

STEVEN L. BESHEAR
GOVERNOR



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 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.

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,


for Leonard K. Peters
Secretary

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

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

Table 7.5.3-1 Kentucky BART Determination Modeling Results for BART-Subject Sources

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.	1.834	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 address condensible particulate emissions and other visibility impairing pollutants.	6.763	0.192	6.571
	Joyce Kilmer-Slickrock Wilderness (178 km)		4.974	0.119	4.855
	Cohutta Wilderness Area (221 km)		3.363	0.080	3.283
	Shinning Rock (233 km)		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 plans to install hydrated lime injection controls on TVA Paradise Units 1-3 to mitigate opacity due to SO ₃ emissions.	U1- 1.285 U2- 1.285 U3- <u>1.842</u> 4.412	0.606 0.606 <u>0.836</u> 2.048	0.679 0.679 <u>1.006</u> 2.364
	Mingo (283 km)		3.930	2.048	1.882
			U1- 0.251 U2- 0.251 U3- <u>0.381</u> 0.883	0.116 0.116 <u>0.166</u> 0.398	0.135 0.135 <u>0.215</u> 0.485
			0.865	0.398	0.467

Table 7.5.3-1 Kentucky BART Determination Modeling Results for BART-Subject Sources

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 install ammonia injection on Unit 1 and a FGD scrubber on Unit 2 to address condensable particulate emissions and other visibility impairing pollutants.	1.027	0.496	0.531
	James River Face (279 km)		1.052	0.457	0.595
	Linville Gorge (256 km)		0.835	0.364	0.471
	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
<p>East Kentucky Power Cooperative (EKPC)</p> <p>Spurlock Units 1 and 2 and Cooper Units 1 and 2</p>	<p>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.</p>	<p>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.</p>	<p>Emission limits and controls will be included in the source's Title V Permit as appropriate or on renewal.</p>	<p>Expediently as practicable, but no later than 5 years after EPA approves Kentucky's Regional Haze SIP.</p>
<p>AEP Big Sandy</p> <p>Unit 1 Unit 2</p>	<p>Install ammonia injection controls on Unit 1 and a FGD on Unit 2.</p>	<p>Inorganic Condensable Particulate Limits (modeled as sulfates):</p> <p>101.0 lb/hr (H₂SO₄) 127.0 lb/hr (H₂SO₄)</p>	<p>Emission limits and controls will be included in the source's Title V Permit as appropriate or on renewal.</p>	<p>Expediently as practicable, but no later than 5 years after EPA approves Kentucky's Regional Haze SIP.</p> <p>KYDAQ will work with AEP to install the FGD scrubber on AEP Big Sandy Unit 2 as expediently as practicable.</p>
<p>TVA Paradise*</p> <p>Unit 1 Unit 2 Unit 3</p>	<p>*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.</p>	<p>*NA</p>	<p>*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.</p>	<p>*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.</p> <p>Specifically, TVA has related to</p>

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
				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.** Mill Creek Unit 3 Unit 4	**Install sorbent injection controls on larger Units 3 and 4 to control SO3 emissions and continue to utilize existing ESPs to control PM emissions for Units 1 through 4.	Inorganic Condensable Particulate Limits (modeled as sulfates): 64.3 lb/hr (H2SO4) 76.5 lb/hr (H2SO4)	**Emission limits and controls will be included in the source's Title V Permit as appropriate or on renewal.	**Expediently as practicable, but no later than 5 years after EPA approves Kentucky's Regional Haze SIP.

*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

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)

Owner	Plant	Plant ID	Unit ID	MANE-VU		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)**
				EGU	167 List								
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/Fabrics 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/Fabrics 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				Clark	LNB	2007	NONE		Cold side ESP	1979
EKPC	DALE	21-049-00003	2				Clark	LNB	2007	NONE		Cold side ESP	1979
EKPC	H. L. SPURLOCK	21-161-00009	1	BART	167	340	Mason	Modified Burner/SCR	1977/2003	WFGD***	Per Consent Decree for BART 2009	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			110	Clark	Water Injection	1999	NONE		NONE	
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		NONE	
EKPC	Gibbert	CFB				268	Clark	SNCR/CFB	2004		2004	Bag House	2004
HMP	HENDERSON I	21-101-00012	6	BART			Henderson		none			Multiclone/ESP	
AEP	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			114	Mercer	LNB	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				
E.ON U.S.	E.W. BROWN	21-167-00001	CT6			170	Mercer	Water Injection (when burning fuel oil)	1999				
E.ON U.S.	E.W. BROWN	21-167-00001	CT7			170	Mercer	Water Injection (when burning fuel oil)	1999				
E.ON U.S.	E.W. BROWN	21-167-00001	CT8			126	Mercer	Water Injection	1996				
E.ON U.S.	E.W. BROWN	21-167-00001	CT9			126	Mercer	Water Injection	1995				
E.ON U.S.	E.W. BROWN	21-167-00001	CT10			126	Mercer	Water Injection	1995				
E.ON U.S.	E.W. BROWN	21-167-00001	CT11			126	Mercer	Water Injection	1996				
E.ON U.S.	DIX DAM		1			9	Mercer	This is a Hydro Station					
E.ON U.S.	DIX DAM		2			9	Mercer						
E.ON U.S.	DIX DAM		3			9	Mercer						
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	1981
E.ON U.S.	GHENT	21-041-00010	4		167	556	Carroll	LNB & OFA/SCR	1999/2004	WFGD	Being Constructed - online 2008 Per CAIR	ESP	1984
E.ON U.S.	GREEN RIVER	21-177-00001	1			76	Muhlenburg	Green River Boilers 1, 2 and 3 produced steam to run Unit 1 and Unit 2. They were retired on 12/31/2003.		FGD (Lime Venturi Scrubber)			
E.ON U.S.	GREEN RIVER	21-177-00001	2				Muhlenburg			FGD (Lime Venturi Scrubber)			
E.ON U.S.	GREEN RIVER	21-177-00001	3				Muhlenburg			FGD (Lime Venturi Scrubber)			
E.ON U.S.	GREEN RIVER	21-177-00001	4			75	Muhlenburg	LNB	2002			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						
E.ON U.S.	LOCK 7		3			1	Mercer						
E.ON U.S.	PINEVILLE	21-013-00001	3			38	Bell	Retired Unit				ESP	1975
E.ON U.S.	TYRONE	21-239-00001	1			31	Woodford	Tyrone Boiler 1 and 2 produce steam to run Unit 1					
E.ON U.S.	TYRONE	21-239-00001	2				Woodford						
E.ON U.S.	TYRONE	21-239-00001	3			31	Woodford	Tyrone Boiler 3 and 4 produce steam to run Unit 2					
E.ON U.S.	TYRONE	21-239-00001	4				Woodford						
E.ON U.S.	TYRONE	21-239-00001	5			75	Woodford	LNB	2001			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.	CANE RUN	21-111-0126	6	BART		272	Jefferson	LNCFS II	1995	FGD-Scrubber	1978	ESP	1960s
E.ON U.S.	CANE RUN	21-111-0126	CT11			16	Jefferson						
E.ON U.S.	MILL CREEK	21-111-0127	1	BART		356	Jefferson	LNCFS I	1996	FGD-Scrubber	1981****	ESP	1970s
E.ON U.S.	MILL CREEK	21-111-0127	2	BART		356	Jefferson	LNCFS 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		1			10	Jefferson	This is a Hydro Station					
E.ON U.S.	OHIO FALLS		2			10	Jefferson						
E.ON U.S.	OHIO FALLS		3			10	Jefferson						
E.ON U.S.	OHIO FALLS		4			10	Jefferson						
E.ON U.S.	OHIO FALLS		5			10	Jefferson						
E.ON U.S.	OHIO FALLS		6			10	Jefferson						
E.ON U.S.	OHIO FALLS		7			10	Jefferson						
E.ON U.S.	OHIO FALLS		8			10	Jefferson						
E.ON U.S.	PADDYS RUN	21-111	CT11			16	Jefferson						
E.ON U.S.	PADDYS RUN	21-111	CT12			33	Jefferson						
E.ON U.S.	PADDYS RUN	21-111	CT13			178	Jefferson						
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				
E.ON U.S.	TRIMBLE	21-223-00002	CT6			234	Trimble	DLNB	2002				
E.ON U.S.	TRIMBLE	21-223-00002	CT7			234	Trimble	DLNB	2004				
E.ON U.S.	TRIMBLE	21-223-00002	CT8			234	Trimble	DLNB	2004				
E.ON U.S.	TRIMBLE	21-223-00002	CT9			234	Trimble	DLNB	2004				
E.ON U.S.	TRIMBLE	21-223-00002	CT10			234	Trimble	DLNB	2004				
E.ON U.S.	WATERSIDE	21-111	CT7			20	Jefferson	Retired Unit					
E.ON U.S.	WATERSIDE	21-111	CT8			25	Jefferson	Retired Unit					
E.ON U.S.	ZORN	21-111	CT1			18	Jefferson						
OMU	ELMER SMITH	21-059-00027	1	BART		150	Dawson	OFA/SCR		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)

Owner	Plant	Plant ID	MANE-VU		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)**
			KY BART	167 List								
		Unit ID	EGU	KY Sources								
OMU	ELMER SMITH	21-059-00027	2	BART	280	Daviess	SNCR/LNB/OFA		FGD-Scrubber		ESP	
TVA	PARADISE	21-177-00006	1	BART	700	Muhlenberg	OFA/SCR	SCR - 2001	FGD-(Venturi Scrubber)	1982	Venturi Scrubber / Lime Injection*****	1982 / Lime Injection Before 2012
TVA	PARADISE	21-177-00006	2	BART	700	Muhlenberg	OFA/SCR	SCR - 2001	FGD-(Venturi Scrubber)	1982	Venturi Scrubber / Lime Injection*****	1982 / Lime Injection Before 2012
TVA	PARADISE	21-177-00006	3	BART	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		175	McCracken	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	LNB				Baghouse	1980's
							AFBC Unit		Bubbling limestone bed		ESP	1970's
WKE	COLEMAN	21-091-00003	C1	BART	150	Hancock	LNB/Rotating Over-Fire Air (ROFA)	LNB-1990s, ROFA-2004	FGD-Scrubber	2006	ESP	1970's
WKE	COLEMAN	21-091-00003	C2	BART	150	Hancock	LNB/Advanced Over-Fire Air (AOFA)	LNB-1990s, AOFA-2004	FGD-Scrubber	2006	ESP	1970's
WKE	COLEMAN	21-091-00003	C3	BART	150	Hancock	LNB/AOFA	LNB-1990s, AOFA-2004	FGD-Scrubber	2006	ESP	1970's
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	HMP8L STATION	21-233-00001	H1	BART	150	Webster	LNB/SCR	LNB-1990s, SCR on 2004	FGD-Scrubber	1990s	ESP	1970's
WKE	HMP8L STATION	21-233-00001	H2	BART	160	Webster	LNB/SCR	LNB-1990s, SCR on 2004	FGD-Scrubber	1990s	ESP	1970's
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, pelletized coal fines or petroleum cok	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 EGUs With or To Have Emission Controls to Date: 97%

Percent of Kentucky EGUs on MANE-VU 167 List With or To Have Emission Controls to Date: 100%

90%
93%

100%
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 Spurlock 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/compliance/resources/cases/civil/cas/eas/kentuckypower.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/cases/civil/cas/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

Table 9-1 Kentucky BART Determination Modeling Results for BART-Subject Sources*

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.	1.834	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 address condensible particulate emissions and other visibility impairing pollutants.	6.763	0.192	6.571
	Joyce Kilmer-Slickrock Wilderness (178 km)		4.974	0.119	4.855
	Cohutta Wilderness Area (221 km)		3.363	0.080	3.283
	Shinning Rock (233 km)		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 plans to install hydrated lime injection controls on TVA Paradise Units 1-3 to mitigate opacity due to SO ₃ emissions.	U1- 1.285 U2- 1.285 U3- <u>1.842</u> 4.412	0.606 0.606 <u>0.836</u> 2.048	0.679 0.679 <u>1.006</u> 2.364
	Mingo (283 km)		3.930 U1- 0.251 U2- 0.251 U3- <u>0.381</u> 0.883	2.048 0.116 0.116 <u>0.166</u> 0.398	1.882 0.135 0.135 <u>0.215</u> 0.485
			0.865	0.398	0.467

Table 9-1 Kentucky BART Determination Modeling Results for BART-Subject Sources*

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 install ammonia injection on Unit 1 and a FGD scrubber on Unit 2 to address condensable particulate emissions and other visibility impairing pollutants.	1.027	0.496	0.531
	James River Face (279 km)		1.052	0.457	0.595
	Linville Gorge (256 km)		0.835	0.364	0.471
	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 (H ₂ SO ₄) 127.0 lb/hr (H ₂ SO ₄)	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 SO ₃ emissions.	*NA	*Although not for BART, TVA has indicated that its planned SO ₃ 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 SO ₃ 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.** Mill Creek Unit 3 Unit 4	**Install sorbent injection controls on larger Units 3 and 4 to control SO3 emissions and continue to utilize existing ESPs to control PM emissions for Units 1 through 4.	Inorganic Condensable Particulate Limits (modeled as sulfates): 64.3 lb/hr (H2SO4) 76.5 lb/hr (H2SO4)	**Emission limits and controls will be included in the source's Title V Permit as appropriate or on renewal.	**Expediently as practicable, but no later than 5 years after EPA approves Kentucky's Regional Haze SIP.

*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 condensable 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

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)

Owner	Plant	Plant ID	Unit ID	MANE-VU		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)**
				EGU	167 List								
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/Fabrics 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/Fabrics 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				Clark	LNB	2007	NONE		Cold side ESP	1979
EKPC	DALE	21-049-00003	2				Clark	LNB	2007	NONE		Cold side ESP	1979
EKPC	H. L. SPURLOCK	21-161-00009	1	BART	167	340	Mason	Modified Burner/SCR	1977/2003	WFGD***	Per Consent Decree for BART 2009	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			110	Clark	Water Injection	1999	NONE		NONE	
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		NONE	
EKPC	Gibbert	CFB				288	Clark	SNCR/CFB	2004		2004	Bag House	2004
HMP	HENDERSON I	21-101-00012	6	BART			Henderson		none			Multiclone/ESP	
AEP	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			114	Mercer	LNB	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				
E.ON U.S.	E.W. BROWN	21-167-00001	CT6			170	Mercer	Water Injection (when burning fuel oil)	1999				
E.ON U.S.	E.W. BROWN	21-167-00001	CT7			170	Mercer	Water Injection (when burning fuel oil)	1999				
E.ON U.S.	E.W. BROWN	21-167-00001	CT8			126	Mercer	Water Injection	1996				
E.ON U.S.	E.W. BROWN	21-167-00001	CT9			126	Mercer	Water Injection	1995				
E.ON U.S.	E.W. BROWN	21-167-00001	CT10			126	Mercer	Water Injection	1995				
E.ON U.S.	E.W. BROWN	21-167-00001	CT11			126	Mercer	Water Injection	1996				
E.ON U.S.	DIX DAM		1			9	Mercer	This is a Hydro Station					
E.ON U.S.	DIX DAM		2			9	Mercer						
E.ON U.S.	DIX DAM		3			9	Mercer						
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	1981
E.ON U.S.	GHENT	21-041-00010	4		167	556	Carroll	LNB & OFA/SCR	1999/2004	WFGD	Being Constructed - online 2008 Per CAIR	ESP	1984
E.ON U.S.	GREEN RIVER	21-177-00001	1			76	Muhlenburg	Green River Boilers 1, 2 and 3 produced steam to run Unit 1 and Unit 2. They were retired on 12/31/2003.		FGD (Lime Venturi Scrubber)			
E.ON U.S.	GREEN RIVER	21-177-00001	2				Muhlenburg			FGD (Lime Venturi Scrubber)			
E.ON U.S.	GREEN RIVER	21-177-00001	3				Muhlenburg			FGD (Lime Venturi Scrubber)			
E.ON U.S.	GREEN RIVER	21-177-00001	4			75	Muhlenburg	LNB	2002			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						
E.ON U.S.	LOCK 7		3			1	Mercer						
E.ON U.S.	PINEVILLE	21-013-00001	3			38	Bell	Retired Unit				ESP	1975
E.ON U.S.	TYRONE	21-239-00001	1			31	Woodford	Tyrone Boiler 1 and 2 produce steam to run Unit 1					
E.ON U.S.	TYRONE	21-239-00001	2				Woodford						
E.ON U.S.	TYRONE	21-239-00001	3			31	Woodford	Tyrone Boiler 3 and 4 produce steam to run Unit 2					
E.ON U.S.	TYRONE	21-239-00001	4				Woodford						
E.ON U.S.	TYRONE	21-239-00001	5			75	Woodford	LNB	2001			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.	CANE RUN	21-111-0126	6	BART		272	Jefferson	LNCFS II	1995	FGD-Scrubber	1978	ESP	1960s
E.ON U.S.	CANE RUN	21-111-0126	CT11			16	Jefferson						
E.ON U.S.	MILL CREEK	21-111-0127	1	BART		356	Jefferson	LNCFS II	1996	FGD-Scrubber	1981****	ESP	1970s
E.ON U.S.	MILL CREEK	21-111-0127	2	BART		356	Jefferson	LNCFS 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		1			10	Jefferson	This is a Hydro Station					
E.ON U.S.	OHIO FALLS		2			10	Jefferson						
E.ON U.S.	OHIO FALLS		3			10	Jefferson						
E.ON U.S.	OHIO FALLS		4			10	Jefferson						
E.ON U.S.	OHIO FALLS		5			10	Jefferson						
E.ON U.S.	OHIO FALLS		6			10	Jefferson						
E.ON U.S.	OHIO FALLS		7			10	Jefferson						
E.ON U.S.	OHIO FALLS		8			10	Jefferson						
E.ON U.S.	PADDYS RUN	21-111	CT11			16	Jefferson						
E.ON U.S.	PADDYS RUN	21-111	CT12			33	Jefferson						
E.ON U.S.	PADDYS RUN	21-111	CT13			178	Jefferson						
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				
E.ON U.S.	TRIMBLE	21-223-00002	CT6			234	Trimble	DLNB	2002				
E.ON U.S.	TRIMBLE	21-223-00002	CT7			234	Trimble	DLNB	2004				
E.ON U.S.	TRIMBLE	21-223-00002	CT8			234	Trimble	DLNB	2004				
E.ON U.S.	TRIMBLE	21-223-00002	CT9			234	Trimble	DLNB	2004				
E.ON U.S.	TRIMBLE	21-223-00002	CT10			234	Trimble	DLNB	2004				
E.ON U.S.	WATERSIDE	21-111	CT7			20	Jefferson	Retired Unit					
E.ON U.S.	WATERSIDE	21-111	CT8			25	Jefferson	Retired Unit					
E.ON U.S.	ZORN	21-111	CT1			18	Jefferson						
OMU	ELMER SMITH	21-059-00027	1	BART		150	Dawson	OFA/SCR		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)

Owner	Plant	Plant ID	MANE-VU		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)**
			Unit ID	EGU								
OMU	ELMER SMITH	21-059-00027	2	BART	280	Daviess	SNCR/LNB/OFA		FGD-Scrubber		ESP	
TVA	PARADISE	21-177-00006	1	BART	700	Muhlenberg	OFA/SCR	SCR - 2001	FGD-(Venturi Scrubber)	1982	Venturi Scrubber / Lime Injection*****	1982 / Lime Injection Before 2012
TVA	PARADISE	21-177-00006	2	BART	700	Muhlenberg	OFA/SCR	SCR - 2001	FGD-(Venturi Scrubber)	1982	Venturi Scrubber / Lime Injection*****	1982 / Lime Injection Before 2012
TVA	PARADISE	21-177-00006	3	BART	1,150	Muhlenberg	OFA/SCR	SCR - 2003	FGD-Scrubber	2006	ESP / Lime Injection*****	1970s / Lime Injection Before 2012
TVA	SHAWNEE	21-145-00006	1		175	McCracken	LNB				Baghouse	1970s
TVA	SHAWNEE	21-145-00006	2		175	McCracken	LNB				Baghouse	1970s
TVA	SHAWNEE	21-145-00006	3		175	McCracken	LNB				Baghouse	1970s
TVA	SHAWNEE	21-145-00006	4		175	McCracken	LNB				Baghouse	1970s
TVA	SHAWNEE	21-145-00006	5		175	McCracken	LNB				Baghouse	1970s
TVA	SHAWNEE	21-145-00006	6		175	McCracken	LNB				Baghouse	1970s
TVA	SHAWNEE	21-145-00006	7		175	McCracken	LNB				Baghouse	1970s
TVA	SHAWNEE	21-145-00006	8		175	McCracken	LNB				Baghouse	1970s
TVA	SHAWNEE	21-145-00006	9		175	McCracken	LNB				Baghouse	1970s
TVA	SHAWNEE	21-145-00006	10		175	McCracken	LNB				Baghouse	1980s
TVA	SHAWNEE	21-145-00006					AFBC Unit		Bubbling limestone bed		ESP	1980s
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	HMP8L STATION	21-233-00001	H1	BART	150	Webster	LNB/SCR	LNB-1990s, SCR on 2004	FGD-Scrubber	1990s	ESP	1970s
WKE	HMP8L 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, pelletized coal fines or petroleum coker	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 EGUs With or To Have Emission Controls to Date: 97%

Percent of Kentucky EGUs on MANE-VU 167 List With or To Have Emission Controls to Date: 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 Spurlock 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/compliance/resources/cases/civil/cas/eas/kentuckypower.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/cases/civil/cas/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



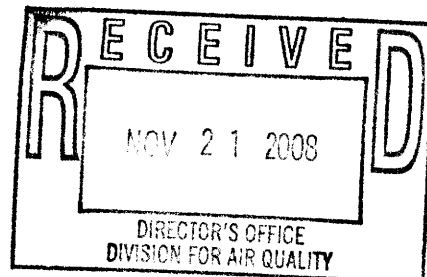
CERTIFIED MAIL

CERTIFICATION NUMBER 7006 2760 0005 5303 9375

RETURN RECEIPT REQUESTED

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 H₂SO₄ 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 H₂SO₄ 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 H₂SO₄ 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

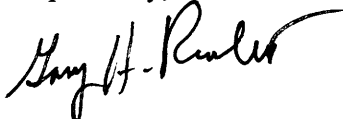
including the value in our submittal, we wish to clarify that we never intended to suggest that it is appropriate for inclusion as an emission limit in our permit.

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,



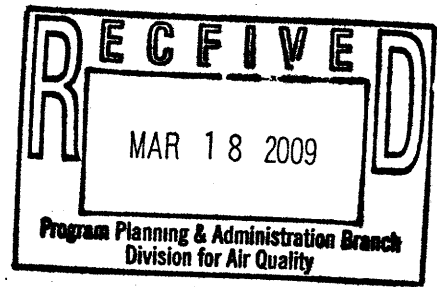
Gary Revlett
Environmental Affairs
E.ON U.S.

Cc: Robin Thomerson, KDAQ

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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,

Jerry Purvis, Manager
Environmental Affairs

JP:MB:jkr

Enclosure

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

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

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 slurry-based 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.

Table 1
Summary of PM Performance Levels

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

B. BART Modeling

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-bottom 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.

**Table 2
Speciated PM Emission Rates for Modeling to Evaluate BART Controls**

Source ID	PM Species Emission Rates, lb/hr				
	SO ₄	SOA	PMC	PMF	EC
Cooper Unit 1	16.0	4.0	34.3	6.0	0.2
Cooper Unit 2	28.4	7.1	60.9	10.7	0.4

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.

**Table 3
Stack 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 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 4
Results of CALPUFF Modeling for BART Control Assessment
Visibility Impact Rankings

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

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

**Table 6
Comparison of the 2007 BART Submittal Results using WFGD/WESP
to 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**

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

assumes heating value of 12,000 Btu/lb and a sulfur content of 4 % and an ash content of 15 % and a heat input of 1,350 mmBtu/hr and (RH) = 1

Boiler Type	Controlled PM10 Emissions (Bold values from Table 1.1-5.)				Particle Type	Particle Ext.Coef.
	Filterable (lb/mmBtu)	Coarse (lb/mmBtu)	Fine (lb/mmBtu)	Ext. Coef.		
PC-DB	0.0606	0.0344	0.6	0.00023	SO4	4

Boiler Type	Controlled PM10 Emissions (Bold values from Table 1.1-6.)				Particle Type	Particle Ext.Coef.
	Filterable (lb/ton)	Coarse (lb/ton)	Fine (lb/ton)	Ext. Coef.		
PC-DB	1.455	0.975	0.150	0.0056	SO4	4

Boiler Type	Controlled PM10 Emissions				Particle Type	Particle Ext.Coef.
	Filterable (% of Total)	Coarse (% of Total)	Fine (% of Total)	Ext. Coef.		
PC-DB	67.0%	56.7%	10.3%	0.4%	SO4	4

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

Boiler Type	Controlled PM10 Emissions (Bold Value is Input by user.)				Particle Type	Particle Ext.Coef.
	Filterable (lb/hr)	Coarse (lb/hr)	Fine (lb/hr)	Ext. Coef.		
PC-DB	60.4	34.3	6.2	0.2	SO4	4

Weighted Extinction 20.6

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

Boiler Type	Controlled PM10 Emissions (Bold Value is Input by user.)				Particle Type	Particle Ext.Coef.
	Filterable (lb/mmBtu)	Coarse (lb/mmBtu)	Fine (lb/mmBtu)	Ext. Coef.		
PC-DB	0.045	0.03	0.0002	0.0002	SO4	4

Controlled PM10 Emissions (Bold values from 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.")

Boiler Type	Controlled PM10 Emissions				Particle Type	Particle Ext.Coef.
	Filterable (% of Total)	Coarse (% of Total)	Fine (% of Total)	Ext. Coef.		
PC-DB	67.0%	84.6%	15.4%	0.6%	SO4	4

If you are given Filterable PM10 emissions in lb/hr:

Boiler Type	Controlled PM10 Emissions (Bold Value is Input by user.)				Particle Type	Particle Ext.Coef.
	Filterable (lb/hr)	Coarse (lb/hr)	Fine (lb/hr)	Ext. Coef.		
PC-DB	60.4	34.3	6.2	0.2	SO4	4

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

Boiler Type	Controlled PM10 Emissions (Bold Value is Input by user.)				Particle Type	Particle Ext.Coef.
	Filterable (lb/mmBtu)	Coarse (lb/mmBtu)	Fine (lb/mmBtu)	Ext. Coef.		
PC-DB	0.045	0.03	0.0002	0.0002	SO4	4

- Coarse 56.7%
- Fine Soil 6.0
- Fine EC 0.4%
- CPM IOR 26.4%
- CPM OR 6.6%
- 100.0%

Cooper Station - Unit 2

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

assumes heating value of 12,000 Btu/lb and a sulfur content of 4 % and an ash content of 15 % and a heat input of 2,400 mmBtu/hr and f(RH) = 1

Boiler Type	Total PM10			Fine Soil			Fine EC			Condensable			CPM IOR			Particle		
	(lb/mmBtu)	Filterable (lb/mmBtu)	Coarse (lb/mmBtu)	Ext. Coef.	(lb/ton)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.
PC-DB	0.0606	0.0406	0.0344	0.6	0.0063	1	0.00023	10	0.020	0.016	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004

Boiler Type	Total PM10			Fine Soil			Fine EC			Condensable			CPM IOR			Particle		
	(lb/hr)	Filterable (lb/ton)	Coarse (lb/ton)	Ext. Coef.	(lb/ton)	Ext. Coef.	(lb/ton)	Ext. Coef.	(lb/ton)	Ext. Coef.	(lb/ton)	Ext. Coef.	(lb/ton)	Ext. Coef.	(lb/ton)	Ext. Coef.	(lb/ton)	Ext. Coef.
PC-DB	1.455	0.975	0.825	0.6	0.150	1	0.0056	10	0.480	0.384	0.096	0.096	0.096	0.096	0.096	0.096	0.096	0.096

Boiler Type	Total PM10			Fine Soil			Fine EC			Condensable			CPM IOR			Particle		
	(% of Total)	Filterable (% of Total)	Coarse (% of Total)	Ext. Coef.	(% of Total)	Ext. Coef.	(% of Total)	Ext. Coef.	(% of Total)	Ext. Coef.	(% of Total)	Ext. Coef.	(% of Total)	Ext. Coef.	(% of Total)	Ext. Coef.	(% of Total)	Ext. Coef.
PC-DB	100%	67.0%	56.7%	0.6	10.3%	1	0.4%	10	33.0%	26.4%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%

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

Boiler Type	Total PM10			Fine Soil			Fine EC			Condensable			CPM IOR			Particle		
	(lb/hr)	Filterable (lb/hr)	Coarse (lb/hr)	Ext. Coef.	(lb/hr)	Ext. Coef.	(lb/hr)	Ext. Coef.	(lb/hr)	Ext. Coef.	(lb/hr)	Ext. Coef.	(lb/hr)	Ext. Coef.	(lb/hr)	Ext. Coef.	(lb/hr)	Ext. Coef.
PC-DB	107.4	72.0	60.9	0.6	11.1	1	0.4	10	35.4	28.4	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1

Weighted Extinction 36.6

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

Boiler Type	Total PM10			Fine Soil			Fine EC			Condensable			CPM IOR			Particle		
	(lb/mmBtu)	Filterable (lb/mmBtu)	Coarse (lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.
PC-DB	0.045	0.03	0.03	0.6	0.00	1	0.0002	10	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Boiler Type	Total PM10			Fine Soil			Fine EC			Condensable			CPM IOR			Particle		
	(% of Total)	Filterable (% of Total)	Coarse (% of Total)	Ext. Coef.	(% of Total)	Ext. Coef.	(% of Total)	Ext. Coef.	(% of Total)	Ext. Coef.	(% of Total)	Ext. Coef.	(% of Total)	Ext. Coef.	(% of Total)	Ext. Coef.	(% of Total)	Ext. Coef.
PC-DB	100%	67.0%	84.6%	0.6	15.4%	1	0.6%	10	33.0%	80.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%

If you are given Filterable PM10 emissions in lb/hr:

Boiler Type	Total PM10			Fine Soil			Fine EC			Condensable			CPM IOR			Particle		
	(lb/hr)	Filterable (lb/hr)	Coarse (lb/hr)	Ext. Coef.	(lb/hr)	Ext. Coef.	(lb/hr)	Ext. Coef.	(lb/hr)	Ext. Coef.	(lb/hr)	Ext. Coef.	(lb/hr)	Ext. Coef.	(lb/hr)	Ext. Coef.	(lb/hr)	Ext. Coef.
PC-DB	107.4	72.0	60.9	0.6	11.1	1	0.4	10	35.4	28.4	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1

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

Boiler Type	Total PM10			Fine Soil			Fine EC			Condensable			CPM IOR			Particle		
	(lb/mmBtu)	Filterable (lb/mmBtu)	Coarse (lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.	(lb/mmBtu)	Ext. Coef.
PC-DB	0.045	0.03	0.03	0.6	0.00	1	0.0002	10	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

- Coarse 56.7%
- Fine Soil 9.9%
- Fine EC 0.4%
- CPM IOR 26.4%
- CPM OR 6.6%
- 100.0%
- Coarse 60.9
- Fine Soil 10.7
- Fine EC 0.4
- CPM IOR 28.4
- CPM OR 7.1
- 107.4

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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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Table 9-1 Kentucky BART Determination Modeling Results for BART-Subject Sources*

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.	1.834	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 address condensible particulate emissions and other visibility impairing pollutants.	6.763	0.192	6.571
	Joyce Kilmer-Slickrock Wilderness (178 km)		4.974	0.119	4.855
	Cohutta Wilderness Area (221 km)		3.363	0.080	3.283
	Shinning Rock (233 km)		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 plans to install hydrated lime injection controls on TVA Paradise Units 1-3 to mitigate opacity due to SO3 emissions.	U1- 1.285 U2- 1.285 U3- <u>1.842</u> 4.412	0.606 0.606 <u>0.836</u> 2.048	0.679 0.679 <u>1.006</u> 2.364
	Mingo (283 km)		3.930 U1- 0.251 U2- 0.251 U3- <u>0.381</u> 0.883	2.048 0.116 0.116 <u>0.166</u> 0.398	1.882 0.135 0.135 <u>0.215</u> 0.485
			0.865	0.398	0.467

Table 9-1 Kentucky BART Determination Modeling Results for BART-Subject Sources*

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 install ammonia injection on Unit 1 and a FGD scrubber on Unit 2 to address condensable particulate emissions and other visibility impairing pollutants.	1.027	0.496	0.531
	James River Face (279 km)		1.052	0.457	0.595
	Linville Gorge (256 km)		0.835	0.364	0.471
	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. ** Mill Creek Unit 3 Unit 4	**Install sorbent injection controls on larger Units 3 and 4 to control SO3 emissions and continue to utilize existing ESPs to control PM emissions for Units 1 through 4.	Inorganic Condensible Particulate Limits (modeled as sulfates): 64.3 lb/hr (H2SO4) 76.5 lb/hr (H2SO4)	**Emission limits and controls will be included in the source's Title V Permit as appropriate or on renewal.	**Expediently as practicable, but no later than 5 years after EPA approves Kentucky's Regional Haze SIP.

*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-deciview, (# days>0.5 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 b_{ext} (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-deciview, (# days>0.5 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-deciview, (# days>0.5 dv, # 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-deciview, (# days>0.5 dv, # 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

Public Hearing Notice

**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
850 Barret Ave, Suite 205
Louisville, KY 40204

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

Bowling Green Regional
1508 Westen Ave
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
162 E Main St
Lexington, KY 40507

Hardin County Clerk
Hardin Co Courthouse
Elizabethtown, KY 42701

Henderson County Clerk
Henderson Co Courthouse
Henderson, KY 42420

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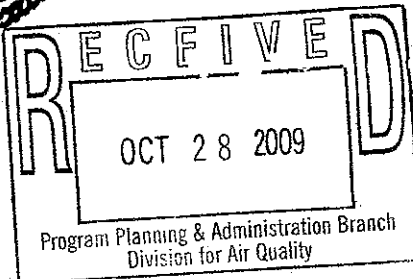
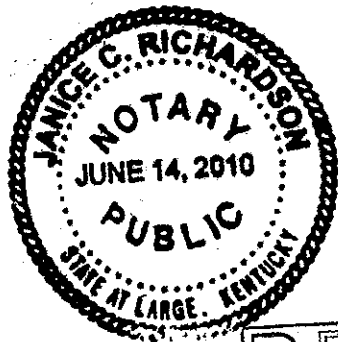
Margie Wise

Signature of person making proof

Subscribed and sworn to before me this *23rd* day of *October*, 2009.

Janice Capris Richardson

/ Notary/ My Commission expires



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

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Louisville Metro APCD 850 Barret Ave, Suite 205 Louisville, KY 40204	Ashland Regional 1550 Wolohan Dr. Suite 1 Ashland, KY 41102
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Bowling Green Regional 1508 Westen Ave Bowling Green, KY 42104	Florence Regional 8020 Veterans Memorial Dr. Suite 110 Florence, KY 41042
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Frankfort Regional 643 Teton Trail, Suite B Frankfort, KY 40601	Hazard Regional 239 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
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Paducah Regional 130 Eagle Nest Dr Paducah, KY 42003	Fayette County Clerk 162 E. Main St. Lexington, KY 40507
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Hardin County Clerk Hardin Co Courthouse Elizabethtown, KY 42701	Henderson County Clerk Henderson Co Courthouse Henderson, KY 42420
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**STATE OF KENTUCKY
COUNTY OF FAYETTE**

Before me, a Notary Public, and for said County and State, this 23RD day
of OCTOBER, 2009 came Barbara Jarvis

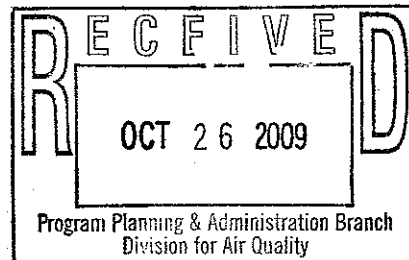
Personally known to me, who, being duly sworn, states as follows:

That she is Account Executive of
Lexington Herald-Leader, and that said publication date of
OCTOBER 23, 2009 carried the advertising
of DIV. OF AIR QUALITY
occupying the following space 20.64 INCHES.

By Barbara Jarvis

(SEAL)

Lee H. Napier
Notary Public



**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
850 Barret Ave, Suite 205
Louisville, KY 40204

Florence Regional
8020 Veterans Memorial Dr
Suite 110
Florence, KY 41042

London Regional
875 S Main St
London, KY 40741

Fayette County Clerk
162 E Main St
Lexington, KY 40507

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

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

Owensboro Regional
3032 Alvey Park Dr W
Suite 700
Owensboro, KY 42303

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>	<u>Organization</u>
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 98th percentile 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 SO₂ 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 (SO₂) and nitrogen oxide emissions controls under CAIR are better than the BART requirements. Thus, EKPC is not required to analyze visibility impacts of SO₂ and NO_x in the BART determination for Cooper Units 1 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 1 and 2 could increase SO₂ emissions and could impact visibility at Class I areas. While modeling is not available to quantify the visibility impact due to a change in SO₂ 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.