.252
Units 1 & 2		0.225	0.199	0.190
Units 1 & 2		0.223	0.165	0.183
		0.219	0.155	0.178
		0.192	0.150	0.171
		0.154	0.254	0.319
		0.148	0.236	0.223
Cooper Station Units 1 & 2		0.146	0.216	0.181
	Joyce Kilmer-Slickrock	0.145	0.148	0.151
		0.133	0.136	0.112
		0.126	0.135	0.112
		0.119	0.121	0.111
		0.115	0.119	0.102
		0.094	0.148	0.122
		0.093	0.138	0.119
		0.091	0.129	0.111
Cooper Station	Cohutta	0.090	0.107	0.109
Units 1 & 2		0.087	0.096	0.103
		0.082	0.090	0.096
		0.075	0.086	0.084
		0.068	0.080	0.079
		0.064	0.070	0.127
		0.053	0.070	0.084
Cooper Station Units 1 & 2		0.049	0.064	0.072
	Shining Rock	0.049	0.053	0.060
		0.048	0.049	0.054
		0.046	0.042	0.051
		0.046	0.042	0.050
		0.045	0.039	0.047
		0.098	0.094	0.074
		0.088	0.071	0.067
		0.073	0.064	0.058
Cooper Station	Linville Gorge	0.065	0.062	0.057
Units 1 & 2		0.051	0.045	0.054
		0.050	0.044	0.051
		0.046	0.041	0.048
		0.046	0.041	0.047

 Table 5
 Summary Results of CALPUFF Modeling for BART Control Assessment

	Number o	Number of Days and	Number of	Number of Days and	Number of	Number of Days and	Number of	Number of Days and	
	Number of	Number of Receptors	Number of	Number of Receptors	Number of	Number of Receptors	Number of	Number of Receptors	Maximum
Distance (km)	with Impa	with Impact > 0.5 dv	with Impa	with Impact > 0.5 dv	with Impa	with Impact > 0.5 dv	with Impa	with Impact > 0.5 dv	24-Hour
from Source	in Clas	in Class I Area:	in Class	in Class I Area:	in Class	in Class I Area:	in Class I	in Class I Area for	Impact for
to Class I	20	2001	20	2002	20	2003	3-Year	3-Year Period	3-Year
Area Boundary	Days	Receptors	Days	Receptors	Days	Receptors	Days	Receptors	Period
130	0	0	0	0	0	0	0	0	0.412
162	0	0	0	0	0	0	0	0	0.389
178	0	0	0	0	0	0	0	0	0.319
221	0	0	0	0	0	0	0	0	0.148
233	0	0	0	0	0	0	0	0	0.127
267	0	0	0	0	0	0	0	0	0.098

~

Table 6Comparison of the 2007 BART Submittal Results using WFGD/WESPto Results using DFGD/FF

Class I Area	98 th Percentile Impact with BART Controls (change in dv)		Maximum 24-hour Impact for 3-year period (change in dv)		
	WFGD/WESP	DFGD/FF (proposed)	WFGD/WESP	DFGD/FF (proposed)	
Mammoth Cave NP	0.252	0.201	0.648	0.412	
Great Smokey Mtns NP	0.219	0.192	0.323	0.389	
Joyce Kilmer-Slickrock	0.122	0.119	0.269	0.319	
Cohutta	0.087	0.080	0.173	0.148	
Shining Rock	0.049	0.047	0.075	0.127	
Linville Gorge	0.046	0.047	0.104	0.098	

MODEL INPUT AND OUTPUT FILES

All input and output files from the additional CALPUFF modeling system BART analysis for Cooper Units 1 and 2 are provided on CD-ROM. All model input files have a file extension of .inp, while all model output files have an extension of .lst. An example set of file names, these representing the modeling for the Cooper Station sources for Mammoth Cave National Park (MACA), are listed below for the 2001 modeling:

CALPUFF Input – PUFF-COOPER-MACA-2001.INP CALPUFF Output – PUFF-COOPER-MACA-2001.LST POSTUTIL Input – PU-COOPER-MACA-2001.INP POSTUTIL Output – PU-COOPER-MACA-2001.LST CALPOST Input – POST-COOPER-MACA-2001.INP CALPOST Output – POST-COOPER-MACA-2001.INP

CONCLUSION

As explained above, EKPC has determined that use of a DFGD/FF for Cooper Units 1 and 2 is at least as effective as the WFGD/WESP previously accepted by KDAQ as BART. EKPC has performed additional CALPUFF modeling to evaluate the visibility impacts of its BART-eligible units taking into account the alternative control train for Cooper Units 1 and 2. The predicted visibility impacts are comparable to impacts noted in EKPC's 2007 BART Submittal. Accordingly, EKPC requests that KDAQ amend the June 2008 Regional Haze SIP to allow EKPC to substitute the DFGD/FF control train for the previously accepted WFGD/WESP control train for Cooper Units 1 and 2.

ATTACHMENT A

NPS PARTICULATE SPECIATION SPREADSHEETS POST-CONTROL PM EMISSIONS

.

Appendix L.11 - 205 Kentucky Regional Haze SIP Cooper Station - Unit 1

Controlled PM10 Speciation from AP-42 Tables 1.1-5 & 1.1-6 Dry Bottom Boiler burning Pulverized Coal using FGD+FF for Emissions control

4 % and an ash content of 45 % and a heat input 4,350 mmBtu/hr and (RH) = assumes heating value of ______12,000 Btu/lb and a sulfur content of

Filterable (Ib/mmBlu) 0.0406 (Ib/fon) 0.975
Total PM10 Filterable (Ib/mmBtu) (Ib/mmBtu) 0.0606 0.0406 1.455 0.975

	٦.	[1
Particle	Ext.Co	4	
а.	Type	SOA	
CPM OR	(% of Total)	6.6%	
Particle	Type Ext.Coef.	SO4 3*f(RH)	
CPM IOR	(% of Total)	26.4%	
Condensible	(% of Total)	33.0%	
Ext.	Coef.	10	
Fine EC	(% of Total)	0.4%	
EXT.	Coef.	1	
Fine Soil	(% of Total)	9.9%	
Fine	(% of Total)	10.3%	
Ext.	Coef.	0.6	
Coarse	(% of Total)	56.7%	
Filterable	(% of Total)	67.0%	
Total PM10	(% of Total)	100%	
Boiler	Type	PC-DB	

If you are given Total PM10 emissions in lohhr:

	Construction of the second second	colo descritorias constructivos autores.				the second se									
						Control	led PM1(Controlled PM10 Emissions (Bold Value is Input b	d Value is i	Input by user.)					_
Boiler	Total PM10	Filterable	Coarse	Ext.	Fine	Fine Soil	Ext.	Fine EC	Ext.	Condensible	CPM IOR	Particle	CPM OR	Particle	
Type	(Ib/hr)	(lb/hr)	(lb/hr)	Coef.	(lb/hr)	(Ib/hr)	Coef.	(Ib/hr)	Coef.	(lb/hr)	(Ip/hr)	Type Ext.Coef.	(Ib/hr)	Type Ext.Coef.	_
PC-DB	60.4	40.5	34.3	0.6	6.2	6.0	+	0.2	10	19.9	16.0	SO4 3	4.0	SOA 4	_
		Weighted Ext	tinction	20.6			6.0		2.3			47.9		16.0	_

<u>1</u>,5

If you are given Total PM10 emissions in Ib/mmBtu:

						Controlled	ed PM1	10 Emissions (Bole	(Bold Value is Input b	put by user.)				
ē	Total PM10	Filterable	Coarse	EXT	Fine	Fine Soil	Ext.	Fine EC	Ext.	Condensible	CPM IOR	Particle	CPM OR	Particle
e	(lb/mmBtu)	(lb/mmBtu)	(lb/mmBtu)	Coef.	(lb/mmBtu)	(lb/mmBtu)	Coef.	(lb/mmBtu)	Coef.	(lb/mmBtu)	(Ib/mmBtu)	Type Ext.Coef.	(Ib/mmBtu)	Type Ext.Coef.
C-DB	0.045	0.03	0.03	0.6	0.00	0.00	1	0.0002	10	0.01	0.01	SO4 3	0.00	SOA 4
	Contro	olled PM10 Em	Emissions (Bold va	alues fro	om Table 1.1-5 an	nd from Table 6 o	f EPA's	able 1.1-5 and from Table 6 of EPA's January 2002 DRAFT "C	AFT "Catalo	of Global Emi	Catalog of Global Emissions Inventories and Emission Inventory Tools for Black Carbon.	and Emission Inven	itory Tools for Black	Carbon.")
e.	Total PM10	Filterable	Coarse	Ĕ	Fine	Fine Soil	Ext	Fine EC	Ext.	Condensible	CPM IOR	Particle	CPM OR	Particle
ĺ				ſ										

														and the second se
Boiler	Total PM10	Filterable	Coarse	Ext.	Fine	Fine Soil	Ext.	Fine EC	Ext.	Condensible	CPM IOR	Particle	CPM OR	Particle
Type	(% of Total)	(% of Total)	(% of Filterable)	Coef.	(% of Filterable)	(% of Filterable)	-	(% of Filterable)	Coef.	(% of Total)	(% of Condensible)	Type Ext.Coef.	if. (% of Condensible)	Type Ext.Coef.
PC-DB	100%	67.0%	84.6%	0.6	15.4%	14.8%	-	0.6%	10	33.0%	80.0%	SO4 3	20.0%	SOA 4
						(% of Fine)	Coef.	(% of Fine)	Coef.					
						96 [.] 3%	-	3.7%	10					
If you are	given Filteral	f you are given Filterable PM10 emissions in Ib/hr:	sions in tb/hr:		-									
						Controll	ed PM	Controlled PM10 Emissions (Bold Value is Ir	1 Value is li	nput by user.)				

Boiler	Total PM10	Filterable	Coarse	EX.	Fine	Fine Soil	ĔX	Fine EC	Ext.	Condensible	CPM IOR	Particle	CPM OR	Particle
Type	(Ib/hr)	(Ib/hr)	(lb/hr)	Coef.	(lb/hr)	(ID/hr)	Coef.	(lb/hr)	Coef.	(lb/hr)	(lb/hr)	Type Ext.Coef.	(lb/hr)	Type Ext.Coef
PC-DB	60.4	40.5	34.3	0.6	6.2	6.0	-	0.2	10	19.9	16.0	SO4 3	4.0	SOA 4

controlled PM10 Emissions (Bold Value is Input by user.)

If you are given Filterable PM10 emissions in Ib/mmBtu:

	icle	xt.Coef.	4						
	Particle	Type Ext.Coef.	SOA						
	CPM OR	(lb/mmBtu)	0.00						
	Particle	Type Ext.Coef.	SO4 3						
	CPM IOR	(Ib/mmBtu)	0.01						
har by accir.	Condensible	(lb/mmBtu)	0.01						
	Ext.	Coef.	10						
Constanting in a second s	Fine EC	(lb/mmBtu)	0.0002						
	Ext.	Coef.	1		_	_	_	_	_
0000	Fine Soil	(lb/mmBtu)	00.0	34.3	6.0	0.2	16.0	4.0	60.4
	Fine	(lb/mmBtu)	00.0	Coarse	Fine Soil	Tine EC	CPM IOR	CPM OR	
	Ext.	Coef.	0.6	Ŭ	-	-	Ŭ	Ū	
	Coarse	(Ib/mmBtu)	0.03						
	Filterable	(lb/mmBtu)	0.03						
	Total PM10	(lb/mmBtu)	0.045	56.7%	9.6%	0.4%	26.4%	6.6%	100.0%
	Boiler	Type	PC-DB	Coarse	Fine Soit	Fine EC	CPM IOR	CPM OR	

Cooper Station - Unit 2

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Controlled PM10 Speciation from AP 42 Tables 1.1-5 & 1.1-6 Dry Bottom Boiler burning Pulverized Coal using FGD+FF for Emissions control

assumes heating value of _____12,000. Btu/lb and a suffur content of

-

L						Controlle	ad PM10	Controlled PM10 Emissions (Bold values from Table 1.1-5.)	values fron	1 Table 1.1-5.)					Γ
H	Total PM10	Filterable	Coarse	Ext.	Fine	Fine Soil	EXT	Fine EC	EX.	Condensible	CPM IOR	Particle	CPM OR	Particle	Γ
	(lb/mmBtu)	(lb/mmBtu)	(ltb/mmBtu)	Coef.	(lb/mmBtu)	(Ib/ton)	Coef.	(Ib/mmBtu)	Coef.	(lb/mmBtu)	(Ib/mmBtu)	Type Ext.Coef.	(lb/mmBtu)	Type Ext.Coef	oef.
_	0.0606	0.0406	0.0344	0.6	0.0063	0.0060	+	0.00023	10	0.020	0.016	SO4 3*(RH)	0.004	SOA 4	
						Controlle	o PM10	Controlled PM10 Emissions (Bold Values from Table 1	Values fron	n Table 1.1-6.)					١Г

											I			
soiler	Total PM10	Filterable	Coarse	EX.	Fine	Fine Soil	Ĕ.	Fine EC	Ext E	Condensible	CPM IOR	Particle	CPM OR	Particle
e	(lb/ton)	(lb/ton)	(Ib/ton)	Coef.	(lb/ton)	(lb/ton)	Coef.	(lb/ton)	Coef.	(lb/ton)	(Ib/ton)	Type Ext.Coef.	(lb/ton)	Type Ext.Coef.
PC-DB	1.455	0.975	0.825	0.6	0.150	0.144	-	0.0056	10	0.480	0.384	SO4 34(RH)	0.096	SOA 4
							ľ	Controlled PM10 Emissions	Emissions					
Ē	Total PM10	Filterable	Coarse	Ext.	Fine	Fine Soil	Ext.	Fine EC	Ext.	Condensible	CPM IOR	Particle	CPM OR	Particle
ø	(% of Total)	(% of Total)	(% of Total)	Coef.	(% of Total)	(% of Total) Coef.	Coef.	(% of Total)	Coef.	(% of Total)	(% of Total)	Type Ext.Coef.	(% of Total)	Type Ext.Coef.
۱														

Type SOA

6.6% ď 8

3*f(RH)

5	N 1:07	20.00	2	R 1.5	-	2.2.2	2.2.2	2	A 1.00	20.10	2 201	22
												1
Type E	(% of Total)	(% of Total)	Coef.	(% of Total)	Coef.	(% of Total)	(% of Total)	Coef.	(% of Total)	(% of Total)	(% of Total)	
	CL M IOL		LAI.		1		1 11 10					ō

If you are given Total PM10 emissions in Ib/hr:

		official and a second second second second												
						Controlled 1	M	10 Emissions (Bold Value)	alue is l	nput by user.)				
Boiler	Total PM10	Filterable	Coarse	Ext.	Fine	Fine Soil	Ext.	Fine EC	Ext.	Condensible	CPM IOR	Particle	CPM OR	Particle
Type	(lb/hr)	(lb/hr)	(lb/hr)	Coef.	(lb/hr)	(Ip/µL)	Coef.	(lp/µl)	Coef.	(lb/hr)	(lb/hr)	Type Ext.Coef.	(lp/hr)	Type Ext.Coef.
PC-DB	107.4	72.0	60.9	0.6	11.1	10.7	1	0.4	10	35.4	28.4	SO4 3	7.1	SOA 4
		Weighted Exti	inction	36.6			10.7		4.1			85.1		28.4

1.5

If you are given Total PM10 emissions in lb/mmBtu:

						Controlle	WH D	Controlled PM10 Emissions (Bold Value is Input by user.	Value is In	put by user.)				
Boiler	Total PM10	Filterable	Coarse	Ext.	Fine	Fine Soil	Ext.	Fine EC	EXT.	Condensible	CPM IOR	Particle	CPM OR	Particle
Type	(lb/mmBtu)	(lb/mmBtu)	(Ib/mmBtu)	Coef.	(lb/mmBtu)	(lb/mmBtu) Coef.	Coef.	(lb/mmBtu)	Coef.	(lb/mmBtu)	(lb/mmBtu)	Type Ext.Coef.	(lb/mmBtu)	Type Ext.Coef.
PC-DB	0.045	0.03	0.03	0.6	00.00	0.00	-	0.0002	10	0.01	0.01	SO4 3	00.00	SOA 4
	Contro	ontrolled PM10 Em	Emissions (Bold va	values fro	om Table 1.1-5 an	d from Table 6 of	EPA's	January 2002 DR	∿FT "Catalo	g of Global Emis	ssions Inventories a	nd Emission Inve	Table 1.1-5 and from Table 6 of EPA's January 2002 DRAFT "Catalog of Global Emissions Inventories and Emission Inventory Tools for Black Carbon."	Carbon.")
Boiler	Total PM10	Filterable	Coarse	EXT.	Fine	Fine Soil	Ext.	Fine EC	Ext.	Condensible	CPM IOR	Particle	CPM OR	Particle
Type	(% of Total)	(% of Total)	(% of Filterable)	Coef.	(% of Filterable)	(% of Filterable) (% of Filterable)	٢	(% of Filterable)	Coef.	(% of Total)	(% of Total) (% of Condensible) Type Ext.Coef.	Type Ext.Coef	(% of Condensible)	Type Ext.Coef.
PC-DB	100%	67.0%	84.6%	0.6	15.4%	14.8%	٢	0.6%	10	33.0%	80.0%	SO4 3	20.0%	SOA 4

1 Coef

(% of Fine

Fine

a la

												Btu:	sions in Ib/mmBtu:	le PM10 emis	f you are given Filterable PM10 emissions i	lf you are
S	7.1	3	S04	28.4	35.4		Ę	0.4	t	10.7	11.1	0.6	60.9	72.0	107.4	PC-DB
Ť	(lth/th)	Ext.Coef.	Type	(lb/hr)	(lb/hr)	ef.	Coef.	(lb/hr)	Coef.	(lb/hr)	(lb/hr)	Coef.	(lb/hr)	(lb/hr)	(Ib/hr)	Type
	CPM OR	Particle	٩	CPM IOR	Condensible	ŗ.	Ĕ	Fine EC	Ext.	Fine Soil	Fine	Ĕ	Coarse	Filterable	Total PM10	Boiler

Particle Type Ext.Coef. SOA 4

Boiler	Total PM10	Filterable	Coarse	EXT.	Fine	Fine Soil	EXT.	Fine EC	Ext.	Condensible	CPM IOR	Particle	CPM OR	Part	Particle
Type	(Ib/mmBtu)	(lb/mmBtu)	(lb/mmBtu)	Coef.	(lb/mmBtu)	(lb/mmBtu)	Coef.	(lb/mmBtu)	Coef.	(Ib/mmBtu)	(lb/mmBtu)	Type Ext.Coef	ef. (lb/mmBtu)	Type Ext.Coet	xt.Coef.
PC-DB	0.045	0.03	0.03	0.6	00.00	0.00	+	0.0002	10	0.01	0.01	SO4 3	0.00	SOA	4
Coarse	56.7%				Coarse	609	~								
Fine Soil	9.9%				Fine Soil	10.7									
Fine EC	0.4%				Fine EC	0.4									

28.4 7.1 107.4

CPM IOR CPM OR

26.**4**% 6.6% 100.0%

CPM IOR CPM OR

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Kentucky Energy and Environment Cabinet Kentucky Division for Air Quality

Appendix L.12 BART Determination Modeling Results for BART-Subject Sources

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Source	Class I Areas	BART Controls to Be Installed*	98 th Percentile Impact Before BART Controls (Change in dv)	98 th Percentile Impact with BART Controls (Change in dv)	BART Determination Control Visibility Improvement From 98 th Percentile value (Change in dy
East Kentucky Power Cooperative (EKPC) Spurlock Station	Mammoth Cave (251 km)	EKPC per a consent decree and for BART will install a wet FGD and wet ESP at EKPC Spurlock Units 1 and 2 that will address condensible particulate emissions and other visibility impairing pollutants.		0.213	1.621
East Kentucky Power Cooperative (EKPC) Cooper Station	Mammoth Cave (130) km	EKPC per a consent decree and for BART will install a dry FGD and fabric filtration at		0.201	7.175
	Great Smoky Mountains National Park (162 km)	EKPC Cooper Units 1 and 2 that will	6.763	0.192	6.571
	Joyce Kilmer-Slickrock Wilderness (178 km)	address condensible particulate emissions	4.974	0.119	4.855
	Cohutta Wilderness Area (221 km)	and other visibility impairing pollutants.	3.363	0.080	3.283
	Shinning Rock (233 km)	impairing ponduants.	2.022	0.047	1.975
	Linville Gorge Wilderness Area (267 km)		1.885	0.047	1.838
			U1- 1.285	0.606	0.679
TVA Paradise		**Although not for	U2- 1.285	0.606	0.679
	Mammoth Cave (63 km)	BART, TVA	U3- <u>1.842</u>	<u>0.836</u>	<u>1.006</u>
Plant**		previously indicated	4.412	2.048	2.364
		to KYDAQ its	3.930	2.048	1.882
		plans to install	U1- 0.251	0.116	0.135
		hydrated lime	U2- 0.251	0.116	0.135
		injection controls	U3- <u>0.381</u>	<u>0.166</u>	<u>0.215</u>
	Mingo (283 km)	on TVA Paradise	0.883	0.398	$\frac{0.213}{0.485}$
		Units 1-3 to mitigate opacity due to SO3 emissions.		0.398	0.467

Source	Class I Areas	BART Controls to Be Installed*	98 th Percentile Impact Before BART Controls (Change in dv)	98 th Percentile Impact with BART Controls (Change in dv)	BART Determination Control Visibility Improvement From 98 th Percentile value (Change in dv)
American Electric Power Big Sandy Plant (AEP)	Dolly Sods (291 km)	Per a consent decree and BART, AEP will	1.027	0.496	0.531
	James River Face (279 km)	install ammonia injection on Unit 1 and a FGD scrubber	1.052	0.457	0.595
	Linville Gorge (256 km)	on Unit 2 to address condensible particulate emissions	0.835	0.364	0.471
		and other visibility impairing pollutants.			
	Otter Creek (266 km)		1.285	0.558	0.697
E.ON U.S Mill*** Creek Station	Mammoth Cave (90 km)	***E.ON U.S. for BART will install sorbent injection controls on the larger Units 3-4 to mitigate condensable particulate emissions.	2.265	1.440	0.825

*Existing and expected EGU controls and EPA web links to EKPC and AEP consent decrees are available in Appendix L.8. **Since TVA had previously indicated to the KYDAQ its plans to install hydrated lime injection controls on TVA Paradise Units 1-3 to mitigate opacity due to SO3 emissions and that additional controls are not cost-effective at this time, the KYDAQ has determined BART to be no control for TVA Paradise Units 1-3. ***Given the extra cost for the lesser additional dv improvement for Units 1 and 2, the Cabinet agreed that BART for Mill Creek is the installation of sorbent injection controls on the larger Units 3 and 4.

 Table 9-2 Kentucky BART Controls, Emission Limits, and Compliance Timeframes for BART-Subject Sources

Kentucky BART Subject Source	BART Controls To Be Installed	BART Emission Limits	Inclusion in Title V Permit	Timeframe for Compliance with BART Emission Limits\Controls
East Kentucky Power Cooperative (EKPC) Spurlock Units 1 and 2 and Cooper Units 1 and 2	Install wet FGD and wet ESP on Spurlock Units 1 and 2 and a dry FGD and fabric filtration on Cooper Units 1 and 2.	A 07/02/07 EKPC consent decree provides a filterable PM emission rate of 0.030 lb/MMBTU, which was utilized to demonstrate modeled visibility improvement.	Emission limits and controls will be included in the source's Title V Permit as appropriate or on renewal.	Expeditiously as practicable, but no later than 5 years after EPA approves Kentucky's Regional Haze SIP.
AEP Big Sandy Unit 1 Unit 2	Install ammonia injection controls on Unit 1 and a FGD on Unit 2.	Inorganic Condensible Particulate Limits (modeled as sulfates): 101.0 lb/hr (H2SO4) 127.0 lb/hr (H2SO4)	Emission limits and controls will be included in the source's Title V Permit as appropriate or on renewal.	Expeditiously as practicable, but no later than 5 years after EPA approves Kentucky's Regional Haze SIP. KYDAQ will work with AEP to install the FGD scrubber on AEP Big Sandy Unit 2 as expeditiously as practicable.
TVA Paradise* Unit 1 Unit 2 Unit 3	*Although not for BART, TVA previously indicated to KYDAQ its plans to install hydrated lime injection controls on TVA Paradise Units 1-3 to mitigate opacity due to SO3 emissions.	*NA	*Although not for BART, TVA has indicated that its planned SO3 controls for Paradise Units 1-3 will be included in its Title V Permit as appropriate or on renewal.	*Although not for BART, TVA in its BART Determination has indicated the SO3 controls will be in place on Paradise Units 1- 3 well before BART controls are required. Specifically, TVA has related to

Table 9-2 Kentucky BART Controls, Emission Limits, and Compliance Timeframes for BART-Subject Sources

Kentucky BART Subject Source	BART Controls To Be Installed	BART Emission Limits	Inclusion in Title V Permit	Timeframe for Compliance with BART Emission
				Limits\Controls
				KYDAQ its
				proposed plan to
				have hydrated
				lime injection
				controls operating
				on all three TVA
				Paradise units
				possibly by the
				fall of 2010.
E.ON U.S.**	**Install sorbent	Inorganic	**Emission	**Expeditiously
Mill Creek	injection controls on	Condensible	limits and	as practicable, but
	larger Units 3 and 4	Particulate Limits	controls will	no later than 5
	to control SO3	(modeled as sulfates):	be included in	years after EPA
	emissions and		the source's	approves
Unit 3	continue to utilize	64.3 lb/hr (H2SO4)	Title V Permit	Kentucky's
Unit 4	existing ESPs to	76.5 lb/hr (H2SO4)	as appropriate	Regional Haze
	control PM emissions		or on renewal.	SIP.
	for Units 1 through 4.			

*Since TVA had previously indicated to the KYDAQ its plans to install hydrated lime injection controls on TVA Paradise Units 1-3 to mitigate opacity due to SO3 emissions and that additional controls are not cost-effective at this time, the KYDAQ has determined BART to be no control for TVA Paradise Units 1-3. **Given the extra cost for the lesser additional dv improvement for Units 1 and 2, the Cabinet agreed that BART for Mill Creek is the installation of sorbent injection controls on the larger Units 3 and 4.



Kentucky Energy and Environment Cabinet Kentucky Division for Air Quality

Appendix L.13 Summary of Kentucky BART Exemption and BART Determination Modeling

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Summary of Kentucky BART Exemption and BART Determination Modeling Results For Kentucky BART-Eligible and BART-Subject Sources

June 2008

(Amended May 2010)

Kentucky BART Exemption Modeling:

Table 1-1.Summary of Visibility Results – for Duke Energy East Bend Station - Rabbit Hash,
Kentucky – Screening Run (12-km grid) – Performed by Source Contractor

Class I Area (Est. Distance from Source)	2001	2002	2003	Annual average background b _{ext}
	Maximum delta-dec	viview, (# days>0.5 d	dv, # days >1 dv)	(Mm ⁻¹)
Mammoth Cave (210 km)	0.197 (0,0)	0.242 (0, 0)	0.227 (0, 0)	21.58
				20% Best Days
				background bext (Mm ⁻¹)
Mammoth Cave (210 km)	0.289 (0, 0)	0.354 (0,0)	0.331 (0, 0)	14.7

Table 1-2.Summary of Visibility Results- 98th Percentile Value (8th Highest) for Owensboro
Municipal Utilities (OMU) – Owensboro, Kentucky – Refined Run (4-km grid,
Subdomain-3)-Performed by Source Contractor

Class I Area (Est. Distance from Source)	2001	2002	2003	Annual average background b _{ext}
	Maximum delta-dec	viview, (# days>0.5 d	dv, # days >1 dv)	(Mm^{-1})
Mammoth Cave (93 km)	0.432 (5,0)	0.387 (4,0)	0.400 (3, 0)	21.58
Mingo (289 km)	0.043 (0,0)	0.048 (0,0)	0.053 (0, 0)	21.03

Table 1-23a.Before Controls Applied, Summary of Visibility Results for 98th Percentile Value
(8th Highest) for the East Kentucky Power Cooperative (EKPC) Cooper Station1 in
Pulaski County, Kentucky – Refined Run (4-km grid, Subdomain-3) – Performed by
Source Contractor

Class I Area (Est. Distance from Source)	2001	2002	2003	Annual average background b _{ext}
	Maximum delta-de	ciview, (# days>0.5 d	v, # days >1 dv)	(Mm ⁻¹)
Mammoth Cave (130) km)	5.810 (58, 48)	7.376 (68, 51)	6.749 (47, 40)	21.58
Great Smokey Mt. (162 km)	6.763 (117, 89)	5.966 (103, 79)	5.662 (97, 71)	21.39
Joyce Kilmer-Slickrock (178 km)	4.974 (79, 53)	4.248 (74, 51)	2.781 (64, 44)	21.40
Cohutta (221 km)	3.192 (60, 44)	3.363 (66, 36)	2.317 (63, 45)	21.40
Shinning Rock (233 km)	2.022 (53, 35)	1.565 (39, 19)	1.804 (50, 27)	21.40
Linville Gorge (267 km)	1.778 (43, 21)	1.599 (38, 16)	1.885 (50, 24)	21.36

¹BART Determination Modeling was required since this source exceeded the 0.5 dv threshold for the 98th Percentile Value (8th Highest).

Table 1-23b.With BART Determination Controls Applied, Summary of Visibility Results for 98th
Percentile Value (8th Highest) for the East Kentucky Power Cooperative (EKPC)
Cooper Station1 in Pulaski County, Kentucky – Refined Run (4-km grid,
Subdomain-3) – Performed by Source Contractor

Class I Area (Est. Distance from Source)	2001	2002	2003	Annual average background b _{ext}
	Maximum delta-de	ciview, (# days>0.5 d	v, # days >1 dv)	(Mm^{-1})
Mammoth Cave (130) km)	0.141 (0,0)	0.201 (0, 0)	0.170 (0, 0)	21.58
Great Smokey Mt. (162 km)	0.192 (0, 0)	0.150 (0, 0)	0.171 (0,0)	21.39
Joyce Kilmer-Slickrock (178 km)	0.115 (0, 0)	0.119 (0, 0)	0.102 (0, 0)	21.40
Cohutta (221 km)	0.068 (0, 0)	0.080 (0, 0)	0.079 (0, 0)	21.40
Shinning Rock (233 km)	0.045 (0, 0)	0.039 (0, 0)	0.047 (0, 0)	21.40
Linville Gorge (267 km)	0.046 (0, 0)	0.041 (0, 0)	0.047 (0, 0)	21.36

¹ Per the source BART Determination, the above results reflect a Dry FGD scrubber and Fabric Filtration controls to be installed on EKPC Cooper Units 1 and 2 for BART and per applicable provisions of the EKPC consent decree. These controls will address condensible and directly emitted visibility impairing pollutants.



Kentucky Energy and Environment Cabinet Kentucky Division for Air Quality

Appendix N Public Hearing Notice and Summary of Comments Received and Cabinet Responses

Appendix N - 1 Kentucky Regional Haze SIP

Public Hearing Notice

Appendix N - 2 Kentucky Regional Haze SIP

NOTICE OF PUBLIC HEARING KENTUCKY DIVISION FOR AIR QUALITY TO REVISE KENTUCKY'S STATE IMPLEMENTATION PLAN

The Kentucky Energy and Environment Cabinet will conduct a public hearing on November 23, 2009, at 10:00 a.m. (local time) in Conference Room 201B of the Division for Air Quality, 200 Fair Oaks Lane, 1st Floor, Frankfort, Kentucky. This hearing will be held to receive comments on a proposed revision to Kentucky's State Implementation Plan (SIP). This proposed revision addresses the following issues that will amend Kentucky's June 25, 2008, Regional Haze SIP: (1) E.ON U.S. Mill Creek Units 3 and 4, a change to indicate the proper BART Title V permit emission limits of 64.3 lb/hr and 76.5 lb/hr respectively for H₂SO₄ in place of a 0.015 lb/mmBtu limit and (2) East Kentucky Power Cooperative (EKPC) Cooper Units 1 and 2, based on March 18, 2009, revised EKPC BART determination modeling a substitution of dry flue gas desulfurization (DFGD) and fabric filtration (FF) emission controls for the wet FGD (WFGD) and wet electrostatic precipitator (WESP) controls.

This hearing is open to the public and all interested persons will be given the opportunity to present testimony. To assure that all comments are accurately recorded, the Division for Air Quality requests that oral comments presented at the hearing are also provided in written form, if possible. Written comments must be received by close of business on November 23, 2009, to be considered part of the hearing record. The Energy and Environment Cabinet does not discriminate on the basis of race, color, national origin, sex, age, religion, or disability and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford an individual with a disability an equal opportunity to participate in all services, programs, and activities.

The full texts of the proposed SIP revision are available for public inspection and copying during regular business hours (8:00 a.m. to 4:30 p.m., local time) at the locations listed below. Any individual requiring copies may submit a request to the Division for Air Quality in writing, by telephone, by FAX, or e-mail. Requests for copies should be directed to the contact person. The proposed SIP revision can be accessed online at: http://www.air.ky.gov/homepage_repository/Public+Hearings.htm.

CONTACT PERSON: Martin Luther, Environmental Scientist II, Program Planning and Administration Branch, Division for Air Quality, 200 Fair Oaks Lane, 1st Floor, Frankfort, Kentucky 40601. Phone number: (502) 564-3999, ext. 4412; fax number: (502) 564-4666; e-mail: martin.luther@ky.gov.

Louisville Metro APCD	Ashland Regional	Bowling Green Regional
850 Barret Ave, Suite 205	1550 Wolohan Dr, Suite 1	1508 Westen Ave
Louisville, KY 40204	Ashland, KY 41102	Bowling Green, KY 42104
Florence Regional 8020 Veterans Memorial Dr Suite 110 Florence, KY 41042	Frankfort Regional 643 Teton Trail, Suite B Frankfort, KY 40601	Hazard Regional 233 Birch St Suite 2 Hazard, KY 41701
London Regional 875 S Main St London, KY 40741	Owensboro Regional 3032 Alvey Park Dr W Suite 700 Owensboro, KY 42303	Paducah Regional 130 Eagle Nest Dr Paducah, KY 42003
Fayette County Clerk	Hardin County Clerk	Henderson County Clerk
162 E Main St	Hardin Co Courthouse	Henderson Co Courthouse
Lexington, KY 40507	Elizabethtown, KY 42701	Henderson, KY 42420

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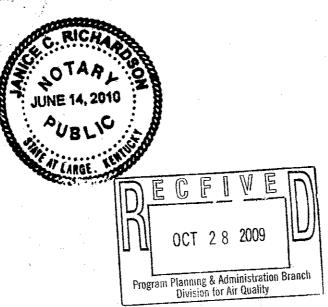
I, Margie Wise of THE COURIER-JOURNAL, Inc., clerk of THE COURIER JOURNAL general circulation printed and published at Louisville, Kentucky, do solemnly swear that from my own personal knowledge, and reference to the files of said publication, the advertisement of:

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Subscribed and sworn to before me this $\underline{33}$ day of ATAU . 2009.

Janice Capris Richardson Notary/<u>My.Commission</u> expires



Appendix N - 4 Kentucky Regional Haze SIP

Total Inches: 2×12.17

NOTICE OF PUBLIC HEARING KENTUCKY DIVISION FOR AIR QUALITY TO REVISE KENTUCKY'S STATE IMPLEMENTATION PLAN

UVALITY TO REVISE KENTUCKY'S STATE IMPLEMENTATION PLAN The Kentucky Energy and Environ-ment Cabinet will conduct a public hearing on November 23, 2009, at 10:00 a.m. (local time) In Confer-ence Room 201B of the Division for Air Quality, 200 fair Oaks Lane, 1st Floor, Frankfort, Kentucky. This hearing will be heid to receive comments on a proposed revision to Kentucky's State Implementation Plan (SIP). This proposed revision addresses the following issues that will amend Kentucky's June 25, 2008, Regional Haze SIP: (1) E.ON U.S. Mill Creek Units 3 and 4, a change to in-dicate the proper BART Title V per-mit emission limits of 64.3 lb/hr and 76.5 lb/hr respectively for H2SO4 in place of a 0.015 lb/nmBtu limit and (2) East Kentucky Power Coopera-tive (EKPC) Cooper Units 1 and 2, based on March 18, 2009, revised EKPC BART determination modeling a substitution of dry flue gas desui-tion (FF) emission controls for the wet FG0 (WFGD) and mather filtra-tion the propiator (WESP) controls. This hearing is open to the public

wet FGD (WFGD) and wet checks static precipitator (WESP) controls. This hearing is open to the public and all interested persons will be given the opportunity to present testimony. To assure that all com-ments are accurately recorded, the Division for Air Quality requests that oral comments presented at the hearing are also provided in written form, if possible. Written com-ments must be received by close of business on November 23, 2009, to be considered part of the hearing record. The Energy and Environ-ment soliter does not discriminate on the basis of race, color, national origin, sex, age, religion, or disabili-ty and provides, upon request, rea-sonable accommodation including auxiliary aids and services neces-sary to afford an individual with a disability an equal opportunity to participate in all services, programs, and activities.

and activities. The full texts of the proposed SIP revision are available for public in-spection and copying during regu-lar business hours (8:00 a.m. to 4:30 p.m., local time) at the locations listed below. Any individual requir-ing copies may submit a request to the Division for Air Quality in writ-ing, by telephone, by FAX, or e-mail. Requests for copies should be di-rected to the contact person. The proposed SIP revision can be act thtp://www.air.ky.gov/homepage_r epository/Public+Hearings.htm.

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Louisville Metro	Ashland Regional
APCD	1550 Wolohan Dr.
850 Barret Ave,	Suite 1
Suite 205	Ashland, KY
Louisville, KY	41102
40204	

Bowling Green Florence Regional Regional 1508 Westen Ave 8020 Veterans Bowling Green, KY Memorial Dr. 42104 Florence, KY 41042

Frankfort Regional 643 Teton Trail, Suite B Frankfort, KY 40601 Hazard

Regional 233 Birch St Suite 2 Hazard, KY 41701

London Regional 875 5 Main St London, KY 40741 3032 Alvey Park Dr W., Sufte 700 Owensboro, KY 42303

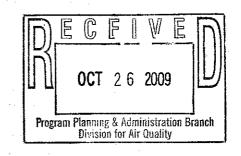
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Regional	Clerk
130 Eagle Nest Dr	162 E. Main St.
Paducah, KY	Lexington, KY
12003	40507

Hardin County	Henderson
Cierk	County Clerk
Hardin Co	Henderson Co
	Courthouse
Courthouse	Courtiouse
Flizabethtown.	KY Henderson, KY
42701	42420

STATE OF KENTUCKY COUNTY OF FAYETTE

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(SEAL) 0 0 Notary Public



NOTICE OF PUBLIC HEARING KENTUCKY DIVISION FOR AIR QUALITY TO REVISE KENTUCKY'S STATE IMPLEMENTATION PLAN

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This hearing is open to the public and all interested persons will be given the opportunity to present testimony. To as-sure that all comments are accurately recorded, the Divi-sion for Air Quality requests that oral comments presented af the hearing are also provided in written form, if possible. Written comments must be received by close of business on November 23, 2009, to be considered part of the hearing record. The Energy and Environment Cabinet does not dis-criminate on the basis of race, color, national origin, sex, age, religion, or disability and provides, upon request, rea-sonable accommodation including auxiliary aids and ser-vices necessary to afford an individual with a disability an equal opportunity to participate in all services, programs, and activities.

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Fayette County Clerk 162 E Main St Lexington, KY 40507

Ashland Regional 1550 Wolohan Dr, Suite 1 Ashland, KY 41102

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Hardin County Clerk Hardin Co Courthouse Elizabethtown, KY 42701

Bowling Green Regional 1508 Westen Ave Bowling Green, KY 42104

Hazard Regional 233 Birch St Suite:2

Hazard, KY 41701

Paducah Regional 130 Eagle Nest Dr Paducah, KY 42003

Henderson County Clerk Henderson Co Court house Henderson, KY 42420

Statement of Consideration

STATEMENT OF CONSIDERATION RELATING TO A SIP REVISION TO AMEND KENTUCKY'S JUNE 25, 2008, REGIONAL HAZE SIP, WHICH DOCUMENTS REASONABLE PROGRESS GOALS FOR KENTUCKY'S CLASS I AREA MAMMOTH CAVE NATIONAL PARK AND INCLUDES BEST AVAILABLE RETROFIT TECHNOLOGY (BART) DETERMINATIONS Amended After Comments

Kentucky Energy and Environment Cabinet

Department for Environmental Protection Division for Air Quality

(1) The Kentucky Energy and Environment Cabinet conducted a public hearing on November 23, 2009, at 10:00 a.m. (ET) in Conference Room 201B of the Division for Air Quality, 200 Fair Oaks Lane, 1st Floor, Frankfort, Kentucky. This hearing was held to receive comments on a proposed revision to Kentucky's State Implementation Plan (SIP). This proposed revision addressed the following issues that amend Kentucky's June 25, 2008, Regional Haze SIP: (1) E.ON U.S. Mill Creek Units 3 and 4, a change to indicate the proper BART Title V permit emission limits of 64.3 lb/hr and 76.5 lb/hr respectively for H2SO4 in place of a 0.015 lb/mmBtu limit and (2) East Kentucky Power Cooperative (EKPC) Cooper Units 1 and 2, based on March 18, 2009, revised EKPC BART determination modeling a substitution of dry flue gas desulfurization (DFGD) and fabric filtration (FF) emission controls for the wet FGD (WFGD) and wet electrostatic precipitator (WESP) controls.

Written comments were received during the public comment period.

(2) The following individuals attended the public hearing and/or provided written and/or oral comments:

<u>Name and Title</u>	Organization
John Bunyak**	National Park Service (NPS)
Richard A. Schutt**	U.S. EPA Region 4

*Attended hearing. **Provided written comments. ***Provided oral comments.

(3) The following individuals from the Kentucky Energy and Environment Cabinet attended the public hearing:

Martin Luther, Environmental Scientist II* & ** Division for Air Quality

* Agency moderator.

**Drafted responses to comments received during the public comment period.

Response to Comments on a SIP revision to Amend Kentucky's June 25, 2008, Regional Haze SIP

Comment: We are concerned that the proposed BART changes for East Kentucky Power Cooperative (EKPC) Cooper Units 1 and 2 may result in a perceptible change in visibility at affected Class I areas, including Mammoth Cave National Park. EKPC is requesting to substitute dry flue gas desulfurization (FGD) and fabric filtration in place of the wet FGD and wet electrostatic precipitator that were determined to be BART in the original SIP. EKPC's BART modeling indicates that the change in technology should not affect visibility on the 98thpercentile days due to particulate matter emissions. Based on the modeling results presented, we agree with that conclusion. However, changing control technology from wet FGD to dry FGD could increase S02 emissions or its dispersion characteristics. Since Kentucky is included in the Clean Air Interstate Rule (CAIR), we recognize that Kentucky is relying on previous guidance from the Environmental Protection Agency that sulfur dioxide (S02) and nitrogen oxide emissions controls under CAIR are better than the BART requirements. Thus, EKPC is not required to analyze visibility impacts of S02 and NOx in the BART determination for Cooper Units I and 2. However, Kentucky and EKPC should acknowledge in the SIP revision and at the public hearing that installing dry FGD rather than wet FGD at Cooper Units I and 2 could increase S02 emissions and could impact visibility at Class I areas. While modeling is not available to quantify the visibility impact due to a change in S02 emissions or dispersion characteristics, EKPC should acknowledge the potential impact. John Bunyak, National Park Service (NPS)

Response: The Cabinet does not concur. EKPC Cooper does not have existing SO2 controls (FGD) in place. Therefore, the installation of a dry FGD for BART will result in a significant reduction in the source's SO2 emissions.

Comment: We have completed our review of the submittal and offer no comments at this time. *Richard A. Schutt, USEPA*

Response: The Cabinet acknowledges EPA's statement.