BEFORE THE ADMINISTRATOR
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

IN THE MATTER OF:	
LOUISVILLE GAS AND ELECTRIC COMPANY	PETITION NO. IV-2008-3
TRIMBLE COUNTY, KENTUCKY TITLE V/PSD AIR QUALITY PERMIT # V-02-043 REVISIONS 2 AND 3	
ISSUED BY THE KENTUCKY DIVISION FOR AIR QUALITY	

ORDER RESPONDING TO ISSUES RAISED IN APRIL 28, 2008 AND MARCH 2, 2006 PETITIONS, AND DENYING IN PART AND GRANTING IN PART REQUESTS FOR OBJECTION TO PERMIT

On April 28, 2008, and March 2, 2006, the United States Environmental Protection Agency (EPA) received petitions from Save the Valley, Sierra Club, and Valley Watch (Petitioners) pursuant to Section 505(b)(2) of the Clean Air Act ("CAA" or "Act"), 42 United States Code (U.S.C.) § 7661d(b)(2) (the March 2, 2006, petition is referred to as "Petition 1" and the April 28, 2008, petition is referred to as "Petition 2"). Both Petitions request that EPA object to the merged CAA construction/operating permit issued by the Kentucky Division for Air Quality ("KDAQ" or "Division") on January 4, 2006 (Revision 2), and February 29, 2008 (Revision 3), respectively, to Louisville Gas and Electric Company (LG&E). The permits are for construction of a new 750 megawatt pulverized coal-fired boiler (and other associated modifications) at the Trimble County Generating Station located in Bedford (Trimble County), Kentucky. Permit #V-02-043 is a merged CAA prevention of significant deterioration (PSD) construction permit and a CAA title V operating permit issued pursuant to Kentucky's Administrative Regulations (KAR) at 401 KAR 52:020 (title V regulations) and 51:017 (PSD regulations).

On September 10, 2008, EPA issued a "Partial Order Responding to March 2, 2006, Petition and Denying in Part and Granting in Part Request for Objection to Permit Revision 2." In the September 2008 Order, EPA explained that some issues raised in Petition 1 were affected by Permit Revision 3 and also discussed in Petition 2. At this time, EPA is addressing all the remaining issues identified by Petitioners in Petitions 1 and 2.

This Order contains EPA's response to Petitioners' request that EPA object to the permit on the basis that: (1) public participation procedures were not adequate; (2) the permit fails to

include requirements for addressing greenhouse gases; (3) BACT for nitrogen oxides (NO_x) and sulfur dioxide (SO_2) is not adequate; (4) BACT for the auxiliary boiler and emergency diesel generator are not adequate; (5) BACT for support operations is not adequate; (6) BACT for particulate matter (PM) and particulate matter with a diameter less than ten micrometers (PM_{10}) are not adequate; (7) BACT for sulfuric acid mist (SAM) is not adequate; (8) the permit fails to consider particulate matter with a diameter less than 2.5 micrometers ($PM_{2.5}$); (9) the permit fails to express limits in an adequate manner; (10) BACT analyses did not include clean fuels; (11) the permit lacks a maximum achievable control technology (MACT) determination for mercury and other hazardous air pollutants (HAP); (12) the SAM limits are not enforceable (compliance assurance monitoring concerns); and (13) the permit improperly relies on manufacturer specifications that are not included in the permit, does not identify test methods, and additional concerns regarding netting.

Based on a review of Petitions 1 and 2 and other relevant materials, including the LG&E permit and permit record, and relevant statutory and regulatory authorities, I grant in part and deny in part the Petitions requesting that EPA object to the LG&E permit. I grant on issues 4 and 8 above.

I. STATUTORY AND REGULATORY FRAMEWORK

Section 502(d)(1) of the Act, 42 U.S.C. § 7661a(d)(1), calls upon each state to develop and submit to EPA an operating permit program to meet the requirements of title V of the CAA. The Commonwealth of Kentucky[1] originally submitted its title V program governing the issuance of operating permits in 1993, and EPA granted full approval on October 31, 2001. 66 *Fed. Reg.* 54,953. The program is now incorporated into Kentucky's Administrative Regulations at 401 KAR 52:020. All major stationary sources of air pollution and certain other sources are required to apply for title V operating permits that include emission limitations and other conditions as necessary to assure compliance with applicable requirements of the CAA, including the requirements of the applicable State Implementation Plan (SIP). CAA §§ 502(a) and 504(a), 42 U.S.C. §§ 7661a(a) and 7661c(a).

The title V operating permit program does not generally impose new substantive air quality control requirements (which are referred to as "applicable requirements"), but does require permits to contain monitoring, recordkeeping, reporting, and other conditions to assure sources comply with existing applicable requirements. 57 *Fed. Reg.* 32,250, 32,251 (July 21, 1992) (EPA final action promulgating Part 70 rules). One purpose of the title V program is to enable the source, EPA, states, and the public to better understand the applicable requirements to which the source is subject and whether the source is complying with those requirements. Thus, the title V operating permit program is a vehicle for ensuring that existing air quality control requirements are appropriately applied to facility emission units and that compliance with these requirements is assured.

[1] The Commonwealth of Kentucky Environmental and Public Protection Cabinet (Kentucky Cabinet), which submitted the title V program, oversees the Kentucky Division for Air Quality (KDAQ) which is the permitting authority for title V and PSD permits in Kentucky.

For a major modification of a major stationary source,[2] applicable requirements include the requirement to obtain a preconstruction permit that complies with applicable new source review requirements (e.g., PSD). Part C of the CAA establishes the PSD program, the preconstruction review program that applies to areas of the country, such as Trimble County, that are designated as attainment or unclassifiable for National Ambient Air Quality Standards (NAAQS). CAA §§ 160-169, 42 U.S.C. §§ 7470-7479. New Source Review, or "NSR," is the term used to describe both the PSD program as well as the nonattainment NSR program (applicable to areas that are designated as nonattainment with the NAAQS). In attainment areas (such as Trimble County), a major stationary source may not begin construction or undertake certain modifications without first obtaining a PSD permit. CAA § 165(a)(1), 42 U.S.C. § 7475(a)(1). The PSD program analysis must address two primary and fundamental elements before the permitting authority may issue a permit: (1) an evaluation of the impact of the proposed new or modified major stationary source on ambient air quality in the area, and (2) an analysis ensuring that the proposed facility is subject to BACT for each pollutant subject to regulation under the PSD program. CAA § 165(a)(3),(4), 42 U.S.C. § 7475(a)(3), (4); *see also* 401 KAR 51:017 (Kentucky's PSD program). The BACT analysis is further discussed in Section III.B. of this Order, below.

EPA has promulgated two largely identical sets of regulations to implement the PSD program. One set, found at 40 Code of Federal Regulations (CFR) § 52.21, contains EPA's own federal PSD program, which applies in areas without a SIP-approved PSD program. The other set of regulations, found at 40 CFR § 51.166, contains requirements that state PSD programs must meet to be approved as part of a SIP. In 1989, EPA approved Kentucky's PSD rules into the SIP as meeting these requirements. 54 *Fed. Reg.* 36,307 (September 1, 1989); *see also* 40 CFR § 52.931.[3] Thus, the applicable requirements of the Act for major modifications at major sources, such as at LG&E, include the requirement to comply with PSD requirements under the Kentucky SIP. *See, e.g.*, 40 CFR § 70.2.[4] In this case, the Commonwealth's rules require a

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[2] The proposed addition of a new 750 megawatt coal-fired boiler at LG&E is considered a "major modification," consistent with the definition of "major modification," in 401 KAR 51:001 § 1(116). The existing LG&E facility is a major stationary source, as that term is defined in 401 KAR 51:001 § 1(120).

[3] On February 10, 2006, EPA proposed to approve changes made to Kentucky's New Source Review (NSR) program consistent with EPA's 2002 NSR Reform Rules. 71 *Fed. Reg.* 6,988 (February 10, 2006). On July 11, 2006, EPA took final action approving Kentucky's NSR program incorporating changes made pursuant to EPA's 2002 NSR Reform Rules. 71 *Fed. Reg.* 38,990 (July 11, 2006). Kentucky's revisions to its NSR program consistent with NSR reform, became effective under Kentucky law on July 14, 2004, and were submitted to EPA as a SIP revision for approval in September 2004. For further information about rules incorporated into the Kentucky SIP, see http://www.epa.gov/region4/air/sips/ky/kytoc.htm.

[4] Kentucky defines "federally applicable requirement" in relevant part to include a "federally enforceable requirement or standard that applies to a source." 401 KAR 52:001 § 1(15). Kentucky further defines "federally enforceable requirement," as "[s]tandards or requirements in the state implementation plan (SIP) that implement the relevant requirements of the Act, including revisions to that plan promulgated at 40 CFR Part 52." 401 KAR 52:001 § 1(34).

source to apply for a PSD permit which is then incorporated into the existing title V permit as a revision to the title V permit. 401 KAR 52:020.

Under section 505(a), 42 U.S.C. § 7661d(a), of the CAA and the relevant implementing regulations (40 CFR § 70.8(a)), states are required to submit each proposed title V permit, and certain revisions to such permits, to EPA for review. Upon receipt of a proposed permit, EPA has 45 days to object to final issuance of the permit if it is determined not to be in compliance with applicable requirements or the requirements of title V. 40 CFR § 70.8(c). If EPA does not object to a permit on its own initiative, section 505(b)(2) of the CAA provides that any person may petition the Administrator, within 60 days of the expiration of EPA's 45-day review period, to object to the permit. 42 U.S.C. § 7661d(b)(2), *see also* 40 CFR § 70.8(d). In response to such a petition, the CAA requires the Administrator to issue an objection if a petitioner demonstrates that a permit is not in compliance with the requirements of the CAA. 42 U.S.C. § 7661d(b)(2); *see also* 40 CFR § 70.8(c)(1), *New York Public Interest Research Group (NYPIRG) v. Whitman*, 321 F.3d 316, 333 n.11 (2nd Cir. 2003). Under section 505(b)(2), the burden is on the petitioner to make the required demonstration to EPA. *Sierra Club v. Johnson*, 541 F.3d. 1257, 1266-1267 (11th Cir. 2008); *Citizens Against Ruining the Environment v. EPA*, 535 F.3d 670, 677-678 (7th Cir. 2008); *Sierra Club v. EPA*, 557 F.3d 401, 406 (6th Cir. 2009) (discussing the burden of proof in title V petitions); *see also NYPIRG,* 321 F.3d at 333 n.11. If, in responding to a petition, EPA objects to a permit that has already been issued, EPA or the permitting authority will modify, terminate, or revoke and reissue the permit consistent with the procedures set forth in 40 CFR §§ 70.7(g)(4) and (5)(i) - (ii), and 40 CFR § 70.8(d).

Where a petitioner's request that the Administrator object to the issuance of a title V permit is based in whole, or in part, on a permitting authority's alleged failure to comply with the requirements of its approved PSD program (as with other allegations of inconsistency with the Act) the burden is on the petitioners to demonstrate that the permitting decision was not in compliance with the requirements of the Act, including the requirements of the SIP.[5] Such requirements, as EPA has explained in describing its authority to oversee the implementation of the PSD program in states with approved programs, include the requirements that the permitting authority (1) follow the required procedures in the SIP; (2) make PSD determinations on reasonable grounds properly supported on the record; and (3) describe the determinations in enforceable terms. *See, e.g.,* 68 *Fed. Reg.* 9,892, 9,894-9,895 (March 3, 2003); 63 *Fed. Reg.* 13,795, 13,796-13,797 (March 23, 1998). EPA has approved the PSD programs into the SIPs of most states, including the Commonwealth of Kentucky, and as the permitting authority, Kentucky has substantial discretion in issuing PSD permits. Given this, in reviewing a PSD permitting decision, EPA will not substitute its own judgment for that of Kentucky. Rather, consistent with the decision in *Alaska Dep't of Envt'l Conservation v. EPA,* 540 U.S. 461 (2004), in reviewing a petition to object to a title V permit raising concerns regarding a state's PSD

[5] The appeal of federal PSD permits issued pursuant to the federal regulations at 40 CFR § 52.21 is governed by the regulations at 40 CFR § 124.19, and authority to review such permits rests exclusively with the Environmental Appeals Board (EAB). Because of the exclusive authority of the EAB in this area, the Administrator has declined to review the merits of a federal PSD permit in the context of a petition to review a title V permit. *See, e.g., In re Kawaihae Cogeneration Project,* Petition No. 0001-01-C (Order on Petition) (March 10, 1997).

permitting decision, EPA generally will look to see whether the Petitioner has shown that the state did not comply with its SIP-approved regulations governing PSD permitting or whether the state's exercise of discretion under such regulations was unreasonable or arbitrary.[6] *See, e.g., In re East Kentucky Power Cooperative, Inc.* (Hugh L. Spurlock Generating Station) Petition No. IV-2006-4 (Order on Petition) (August 30, 2007); *In re Pacific Coast Building Products, Inc.* (Order on Petition) (December 10, 1999); *In re Roosevelt Regional Landfill Regional Disposal Company* (Order on Petition) (May 4, 1999).[7]

II. BACKGROUND

Existing Facility

The LG&E facility in Trimble County, Kentucky, began construction on its existing 500 megawatt (MW) pulverized coal-fired boiler in the late 1970s (Unit 1). The facility has undergone a series of modifications since then, adding not only the support facilities for the original 500 MW boiler, but also, six 160 MW simple cycle natural gas combustion turbines (Units 25-30) in approximately 2001. The existing facility also includes support structures such as a natural draft cooling tower; coal/limestone/ash/gypsum material handling equipment; three auxiliary boilers; an emergency diesel generator; and fuel oil storage tanks. Unit 1 and Units 25-30 previously went through PSD permitting prior to construction. A draft title V permit for the facility was first issued in December 1997, followed by several permit changes eventually resulting in Revision 2. Kentucky issued the title V permit Revision 2 on January 4, 2006, and Revision 3 on February 29, 2008. *See* LG&E Permit Revision 3 Statement of Basis (SOB Revision 3) (July 26, 2007). Both revisions are at issue in the instant Petitions.[8]

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[6] In determining the appropriate standard of review to apply to the review of federal PSD permit determinations in a petition to object to a title V permit, the standard of review applied by the EAB in reviewing the appeals of federal PSD permits provides a useful analogy. The standard of review applied by the EAB in its review of federal PSD permits is discussed in numerous EAB orders as the "clearly erroneous" standard. *See, e.g., In re Prairie State Generation Company,* 13 E.A.D. ___, PSD Appeal No. 05-05, slip op., 2006 EPA App. LEXIS 38 (EAB, August 24, 2006); *In re Kawaihae Cogeneration,* 7 E.A.D. 107, 114 (EAB, April 28, 1997). In short, in such appeals, the EAB explained that the burden is on a petitioner to demonstrate that review is warranted. Ordinarily, a PSD permit will not be reviewed by the EAB unless the decision of the permitting authority was based on either a clearly erroneous finding of fact or conclusion of law, or involves an important matter of policy or exercise of discretion that warrants review.

[7] Section II of Petition 2, "Petition Standard of Review," describes the Petitioners' view of the applicable standard of review. This section of the Petition raises no requests for objection. EPA's articulation of its view on the standard of review in title V petitions is not intended to either agree or disagree with Petitioners' views.

[8] In evaluating the remaining issues in both Petitions, EPA considered the terms of the current permit for the facility (Revision 3). Permit citations are provided for Revision 3 unless the particular citation at issue was different in Revision 2 than Revision 3. For purposes of clarity in this Order, the permits are referred to by revision.

Permit History

In December 2004, LG&E submitted a PSD permit application to KDAQ to include into its title V permit, a PSD construction permit to undertake a major modification to construct a new 750 MW net nominal generating unit that would utilize supercritical pulverized coal (Unit 31).[9] Ancillary equipment for this new unit includes a new linear mechanical draft cooling tower, a coal blending facility, dust collectors and dust suppression equipment on material handling operations, an ash barge loading system/fly ash silos, an auxiliary steam boiler, a backup diesel generator, and an emergency diesel fire water pump engine. The construction of new Unit 31 is also expected to increase utilization of the existing natural draft cooling tower on Unit 1, various material handling equipment, the three auxiliary boilers, emergency diesel generator, and fuel oil storage tanks.

In late 2004, and separate from the PSD application, LG&E submitted a minor permit revision application to KDAQ for a voluntary creditable decrease in emissions for nitrogen oxides (NO_x) and sulfur dioxide (SO_2) for Unit 1. The creditable decreases were requested to net against the anticipated future increases in emissions from the new Unit 31 for PSD purposes. In January 2005, KDAQ approved the minor permit revision to reduce the NO_x and SO_2 emission limits for Unit 1 (Revision 1, minor modification).

The final draft Revision 2 combined PSD/title V permit for construction of new Unit 31 was opened for public notice and comment in July 2005. Minor changes were made to the permit following public comment and the final Revision 2 Permit was issued on January 4, 2006. The Petitioners administratively appealed the issuance of the Revision 2 Permit by KDAQ, which resulted in a Final Order by the Secretary of the Kentucky Environmental Protection and Public Health Cabinet on September 28, 2007, granting certain claims and denying others. On October 26, 2007, KDAQ issued a revision entitled, "Revision 2 Administrative Amendment," which involved revisions to the permit in response to the Secretary's Final Order. In January 2008, KDAQ further revised the permit (Revision 3).

In issuing Revision 2, KDAQ concluded that the proposed major modifications would result in a significant net increase in emissions of particulate matter (PM) and particulate matter with a diameter of less than ten micrometers (PM_{10}), carbon monoxide (CO), volatile organic compounds (VOC), fluorides, and sulfuric acid mist (SAM). Due to the voluntary creditable decreases in emissions of NO_x and SO_2 at Unit 1, which were approved in Revision 1, KDAQ concluded that the new Unit 31 was not subject to major PSD review for NO_x and SO_2. As presented for Revision 2, the design of Unit 31 involved a suite of control technology including: selective catalytic reduction (SCR); pulse jet fabric filters (PJFF) and hydrated lime injection; wet flue gas desulfurization (WFGD); wet electrostatic precipitator (WESP). These control technologies, in addition to the construction of the new linear mechanical draft cooling tower and other operational limits, were determined by KDAQ as sufficient for the facility to meet BACT requirements that resulted from KDAQ's PSD review of the proposed major modification. KDAQ SOB Revision 2.

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[9] In some permitting information, Unit 31 is also referred to as Unit 2. In this Order, we reference Unit 31 or "the new unit."

On February 13, 2007, LG&E submitted an application for a significant revision to amend the permit to account for permitting redesigns. KDAQ SOB Revision 3 at 1. As part of this revision, the permit was modified to include additional control technology for Unit 31 – a dry electrostatic precipitator (DESP) and powdered activated carbon (PAC) injection and hydrated lime injection. The DESP is intended to ensure that the saleable fly ash is captured prior to potential contamination due to PAC injection which is for mercury control. KDAQ SOB Revision 3 at 2. In addition to these changes, Revision 3 also included permitting changes for the following other changes to operations and/or design at the facility: (1) Unit 32 (auxiliary boiler) changes including increased hours of operation and use of ultra low sulfur fuel; (2) Unit 33 (emergency generator) changes including use of ultra low sulfur fuel and changes to hours of operation; (3) the elimination of three existing auxiliary boilers (Units 7-9) and the emergency diesel firewater pump; (4) the addition of material handling silos (waste ash, hydrated lime and PAC); (5) movement of proposed conveyer transfer points; (6) new conveyer transfer points; (7) an increase in length of haul road; and (8) ash transfer design changes. KDAQ SOB Revision 3 at 2-3. As a result of these changes, KDAQ also reviewed the previous PSD analysis done for the facility and made some changes to emission calculations for the netting associated with Unit 31 (for NO_x and SO_2) as well as revised calculations for the PM emissions from the linear mechanical draft cooling tower (Unit 41). Despite the changes, KDAQ concluded that the facility was still able to use netting to avoid PSD review for NO_x and SO_2 associated with the addition of Unit 31. KDAQ SOB Revision 3 at 3.

At this time, LG&E is engaged in construction of Unit 31 and the associated design changes necessary at the facility to support the new unit. In addition, in mid-January 2009, KDAQ proposed changes to Revision 3 to the permit to respond to EPA's September 10, 2008, Order which granted two petition issues. KDAQ did not receive comments from Petitioners on this revision. On April 21, 2009, KDAQ issued a proposed permit (Revision 4 – although it is not identified by KDAQ in that manner). On June 5, 2009, EPA Region 4 objected to the permit on two grounds. First, that KDAQ "must undertake a Section 112(g) analysis for all hazardous air pollutants with respect to Unit 31 in order to comply with all applicable Clean Air Act requirements." Second, that the startup/shutdown limits added to the permit must be rewritten to more accurately reflect what is presented in the Statement of Basis. EPA did not object to the substance of KDAQ's revised analysis for startup and shutdown (which was required as part of the September 10, 2008, Order). Consistent with the CAA and applicable regulations, KDAQ has ninety days in which to revise the permit pursuant to the June 5, 2009, objection letter.

III. EPA DETERMINATIONS ON PETITIONS 1 AND 2

A. Petitioners' Claims Regarding Public Participation

Petitioners allege that EPA must object to the permit because KDAQ did not comply with applicable public participation requirements during the Revision 2 process in three primary ways. Petitioners allege that KDAQ (1) did not make the entire permit application or all supporting materials available to the Petitioners; (2) was unresponsive to Petitioners' requests for information during the public comment period – thus impacting public participation; and (3) failed to meaningfully extend the public comment period to correct its delays in providing

information to Petitioners. Petition 1 at 6-7. Subsequent to Petition 1, a second public comment period was held for Revision 3 to the permit. Petitioners raised no new public participation concerns following the Revision 3 public comment process. For the reasons discussed below, the Petitions[10] are denied with regard to all public participation issues raised although EPA emphasizes the fundamental importance of public participation and strongly urges KDAQ to revise its procedures.

1. Failure to make entire permit file available and respond to requests for information during public comment period

Petitioners' allegations regarding KDAQ's failure to make the entire permit file available in a timely manner to the public during the public comment period involve three distinct assertions. First, the file viewed by Petitioners during the public comment period did not include a CD-ROM dated November 7, 2005, describing CO air quality monitoring data. Second, the minor permit modification applications (Revision 1), which involved the voluntary creditable decreases of NO_x and SO_2 emissions from Unit 1, were not included in the Revision 2 file. In addition, the file viewed by Petitioners during the public comment period did not include a startup/shutdown plan or operation and maintenance specifications. Third, the files were allegedly disorganized and Petitioners were not able to obtain in a timely manner copies of the relevant files for review.

a. CO air quality monitoring data

Petitioners' Claims. During the public comment period in July 2005, Petitioners sought to view the entirety of the permit file. Petition 1 at 7. In February 2006, as part of discovery during the administrative appeal of Permit Revision 2, KDAQ produced a CD-ROM with CO air quality monitoring data which was dated November 7, 2005. Petitioners claim that the permit record was flawed because it did not contain this CD-ROM. *Id.*

EPA's Response. During the permitting process for a facility like the LG&E facility, KDAQ typically receives a number of submittals from the permittee regarding, among other matters, air quality monitoring data. Petitioners presented no information explaining what the November 7, 2005, CD-ROM contained, whether it was related to Permit Revision 2, or even when it was submitted to KDAQ (i.e., whether it was a part of the permit application or submitted later). Further, Petitioners presented no information indicating that KDAQ relied on that CD-ROM to establish the CO limits or to perform any required analyses. The mere existence of a data set dated after draft permit issuance and the public comment period, with no information supporting its relevance to the decision, is not sufficient to demonstrate that KDAQ failed to comply with a requirement under the Act in issuing the permit. Additionally, Petitioners present no information suggesting that either KDAQ relied on this information in making a permit decision or that review of this information was necessary to meaningfully

[10] These public participation issues were raised in Petition 1, but reiterated in Petition 2. In this section, EPA is addressing all the public participation issues raised (the substance of which is discussed primarily in Petition 1). EPA uses the term "Petitions" because the issues were also referenced in Petition 2.

review the proposed project or permit. *See, e.g., In the matter of Pencor-Masada Oxynol, LLC*, Petition No. II-2000-07 (Order on Petition) (May 2, 2001) at 5 (denying an issue regarding public availability of certain documents).

In addition, we note that Petitioners have had a second opportunity through the Revision 3 changes, to provide KDAQ with any comments concerning the CO data contained in the CD-ROM to the extent that they believe it is pertinent to the permitting decision. Although Petitioners provided comments regarding CO to KDAQ during the Revision 3 public comment period, there is no mention of or reference to the data on the CD-ROM. Petitioners' Exhibit 1 at 16-17. For these reasons, Petitioners failed to demonstrate that the permit is not in compliance with the Act. As a result, the Petitions are denied as to this issue.

b. Permit file missing information such as minor revision applications, startup/shutdown plan, and operation and maintenance information

Petitioners' Claims. Petitioners sought to view the permit file (for Revision 2) at KDAQ offices in Frankfort, Kentucky and were provided with a box of documents. Petitioners allege that applications submitted by LG&E seeking the minor permit revision (Revision 1) involving the voluntary creditable decreases of NO_x and SO_2 emissions at Unit 1 were not included in the permit file for Revision 2. Petitioners further allege that the box did not include the startup/shutdown plan or operation and maintenance materials. Petition 1 at 8-9.

EPA's Response. KDAQ's public participation procedures for PSD and title V permits are found at 401 KAR 52:100. Consistent with Kentucky's PSD rules at 401 KAR 51:017 § 15, the federal public participation rules found at 40 CFR § 51.166(q) also apply. Federal title V rules found at 40 CFR § 70.7(h) also describe public participation procedures although Kentucky's rules are more detailed in their requirements than Section 70.7(h). In pertinent part, 401 KAR 52:100 § 8(1)(a-c), "Public Inspection of Documents," provides that Kentucky shall make available the permit application, the draft permit, and supporting materials. The federal rules further explain that the permitting authority shall "[m]ake available in at least one location in each region in which the proposed source would be constructed a copy of all materials the applicant submitted, a copy of the preliminary determination, and a copy or summary of other materials, if any, considered in making the preliminary determination." 40 CFR § 51.166(q).

Inclusion of a particular document in the permitting file depends in large part on whether the information at issue was relied upon by KDAQ in the permitting decision, and not available in any other documents provided to the public. The SOB for Revision 2 provides an explanation of the voluntary creditable decreases as well as information associated with that permit modification that was relevant to Revision 2.[11] KDAQ SOB Revision 2 at 3-7. In the Response to Comments (RTC) for Revision 2, KDAQ explained that "[a]ppropriate supporting materials

[11] The application for Revision 2 includes the netting calculations and provides significantly more information regarding the netting analysis for Unit 31 than did the minor modification application which did not include the netting analysis at Unit 31, but rather, just the decreases in emissions from Unit 1.

on reductions were provided to the public through the air permit application document, the Statement of Basis netting discussion, and minor permit revision applications supporting the creditable emission decreases..." KDAQ RTC Revision 2 at 13. Thus, according to KDAQ, the permitting record for Revision 2 included the information from the minor modification that KDAQ relied upon in evaluating Revision 2. Further, the netting issues were open for additional public comment as part of Revision 3 to the permit, and Petitioners did not raise any concerns regarding insufficient information at that time. For the reasons discussed above, Petitioners have not demonstrated that any information from the minor permit modification applications that was relied upon by KDAQ was not provided in the permitting record. Therefore, the Petitions are denied as to this issue.

With regard to the startup/shutdown plan, we note that in the September 10, 2008 EPA Order, we granted the objection in Petition 1 that the permit did not adequately address startup and shutdown emissions as part of the BACT analysis. Thus, the permit record now contains additional information regarding periods of startup and shutdown, and a new public comment period was held specifically on this issue. Petitioners did not submit comments to KDAQ on the most recent permit revisions regarding startup and shutdown. Thus, this issue appears resolved and is now moot.

With regard to the operation and maintenance information, Petitioners make a general assertion that "the operating and maintenance procedures and manufacturer's recommendations for the proposed unit's equipment" were "absent from the file." Petition 1 at 9. LG&E did include some specific operation and maintenance information for certain components as part of the 2004 Application (in Appendix E). Prevention of Significant Deterioration Construction Permit Application and Title V Operating Permit Application Trimble County Unit 2, Louisville Gas & Electric (December 1, 2004) (hereafter referred to as "2004 Application"). Petitioners do not explain what particular information was missing from the file. Further, as a general matter, at the time of issuance of a PSD permit, construction has not yet occurred. In general, companies may not have contracted for construction at the time the permit application is pending because many companies are reluctant to enter into binding contracts without a final preconstruction permit. Although the application and the permit specify the design of the affected units, there are often many manufacturers of the control technologies and other components such that inclusion of all operation and maintenance information in the permit record may not be practical. Petitioners do not demonstrate that the permit record lacked any required operation and maintenance information, and thus the Petition is denied on this issue.

For the above reasons, Petitioners fail to demonstrate that the permit is inconsistent with the Act. As a result, Petitions are denied as to the issues identified above.

c. KDAQ's files were disorganized, inhibiting onsite review; copies were not timely provided to Petitioners

Petitioners' Claims. Petitioners state that the file they received from KDAQ was "jumbled" and "disorganized;" that they had trouble identifying where the file could be viewed (which KDAQ office), which delayed viewing; that the onsite copier was broken; and when

Petitioners' requested copies of the permit file, the copies were provided during the third week of August 2005, two weeks after the close of the comment period. Petition 1 at 8.

EPA's Response. As a procedural threshold matter, Petitioners failed to raise any of these issues during the public comment period. Petitioners' Exhibit A to Petition 1 (Comments (Revised) on the Louisville Gas and Electric Company Proposed Coal-Fired Power Plant (August 9, 2005) at 3). The comment letter raises three public participation issues –that it was not clear when the public comment period began, that KDAQ failed to extend the public comment period, and that some information regarding SO_2 and NO_x was missing from the file at KDAQ's offices. Pursuant to Section 505(b)(2) of the CAA, 42 U.S.C. § 7661d(b)(2), a "petition shall be based only on objections to the permit that were raised with reasonable specificity during the public comment period provided by the permitting agency." Thus, not only must issues be raised during the public comment period, but they must be raised sufficiently to meet the threshold requirements. The Act does provide for an exception to this threshold requirement if the petitioner "demonstrates in the petition to the Administrator that it was impracticable to raise such objections...or the grounds for such objection arose after such period." *Id.* Neither Petition raises these exceptions.[12] As claims regarding the files being disorganized, and unavailability of copies were not raised during the public comment period, consistent with Section 505(b)(2) of the CAA, such issues may not now be raised in a title V petition. Therefore, these issues are denied for procedural reasons. Nonetheless, in order to promote transparency in government decision-making, below is brief discussion on the issues raised by Petitioners.

Public participation requirements found at 40 CFR § 51.166(q) address only the minimum requirements for what must be included in the permit file. Additional requirements are found in Kentucky's SIP-approved rule (401 KAR 52:100) and specify that certain documents be available for public review. *See, e.g.*, 401 KAR 52:100 § 8(1)(a)(specifying that the permit application, draft permit, and supporting materials be made available to the public); *see also* 40 CFR § 70.7(h)(2) (describing the types of information that must be made available to the public for title V permit review). The permit record indicates that the permit file was available for public review at the required locations. KDAQ SOB Revision 2 12-13. According to the SOB, the documents were also available via the KDAQ Web site which provides instant access for many permitting documents. *Id.*

In addition, Petitioners have not demonstrated that their public participation claims regarding file organization and copies prevented a meaningful assessment of the issues, or a flaw in the permit. *See, e.g., Valero Refining Company*, at 44; *In the matter of Pencor-Masada Oxynol, LLC*, Petition No. II-2000-07 (Order on Petition) (May 2, 2001) at 5-8 (describing

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[12] With regard to Petitioners' claim that certain requested documents were not received until after the close of the comment period, we note that they did not raise this concern to Kentucky in the comments they submitted on the Permit, nor did they raise this concern in the requests for an extension of the comment period that they filed with the Kentucky. Petitioners did have access to the file for viewing at the KDAQ office, so the information itself was available to Petitioners. Finally, we note that in neither petition requesting EPA to object to the permit do they attempt to identify concerns with specific information they received after the close of the comment period.

standards for reviewing public participation concerns). Further, as was discussed above, Petitioners did have the benefit of a second public comment period (on Revision 3).

Even though EPA is denying this claim in the Petition because Petitioners have not demonstrated that KDAQ failed to comply with an applicable public participation requirement, EPA has concerns regarding KDAQ's treatment of the Petitioners in their efforts to view the permit file and obtain copies of the file. Consistent with Section 502(b)(8), 42 U.S.C. § 7661a(b)(8), state rules shall provide "reasonable procedures consistent with the need for expeditious action by the permitting authority on permit applications and related matters, to make available to the public" certain permitting information. As a result, EPA strongly urges that KDAQ review its procedures regarding public inspection of its permit files and ensure that such procedures allow for inspection of the entire permit file at the beginning of the public comment period, and that the file is well-organized. Further, if no copier is provided for use by the public, EPA strongly recommends that KDAQ provide the public with a procedure by which copies may be obtained in a timely manner. Such steps will further open and transparent government, which ultimately helps to support government decisions and actions. In the RTC for Revision 2, KDAQ committed to "take under advisement suggestions to improve its public out reach procedures." KDAQ RTC Revision 2 at 13. EPA supports open and transparent government decision-making and is available to further advise KDAQ about improvements in its procedures for ensuring an adequate public participation for PSD and title V permits.

2. KDAQ failed to extend the public comment period

Petitioners' Claims. Petitioners state that KDAQ's failure to extend the comment period was unreasonable because of "gross inadequacies" in the public review process. Petition 1 at 12. Specifically, Petitioners allege that the extension was warranted due to the delays associated with identifying the location of the permit file (*see* Petitioners' Exhibit F (Declaration of Joan S. Lindop, Sierra Club member)), as well as delays associated with obtaining a copy of the permit file. Petition 1 at 12-13. Petitioners cite to a situation in Illinois, which they claim is similar and for which an extension was granted.

EPA's Response. As an initial matter, we believe that this issue is now moot due to the subsequent public comment period on Revision 3. Because Kentucky did not limit the scope of comments that could be submitted on Revision 3, the Petitioners had a second opportunity to submit comments on any issues for which they believed they had an insufficient opportunity to do so on Revision 2. We note that Petitioners took advantage of this opportunity and submitted numerous comments that went beyond the limited scope of the revisions that were the focus of Revision 3 – including raising issues that could have been raised during the Revision 2 process. Thus, to the extent a new or extended comment period may have been warranted, it has already been provided.

Nonetheless, Petitioners have not demonstrated that Kentucky acted inconsistent with applicable requirements or requirements under title V in denying Petitioners' request for an extension of the comment period on Revision 2. Kentucky's regulations at 401 KAR 52:100 do not explicitly require that extensions to public comment periods be granted. Extensions are also not explicitly discussed by applicable federal rules. 40 CFR § 70.7(h)(2), 40 CFR § 51.166(q).

As a general matter, permitting authorities have discretion to extend (or not) a public comment period.

Petitioners describe Ms. Lindop's unfortunate experience in attempting to view and obtain a copy of the LG&E permit file. However, in requesting the extension of time from KDAQ prior to the close of the comment period, Petitioners did not raise any of the concerns raised in the Petition. *See* Petitioners Exhibit G (E-mail from John Blair, Valley Watch, Inc. to John Lyons). Instead, Petitioners stated that an extension was necessary because "so many new sources" were being proposed in Kentucky. *Id.* Petitioners' comment letter also included a request for an extension of time (Petitioners' Exhibit A at 3), but providing little detail in terms of why an extension (or re-opening of the comment period) was warranted. Petitioners have not demonstrated that KDAQ's exercise of its discretion, based on the facts that were presented to it in this circumstance, was arbitrary, capricious or resulted in a flaw in the permit. *See, e.g., Valero Refining Company* at 44. In addition, the matter is now moot. Therefore, the Petitions are denied as to this issue.

B. Petitioners' PSD Related Issues

Background on PSD and BACT Applicable to All PSD/BACT Related Issues Raised in Petition

The CAA and corresponding PSD regulations require that new major stationary sources and major modifications of such sources employ BACT to minimize emissions of regulated pollutants emitted from the facility in significant amounts. CAA § 165(a)(4), 42 U.S.C. § 7475(a)(4); 40 CFR § 52.21(j)(2); 401 KAR 51:017 § 8(2), (3). BACT is defined to mean,

> an emission limitation based on the maximum degree of reduction [of pollutants emitted from the facility] which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant.

CAA § 169(3), 42 U.S.C. § 7479(3).

EPA has developed a "top-down" process that permitting authorities use to ensure that a BACT analysis satisfies the applicable legal criteria. The top-down BACT analysis consists of a five-step process which provides that all available control technologies be ranked in descending order of control effectiveness, beginning with the most stringent. *See Prairie State,* slip. op. at 17-18. The most stringent control technology is deemed the control necessary to achieve BACT-level emission limits unless the applicant demonstrates, and the permitting authority determines, that technical considerations, or energy, environmental, or economic impacts justify a conclusion that the most stringent technology is not achievable in that case. An incomplete BACT analysis, including failure to consider all potentially applicable control alternatives, constitutes clear error. *See, e.g., Prairie State,* slip op. at 19; *In re Knauf Fiber Glass, GmbH,* 8 E.A.D. 121, 142 (EAB,

February 4, 1999); *In re Masonite Corp.* 5 E.A.D. 551, 568-569 (EAB, November 1, 1994). The five steps in the top-down process are summarized below:

a. Identify all available control technologies;
b. Eliminate technically infeasible options;
c. Rank remaining control technologies by control effectiveness;
d. Evaluate the economic, environmental, and energy impacts of the options; and
e. Select BACT.

Prairie State, slip op. at 17-18. Although EPA regulations do not require application of this top-down process to meet the BACT requirement, this top-down analysis is frequently used by permitting authorities to ensure that a defensible BACT determination, including consideration of all requisite statutory and regulatory criteria, is reached. LG&E followed this top-down BACT methodology when it submitted its application for modifications at the Trimble County facility, which KDAQ applied in issuing its permitting decision. KDAQ SOB Revision 2 at 15.

1. Petitioner's Claim that the Permit Fails to Include BACT for Carbon Dioxide

(Section III of Petition 2)

Petitioners' Claims. Petitioners claim that EPA must object to the permit because the permit fails to include requirements addressing emissions of carbon dioxide (CO_2) and other harmful greenhouse gases (GHGs) from Unit 31, specifically a BACT analysis for CO_2. Petition 2 at 5-16. In this portion of the Petition, Petitioners raise the following main concerns: (1) Unit 31 will emit millions of tons of CO_2 and other GHGs; (2) CO_2 is an air pollutant under Kentucky and federal law; (3) CO_2 is subject to regulation under the CAA (Sections 202, 821 and 40 CFR Part 75) and Kentucky law (401 KAR 52:060); (4) the permit cannot issue without the required emissions information for CO_2; and (5) the permit cannot issue without BACT limits for CO_2 (also stating, among other points, that the PSD significance level for CO_2 is "any emissions," and that a BACT analysis should consider carbon capture and sequestration).

EPA's Response. In its response to comment on this issue, KDAQ identified the provision of the Kentucky SIP that requires it to implement the state PSD program in a manner that is no more stringent than the federal PSD program. KDAQ RTC Revision 3 at 13 (citing Kentucky Revised Statutes (KRS) 224.10-100(26)). KDAQ then found that there were no federal PSD requirements to control CO_2 at stationary sources,[13] and KDAQ explained that the Kentucky PSD regulations did not require a BACT analysis for CO_2 emissions in Revision 3. *Id.* Implicit in KDAQ's conclusion that the permit would not include a CO_2 BACT limit was an

[13] As Petitioners note, KDAQ did incorrectly state that there "there are no federal regulations establishing requirements for CO_2 at stationary sources." KDAQ RTC Revision 3 at 13. However, given that this sentence directly follows KDAQ's discussion of the SIP requirement to implement their PSD program no more stringently than the federal PSD program and directly precedes their discussion of state BACT requirements, we think this sentence is more appropriately interpreted to say that Kentucky found there are no federal regulations establishing PSD requirements for CO_2 at stationary sources.

understanding that the federal PSD program did not apply to CO_2 emissions at the time Revision 3 was issued. As discussed below, Petitioners have failed to demonstrate that KDAQ's reliance on the SIP and its assumptions regarding the federal PSD program requirements led to a permit that is deficient under the CAA.[14]

When KDAQ issued permit Revision 3 in January 2008, at least one EPA Region and the EPA program office that oversees implementation of the federal PSD permitting program had taken the position that CO_2 emissions were not subject to federal PSD requirements because they believed there was a binding, historic interpretation of the phrase "subject to regulation" in the federal PSD regulations that required PSD regulations to applied only to those pollutants already subject to actual control of emissions under other provisions of the CAA.[15] *See* EPA Region 7's Response to Petition for Review, *In re: Deseret Power Electric Cooperative*, PSD Appeal No. 07-03 (filed November 2, 2007); Brief of the EPA Office of Air and Radiation, *In re: Christian County Generation, LLC*, PSD Appeal No. 07-01 (filed September 24, 2007). Accordingly, these EPA offices argued that the regulations in the CAA Acid Rain program that require monitoring of CO_2 at some sources (and which are cited by Petitioners in this matter) did not make CO_2 subject to PSD regulation. *Id.* Thus, it was not implausible for KDAQ to assume that the federal PSD program did not require permits to include limits for CO_2 emission because, at the time KDAQ issued Revision 3, two EPA offices that implement and interpret the requirements of the federal PSD program had taken that position. Moreover, at that time, no federal permitting authorities had actually imposed PSD requirements for CO_2; in fact, no federal PSD permit has since issued which included CO_2 limits.

A decision of EPA's Environmental Appeals Board ("EAB") subsequently addressed the position that CO_2 emissions were not subject to PSD regulation. *See In re: Deseret Power Electric Cooperative*, 14 E.A.D. ___, PSD Appeal No. 07-03 (EAB, November 13, 2008). The EAB determined that prior EPA actions were insufficient to establish a historic, binding interpretation that "subject to regulation" for PSD purposes included only those pollutants subject to regulations that require actual control of emissions. However, the EAB did not conclude that such an interpretation was impermissible under the CAA and found "no evidence of a Congressional intent to compel EPA to apply BACT to pollutants that are subject only to monitoring and reporting requirements." *Id.* at 63. Shortly thereafter, in order to address the ambiguity that existed in the federal PSD regulations following the EAB decision, then Administrator Stephen Johnson issued a memorandum setting forth the official EPA interpretation regarding which pollutants were "subject to regulation" for the purposes of the

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[14] Petitioners also included a request for EPA to reopen the LG&E permit to include PSD BACT limits for CO_2 emissions. Petition 2 at 10. In light of the circumstances discussed below, EPA also declines at this time to undertake a discretionary reopening of the LG&E permit to include such limits.

[15] Under the federal PSD permitting regulations, only newly constructed or modified major sources that emit one or more "regulated NSR pollutants" are subject to the requirements of the PSD program, including the requirement to install BACT for those regulated NSR pollutants that the facility emits in significant amounts. "Regulated NSR pollutants" include "any pollutant that otherwise is subject to regulation under the Act." 40 CFR § 52.21(b)(50)(vi); *see also* 401 KAR 51:001 § 1(210).

federal PSD permitting program. Memorandum from Stephen Johnson, EPA Administrator, to EPA Regional Administrators entitled, "*EPA's Interpretation of Regulations that Determine Pollutants Covered by Federal Prevention of Significant Deterioration (PSD) Permit Program*" (December 18, 2008) (Johnson Memo); *see also* 73 *Fed. Reg.* 80,300 (December 31, 2008) (public notice of December 18, 2008 memo). The Johnson Memo established an interpretation of "subject to regulation" within the federal PSD regulations that "exclude[d] pollutants for which EPA regulations only require monitoring or reporting but [] include[d] each pollutant subject to either a provision in the Clean Air Act or regulation adopted by EPA under the Clean Air Act that requires actual control of emissions of that pollutant." Johnson Memo at 1; 73 *Fed. Reg.* at 80,301. EPA received a petition for reconsideration of the position taken in the Johnson Memo, and on February 17, 2009, the new Administrator granted that petition. Letter from Lisa P. Jackson, EPA Administrator, to David Bookbinder, Chief Climate Counsel at Sierra Club (February 17, 2009). In granting reconsideration, Administrator Jackson announced the intent to conduct a rulemaking to take public comment on the issues raised in the memo, but she did not stay the effectiveness of the Johnson memo pending reconsideration.[16]

While KDAQ's implicit assumption at the time Revision 3 was issued – that there was an established federal standard that did not require PSD permits to include limits for CO_2 emissions – was later overturned by the EAB, it does not mean that Petitioners have demonstrated that KDAQ's reliance on this assumption led to a permit that is deficient under the CAA. Petitioners assert that Revision 3 was issued in error because CO_2 "is clearly 'subject to regulation' under the [CAA] and Kentucky law," based on CAA regulations requiring their monitoring and reporting. Petition 2 at 7. Petitioners are essentially arguing that at the time KDAQ issued the permit, the federal PSD program required application of BACT requirements to CO_2 emissions and KDAQ erred by not including such limits. However, this argument fails because the EAB specifically found that there was no established standard regarding whether CO_2 was "subject to regulation" under the federal PSD program and that the position urged by Petitioners – PSD regulation of CO_2 was required given existing monitoring and reporting requirements – is not clearly dictated by the language of the CAA or EPA regulations. *Deseret Power* at 63. Accordingly, Petitioners have not established that KDAQ's failure to require CO_2 emissions limits in this permit was incorrect because they did not show that KDAQ implemented the Kentucky PSD program in a manner less stringent than the existing federal PSD program.[17] Because Petitioners have not demonstrated that Revision 3 is inconsistent with the requirements of the Act, the Petition 2 is denied with respect to this issue.[18]

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[16] The grant of reconsideration also re-iterated that states must issue PSD permits "under their own State Implementation Plans." February 17, 2009 letter granting reconsideration at 1; *see also* Johnson Memo at 3, n. 1 ("To the extent approved State Implementation Plans contain the same language as used in [the relevant federal PSD regulations], States *may* interpret that language in state regulations in the same manner reflected in this memorandum.") (emphasis added).

[17] The position taken in KDAQ's permitting decision rests on the interplay of its SIP and the federal PSD program, and that decision is consistent with the EPA's present position regarding which pollutants are subject to federal PSD permitting requirements.

[18] Actions are underway at EPA that could, when finalized, result in the promulgation of final standards controlling the emission of greenhouse gases. In particular, EPA has announced its

2. *Petitioners' Claims that the Permit fails to include air quality monitoring demonstration during periods of startup, shutdown, and maintenance*
(Sections IX and X of Petition 2)

Petitioners' Claims. In Section IX of Petition 2, Petitioners reiterate the issues raised in Section II. E. of Petition 1 that the permit fails to include BACT for periods of startup, shutdown and malfunction. Petition 1 at 24. These issues were already responded to in EPA's September 10, 2008, Partial Order. In Section X, Petitioners comment that KDAQ's failure to consider BACT for periods of startup, shutdown and malfunction also resulted in a failure to demonstrate that Unit 31 "will not cause or contribute to a violation of NAAQS or PSD increment." Petition 2 at 51. Petitioners cite to CO, VOCs and NO_x as pollutants of concern although Petitioners' focus is on VOCs because the VOC potential to emit was estimated at 97.8 tpy, a level that allowed LG&E not to evaluate air quality impacts for ozone. Petitioners suggest that VOC emissions can be higher during periods of startup, shutdown and malfunction, and that such emissions "can be significant in terms of triggering an ambient air quality analysis to assess compliance with ozone NAAQS and increments." Petition 2 at 52.

EPA's Response. Pursuant Section 165 of the CAA, the PSD preconstruction requirements include, among others, an air quality analysis and PSD increment analysis. 42 U.S.C. § 7475. EPA promulgated rules providing details on the air quality and PSD increment analyses, and Kentucky also adopted rules consistent with the CAA and EPA's regulations, which are incorporated into Kentucky's SIP. 401 KAR 51:017 §§ 9-14; *see also* 40 CFR §§ 52.21(c)-(p), (r). Kentucky's rules at 401 KAR 51:017 § 11 describe a PSD permit applicant's obligation to provide to KDAQ an "analysis of ambient air quality in the area that the major stationary source or major modification will affect." *Id.* at (1)(a). The analysis is specific to regulated pollutants for which the major modification will result in a significant net increase – and how those increases might affect the area's ability to maintain the current NAAQS attainment status. 401 KAR § 51:017; *see also* KDAQ SOB Revision 2 at 31. Ozone is treated differently from other pollutants for which there is an established NAAQS because ozone is not emitted directly from sources. As a result, an ozone air quality analysis cannot be performed on a source-by-source basis in the same manner as an analysis for PM or the other NAAQS pollutants. Therefore, air quality impact analyses for ozone focus on ozone precursors, primarily VOCs and NO_x. NO_x is a precursor for ozone although KDAQ's SIP-approved rules have not yet been updated to include NO_x as an ozone precursor.

In the Revision 2 SOB, KDAQ explained that LG&E provided the information required by Kentucky rules for the ambient air quality analysis. KDAQ SOB Revision 2 at 31-32. Pursuant to Kentucky rules (which are consistent with federal rules), KDAQ may exempt a project from an ambient air impact analysis if the project would result in a net emissions increase of less than the amounts listed in the table in 401 KAR 51:017 § 7(5)(a). Petitioners raise specific concerns regarding VOCs and ozone. For ozone, 401 KAR 51:017 § 7(5)(a) explains

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intention to propose a rule regulating greenhouse gas emissions from light-duty vehicles; that rule would control the emission of greenhouse gases within the meaning of the Johnson Memo.

that, "No de minimis air quality level is provided for ozone. However, a net increase of 100 tpy or more of VOCs subject to this administrative regulation is required to perform an ambient impact analysis including the gathering of ambient air quality data." *Id.* LG&E's 2004 Application explains the origin of LG&E's determination that the net emissions increase for VOCs would be 97.5 tpy (thus allowing KDAQ to exclude the source from ozone related air quality analyses). 2004 Application at 2-11-2-15. Specifically, LG&E evaluated emissions from 9 emissions sources associated with the Unit 31 modification. *Id.* at 2-11. The emissions from these sources were based on projected fuel burn rates, engineering design estimates, and EPA AP-42 emissions factors.[19] *Id.* In addition, LG&E explained that "combustion calculations were performed to develop representative stack parameters and emission rates..." *Id.* For Unit 31, LG&E explained that "emissions and stack parameters were developed for unit loads of 100, 75, and 50 percent of maximum capacity over a range of representative ambient temperatures...as well as for three potential coal fuels." *Id.* These analyses were then used to determine the potential-to-emit resulting from the modifications, and then compared with previous emissions to determine the net emissions increase pursuant to Kentucky's SIP-approved rules at 401 KAR 51:017.[20]

The result of these analyses was a projected net emissions increase of 97.8 tpy for VOCs. KDAQ SOB Revision 2 at 3-6. In the Revision 3 analysis, this number was revised to 97.5 tpy for VOCs, but the substance of the analysis remained unchanged. KDAQ SOB Revision 3 at 3. Because the projected net emissions increase was below 100 tpy, Kentucky concluded that LG&E was not required to conduct an ambient air analysis for ozone. 401 KAR 51:017 § 7(5)(a); see also 2004 Application at 4-35 (requesting the §7(5)(a) exemption).

Petitioners do not identify any specific flaws in the analysis performed by LG&E or KDAQ with regard to CO, VOCs, or NO_x. Rather, Petitioners seem to rely on a presumption that emissions during startup and shutdown periods can be higher than during other operating periods. Petition 2 at 52. With regard to CO and NO_x, Petitioners provide no specific information demonstrating any flaw in the analyses performed by LG&E and KDAQ. Slightly

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[19] An emissions factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. These factors are usually expressed as the weight of pollutant divided by a unit weight, volume, distance, or duration of the activity emitting the pollutant (e.g., kilograms of particulate emitted per megagram of coal burned). Such factors facilitate estimation of emissions from various sources of air pollution. In most cases, these factors are simply averages of all available data of acceptable quality, and are generally assumed to be representative of long-term averages for all facilities in the source category. For more information on AP-42 and emissions factors, see http://www.epa.gov/ttn/chief/ap42/index.html.

[20] In determining the actual emissions for evaluating an increase associated with a modification, the rules require that sources consider emissions that are "representative of normal source operations." 401 KAR 51:001 § 1(2)(a). Neither federal law nor Kentucky rules require that sources consider a malfunction as representative of normal source operations. In addition, the nature of malfunctions is such that they are not anticipated events. Petitioners fail to demonstrate that malfunction emissions from this unit will result in an increase of VOC emissions such that the 100 tpy threshold will be met.

more detail is provided for VOCs. With regard to VOCs, Petitioners suggest that because 97.5 tpy is close to the 100 tpy threshold, and because "any increase in VOCs – such as those from startup, shutdown and maintenance – can be significant," that LG&E should have conducted an air quality impact analysis for ozone. Petition 2 at 52.[21] Petitioners provide no information demonstrating that emissions from startup, shutdown can be "significant," or result in an increase that would push LG&E over the 100 tpy threshold. Further, Petitioners fail to identify any specific portion of LG&E's analyses described in its 2004 or 2007 Applications where LG&E's analysis is not consistent with applicable law. As explained by LG&E, the emissions analyses were based on several scenarios, including unit loads of 100% (which are significantly greater than unit loads that would exist during a period of shutdown or startup). 2004 Application at 2-11. These emissions increases were then compared with previous emissions, consistent with the SIP-approved Kentucky rules, to determine whether such increases were "significant."

The Petitioners rely primarily on the assumption that emissions will increase during periods of startup and shutdown, as opposed to specific flaws in the analyses performed by LG&E and KDAQ. *See, e.g.,* KDAQ SOB Revision 2 at 3-5; 2004 Application at 2-11-2-15 and Appendix E; LG&E February 13, 2007, Application (Revision 3) at Appendix D (Emission Calculations); and Kentucky Cabinet Hearing Officer's Report and Recommended Secretary's Order (Hearing Officer's Report), File No. DAQ-27602-042 (June 13, 2007) at 163-164 (*aff'd* by Secretary on September 28, 2007). While it is generally true that not all control technology will be fully operational during periods of startup and shutdown (such as SCR which requires a certain temperature for the catalyst to function), this does not necessarily correlate to increased emissions during periods of startup and shutdown. As noted above, typically the units are not operating at full loads during such periods either. Petitioners cite to no evidence supporting their allegation on this point that emissions would be greater during these periods than they would be during operation at full-load. VOC emissions at LG&E are related to combustion generally – hence the focus of the analysis on combustion calculations and unit loads. 2004 Application at 2-11-2-15. As noted in the Hearing Officer's Report, Unit 31 would not be expected to be operating at "full load/full capacity" during periods of startup and shutdown; thus, the emissions are expected to be significantly less than those measured by LG&E which assumed maximum capacity loads 365 days a year. KDAQ RTC Revision 2 at 25; *see also* Hearing Officer's Report at 163-164; 2004 Application at 2-11-2-15. In addition, facilities such as LG&E will typically try to minimize emissions during startup by using alternative fuels during startup (such as natural gas). KDAQ RTC Revision 2 at 25; Hearing Officer's Report at 163-164.

Petitioners do not identify any specific step in the analytical process where LG&E's evaluation was not consistent with applicable law. There is no information in the record indicating that the VOC emissions are expected to exceed 100 tpy. Thus, for the reasons described above, Petitioners have not demonstrated that KDAQ's evaluation was unreasonable or resulted in a flaw in the permit. As a result, the Petitions are denied on these issues.

3. *Petitioners' Claims Regarding BACT for NO_x and SO_2*
(Section II. B. Petition 1; Section V.b Petition 2)

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[21] Petitioners also make a vague reference to a failure to evaluate "PSD increment;" however, there is no PSD increment for ozone.

Background on PSD Program and Netting

The PSD program applies to NAAQS pollutants and precursors for which an area has been designated attainment or unclassifiable, *see* CAA §§ 160-169, 42 U.S.C. § 7470-7479, as well as any other "regulated NSR pollutant" as defined in 40 CFR § 52.21(b)(50). The PSD program describes a set of preconstruction requirements applicable to new major emitting facilities (also called major stationary sources), and those undergoing a major modification that triggers PSD review. *See* 42 U.S.C. § 7475. Pursuant to federal rules, a major modification means "any physical change in or change in the method of operation of a major stationary source that would result in: a significant emissions increase...of a regulated NSR pollutant...and a significant net emissions increase of that pollutant from the major stationary source." 40 CFR § 51.166(b)(2)(i); *see also* Kentucky's SIP-approved rules at 401 KAR 51:017 § 1(116). The term "significant" is defined in 40 CFR § 51.166(b)(23) and includes specific emission rates for certain pollutants. *See also*, 401 KAR 51:017 § 1(221). With regard to pollutants for which the CAA does not set a specific emission rate, "significant" is defined as "any net emissions increase" associated with a major modification for those pollutants. 40 CFR 51.166(b)(23).[22]

Netting is a term that refers to the process of considering certain previous and prospective emissions changes at an existing major source to determine if a "net emissions increase" of a pollutant will result from a proposed physical change or change in method of operation. *See* 40 CFR § 51.166(b)(3)(i) (definition of "net emissions increase"), 401 KAR 51:017 § 1(146). The PSD definition of a net emissions increase found in 40 CFR § 51.166(b)(3)(i) (and 401 KAR 51:017 § 1(146)(a)) consists of two components: (a) any increases in actual emissions from a particular physical change or change in method of operation at a stationary source; and (b) any other increases and decreases in actual emissions at the source that are contemporaneous with the particular change and are otherwise creditable. The first component narrowly includes only the emissions increases associated with a particular change at the source. The second component more broadly includes all contemporaneous, source-wide (occurring anywhere at the entire source), creditable emission increases and decreases. *Id.* The netting analysis is reviewed on the basis of changes in annual (tons per year) emissions. *See* 40 CFR § 51.166(b)(23); *see also Environmental Defense v. Duke Energy Corp.*, 127 S. Ct. 1423 (2007) (upholding EPA's interpretation of modification based upon tons per year of emissions).

Pursuant to federal rules and Kentucky's SIP-approved rules, an increase or decrease in actual emissions is contemporaneous with the increase from the particular change only if it occurs between the date five years before construction on the particular change commences and the date that the emissions increase from the particular change occurs. 40 CFR § 52.21(b)(3)(ii)(a)-(b), 401 KAR 51:017 § 1(146)(b)(2). Applicable rules also describe when an increase or decrease in actual emissions is "creditable." 40 CFR § 52.21(3)(iii); 401 KAR 51:017 § 1(146)(c)-(f). Generally, to be creditable, a contemporaneous reduction must be

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[22] The concept of a "net" emissions increase was challenged following EPA's promulgation of the NSR rules in 1978 (43 *Fed. Reg.* 26,380, June 19, 1978) and upheld by the U.S. Court of Appeals for the District of Columbia Circuit (D.C. Circuit). *See, e g., Alabama Power Co. v. Costle*, 636 F.2d 323 at 402-403 (D.C. Cir. 1979).

enforceable on and after the date construction on the proposed modification begins. The actual reduction must take place before the date that the emissions increase from any of the new or modified emissions units occurs. In addition, the permitting agency must ensure that the source has maintained any contemporaneous decrease which the source claims has occurred in the past. The source must either demonstrate that the decrease was enforceable at the time the source claims it occurred, or it must otherwise demonstrate that the decrease was maintained until the present time and will continue until it becomes enforceable. An emissions decrease cannot occur at, and therefore, cannot be credited from an emissions unit which was never constructed or operated, including units that received a PSD permit. In addition, reductions must be of the same pollutant as the emissions increase from the proposed modification and must be qualitatively equivalent in their effects on public health and welfare to the effects attributable to the proposed increase. *Id.*, *see also* 45 *Fed. Reg.* 52,676, 52,698-52,699 (August 7, 1980) (explaining contemporaneous and creditable in the preamble to the rule promulgating EPA's 1980 NSR rule revisions).

For emissions decreases occurring at the same facility, of the same pollutant, within the applicable contemporaneous time period, KDAQ adopted an approach explained in the RTC Revision 2. KDAQ RTC Revision 2 at 18. Under this approach, there exists a presumption that the emissions decrease will have approximately the same qualitative significance for public health and welfare as that attributed to the related increase, unless the permitting agency has reason to believe that the reduction in ambient concentrations from the emissions decrease will not be sufficient to prevent the proposed emissions increase from causing or contributing to a violation of any NAAQS or PSD increment. The language regarding qualitative significance for public health and welfare stems from the purpose of the Act in Section 101(b)(1), 42 U.S.C. § 7401(b)(1). As in the case of LG&E, in order to ensure that the emissions reductions are contemporaneous and creditable for netting purposes, a regulated entity may seek a voluntary reduction in emissions not associated with any other change at the facility.

In summary, the netting analysis performed by a permitting authority tends to follow a six-step process: (1) determine emission increases from the proposed project; (2) determine the beginning and ending dates of the contemporaneous period as it relates to the proposed modification; (3) determine which emission units at the source have experienced an increase or decrease in emissions during the contemporaneous period; (4) determine which emissions changes are creditable; (5) determine, on a pollutant-by-pollutant basis, the amount of each contemporaneous and creditable emissions increase and decrease; and (6) sum all contemporaneous and creditable increases and decreases with the increase from the proposed modification to determine if a significant net emissions increase will occur. 45 *Fed. Reg.* at 52,698; *see also* Memorandum entitled, "*Proposed Netting for Modifications at Cyprus Northshore Mining Corporation, Silver Bay, Minnesota,*" from John Calcagni to David Kee (August 11, 1992) at 3-6. At the conclusion of the netting analysis, the permitting authority can then determine the specific pollutants for which there is a significant net increase in emissions, and thus, would be subject to PSD review. *See, e.g., In re Hawaii Electric Light Company, Inc.*, 8 E.A.D. 66 (EAB, November 25, 1988) (discussing elements of the netting analysis).

Background on KDAQ Netting Analysis for LG&E

In November and December of 2004, LG&E submitted to KDAQ two minor permit revisions for voluntary creditable decreases in emissions of NO_x and SO_2 from the already existing and permitted Unit 1, in anticipation of future construction of Unit 31. KDAQ SOB Revision 1 Minor Modification (January 20, 2005). KDAQ's review of the voluntary decrease in emissions was completed consistent with Kentucky's PSD rules.[23] As part of its permit application to reduce emissions, LG&E explained its intention to use the emission decreases of NO_x and SO_2 in its netting calculations for the forthcoming modification. KDAQ SOB (Revision 1 – Minor Modification); *see also* KDAQ SOB (Revision 2) at 3, 6. The Revision 2 SOB explained that for NO_x, LG&E would reduce the emissions through a combination of increased removal efficiency and increased SCR operating time. KDAQ SOB Revision 2 at 5, 6. For SO_2, KDAQ explained that the reductions would be achieved through capital investments to increase overall WFGC removal efficiency. *Id.* In Revision 3, KDAQ noted that there were some adjustments to the emissions for NO_x and SO_2, but concluded that LG&E was still able to net-out of PSD for NO_x and SO_2. KDAQ SOB Revision 3 at 3. In the February 13, 2007 Amendment to Air Construction Permit (Revision 3 Application), LG&E explains the emissions changes associated with the modifications as well as presenting the specific emissions calculations. Revision 3 Application at Section 3.0 and Appendices. Generally, the facts of the LG&E netting involve the situation contemplated by EPA in promulgating its regulations in 1980 – that facilities would upgrade older equipment to reduce emissions and that this may result in creditable emissions decreases. 45 *Fed. Reg.* at 52,700.

These netting issues were raised by Petitioners in their state permit appeal, for which a final order was issued on September 28, 2007. Kentucky Cabinet Secretary's Final Order File No. DAQ-27602-042 (September 28, 2007); *see also*, Kentucky Cabinet Hearing Officer's Report at 67-105. As part of Revision 3 to the permit, KDAQ revised the netting analysis, although the ultimate result was that KDAQ still concluded that the modification satisfied the netting requirements and was able to "net-out" of PSD review for NO_x and SO_2. As explained by KDAQ, the additional control equipment required by KDAQ as part of the permit had the effect of reducing the net emissions increase for NO_x and SO_2 by 2.9 tpy and 0.9 tpy, respectively. KDAQ SOB Revision 3 at 4. KDAQ also noted that even with some increases from emission units such as the auxiliary boiler, there were "no changes to the project's applicability under the original PSD review process from what was determined for the 2004 Application." KDAQ SOB Revision 3 at 3.

Petitioners' Claims. Petitioners raised a number of concerns regarding the netting in Petition 1. Petitioners raised some new concerns in Petition 2. All are outlined in this paragraph and discussed below. In Petition 1, Petitioners state that the netting analysis for NO_x and SO_2 was erroneous, and thus, it was incorrect for KDAQ to allow Unit 31 to avoid full PSD review for NO_x and SO_2 (i.e., a full BACT analysis). In Petition 1, Petitioners' issues stem from two

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[23] These rules became effective as a matter of State law on July 14, 2004. At the time that these rules were relied upon by KDAQ, they had been submitted to EPA for approval into the SIP. The rules reflected changes made by EPA to the federal NSR rules – the 2002 NSR Reform Rules. EPA subsequently approved these rules into the Kentucky SIP. 71 *Fed. Reg.* 38,990 (July 11, 2006). The delay was associated with litigation on the 2002 NSR Reform Rules that did not impact any issues raised by Petitioners.

basic concerns – that the reductions in NO_x and SO_2 were neither creditable nor contemporaneous. Petition 1 at 14-18. Petitioners claim in Petition 1 that the emission decreases at Unit 1 were not "creditable" for use at Unit 31 because KDAQ did not: (1) properly determine that the decreases had the same qualitative significance for public health and welfare as the increase in emissions at Unit 31; (2) consider that the SCR on Unit 1 was installed as a result of the NO_x SIP Call or other SIP requirements and thus any decreases in emissions cannot be used for netting; and (3) properly consider the timing of the increases per the ozone season. Petitioners claim in Petition 1 that the emission decreases at Unit 1 were not "contemporaneous" because KDAQ: (1) used "baseline emissions" instead of "actual emissions" for the netting calculations; (2) only the two prior consecutive years may be used for determining actual emissions; and (3) the SO_2 reductions at Unit 1 were required by another regulatory program (the CAA title IV program) and thus were not available for netting under the NSR program.

In Petition 2, Petitioners raise two additional concerns. Petition 2 at 28-29. First is the claim that LG&E did not properly document its emissions calculations for NO_x associated with the increase in size and operation of the auxiliary boiler. Second is the claim that LG&E did not properly document its emissions for NO_x associated with the emergency diesel generator. *Id.*

EPA's Response to Petition 1 Netting Issues

a. Concerns regarding whether decreases were creditable

Petitioners allege that the netting analysis fails to apply the requirement that the creditable decreases be of the same qualitative significance for public health and welfare as the increases for both NO_x and SO_2, with an emphasis on the NO_x emissions. Petition 1 at 14-16. For emissions decreases occurring at the same facility, of the same pollutant, within the applicable contemporaneous time period, KDAQ adopted an approach explained in the RTC Revision 2. KDAQ RTC Revision 2 at 18. Under this approach, there exists a presumption that the emissions decrease will have approximately the same qualitative significance for public health and welfare as that attributed to the related increase, unless the permitting agency has reason to believe that the reduction in ambient concentrations from the emissions decrease will not be sufficient to prevent the proposed emissions increase from causing or contributing to a violation of any NAAQS or PSD increment. Neither the federal rules, nor Kentucky's SIP-approved rules, articulate that the evaluation of qualitative significance be akin to a formal 'determination' process as Petitioners appear to suggest. Rather, the permitting agency will typically evaluate the emissions decreases and increases per the elements enumerated above, and so long as those elements are met, the netting analysis is sufficient. The 2004 Application describes the creditable emissions reductions (at 2-14 - 2-15), as does KDAQ's SOB for Revision 2 at 3-6. *See also* KDAQ RTC Revision 2 at 18. Therefore, the requisite analysis for determining credibility was completed by KDAQ.

As noted by Petitioners, during the public comment period, EPA submitted a comment to KDAQ on the issue of qualitative significance. EPA's comment to KDAQ underscores the key issue associated with the qualitative significance analysis. Notably, EPA commented that the qualitative significance analysis needs to "take into account the dispersion characteristics of Unit 1 in comparison with the dispersion characteristics of the proposed new NO_x and SO_2 emissions

units." Petition 1 at 15 (quoting EPA comments on draft permit). In this sense, the qualitative analysis may be a simple one. For example, one issue associated with evaluating the qualitative relationship of emissions may be comparing stack heights of different units. If, for example, decreases in emissions are taken through a stack that is 500 feet tall and the increases are emitted by a stack that is only 15 feet tall, these emissions may not have the same qualitative significance because the emissions from the lower stack may have a greater impact on ground level pollutants than the emissions from the higher stack. This is not to say that such impact is a certainty, but rather, that it would need to be evaluated as part of the netting analysis. EPA's comment to KDAQ was just a reminder that KDAQ conduct this type of analysis if the dispersion characteristics of the new unit, as compared with the existing unit, significantly differed. EPA typically includes this reminder in draft permit comments that include netting, and EPA's comment is not an indication that KDAQ had not properly undertaken the netting analysis. Petitioners make no allegations regarding any physical characteristic of Unit 1 versus Unit 31 that implicates concerns regarding the qualitative significance of the emissions. They are two similar emission units (Unit 1 is a 500 MW unit and Unit 31 will be a 750 MW unit), located at the same facility, with similar technical features such as emission points, and the decreases/increases occurred within the appropriate time period. KDAQ SOB Revision 2 at 3-7. Thus, Petitioners are incorrect in claiming that EPA's comment demonstrates a flaw in KDAQ's qualitative significance analysis.

Petitioners also allege that KDAQ "failed to examine all of the reasons for Trimble reducing NO_x emissions and assessing whether those reasons preclude use of the reductions in a netting calculation." Petition 1 at 16. Petitioners cite to possible use of the same reductions to satisfy the NO_x SIP Call[24] or other ozone SIP obligations. Petition 1 at 15-16. The minor modification sought by LG&E for netting purposes was to achieve greater NOx reductions than already required. 2004 Application at 2-16 (explaining that creditable NOx reductions from Unit 1 were achieved through a combination of increased removal efficiency and/or increased SCR operating time); see also, KDAQ SOB Revision 1 (Minor Modification) at 1; KDAQ RTC Revision 2 at 17. The creditable emissions decreases for NO_x resulted from LG&E voluntarily reducing the annual limit for NO_x to 0.45 lbs/mmBTU from 0.7 lbs/mmBTU. *Id.* Petitioners state that as a result of the NO_x SIP Call, the facility generated reductions of NO_x emissions (Petition 1 at 15); however, Petitioners do not explain how those reductions relate to or implicate reductions obtained by LG&E for netting purposes. The Permit Revision 3 includes a section on

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[24] On October 27, 1998, EPA finalized the "Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone"— commonly called the "NO_x SIP Call." 63 *Fed. Reg.* 57,356. The NO_x SIP Call was designed to mitigate significant transport of NO_x, one of the precursors of ozone. For those states opting to meet the obligations of the NO_x SIP Call through a cap-and-trade program, EPA included a model NO_x Budget Trading Program rule in 40 CFR Part 96. Kentucky is included in the NO_x SIP Call and implements the program through 401 KAR 51:001, 51:160 (for utilities), 51:180, 51:190, and 51:195. EPA approved Kentucky's NO_x SIP Call rules into the SIP on April 11, 2002. 67 *Fed. Reg.* 17,624.

the NO_x SIP Call (Section K).[25] KDAQ responded to Petitioners' comments on the NO_x SIP Call, explaining why Petitioners were not correct about the emissions used for the LG&E netting analysis. KDAQ RTC Revision 2 at 17. In Petition 1, Petitioners do not address specific concerns with KDAQ's RTC, or explain why it was not correct. KDAQ's evaluation on this issue is consistent with applicable requirements and Petitioners have not demonstrated that the netting analysis was flawed.

In addition, Petitioners suggest that the NO_x reductions associated with LG&E's minor modification were also used as part of Kentucky's plan to achieve compliance with the NAAQS. Petition 1 at 15. Petitioners do not identify any specific attainment demonstration or maintenance plan that included source-specific requirements for LG&E's Trimble County facility. As described in 40 CFR Part 81, Trimble County is designated as attainment for all the NAAQS. Although other areas in Kentucky are designated as nonattainment, there is no information indicating that emission reduction requirements for LG&E's Trimble County facility are relied upon as part of a SIP for the areas designated as nonattainment in Kentucky. There is nothing in the record that indicates that the reductions that LG&E requested from KDAQ were for any other purpose but netting. KDAQ SOB (Revision 2) at 3-6; KDAQ RTC at 5, 14-15, and 17-18. One result of the numerous applicable requirements for NO_x and SO_2, among other pollutants, is that facilities seeking creditable and contemporaneous emission decreases for netting will have to achieve emission reductions that have *some* relationship to other reductions required by law. Applicable requirements do not prohibit netting simply because the emissions reductions bear some relationship to a reduction requirement. *See, e.g.*, 40 CFR § 52.21 (b)(3)(iii); 401 KAR 51:100 § 1(146)(f). Thus, Petitioners have failed to demonstrate that KDAQ's analysis for LG&E's netting failed to meet any applicable requirement either federal regulations or Kentucky's SIP-approved rules.

Lastly, Petitioners appear to suggest that the "same qualitative significance for public health and welfare" means that the "increases from the project should be offset by decreases that occur in the same amount and at the same time." Petition 1 at 15. Petitioners seem to suggest that the creditable decreases will actually result in an increase of NO_x emissions during the ozone season. Petition 1 at 16. In responding to Petitioners' comments on this point, KDAQ explained its position on qualitative significance and applied the LG&E facts to that stated framework. KDAQ RTC Revision 2 at 18. Petitioners fail to explain why the interpretation adopted by KDAQ was inappropriate. Thus, Petitioners failed to demonstrate that KDAQ's analysis was flawed.

Additionally, the applicable requirements do not require that the exact amount of emissions increased must be decreased to qualify for netting (i.e., net zero emissions). Rather, so long as the "net emissions increase" is below the *significance threshold* for listed pollutants (which includes NO_x and SO_2), then the major modification is not subject to PSD review for those pollutants. 40 CFR § 51.166(b)(23)(i) (definition of "significant"); *see also* 401 KAR

[25] As noted by KDAQ in the RTC, the NOx SIP Call program includes a trading component. As a result, the mere existence of the NOx SIP Call does not mean that every electric generating facility in a NOx SIP Call state would have to install controls and/or operate the facility to meet certain limits. KDAQ RTC Revision 2 at 17.

51:100 § 1(221). Therefore, there is no requirement that a facility have a net zero increase of emissions due to creditable decreases. Netting is established by evaluating emissions on a tons per year basis – not simply evaluating emissions during a portion of the year (e.g., ozone season versus non-ozone season). *See, e.g.*, 40 CFR § 52.21(b)(23)(i) (noting significant rates in tpy); 401 KAR 51:001 § 1(221). In order to effectuate the voluntary, creditable decrease in NO_x emissions, Permit Revision 3 establishes several different NO_x emission limits for Unit 1 including a 0.7 lb/mmBTU (3-hour rolling average); 5,559 tpy (12-month rolling total); and 0.45 lb/mmBTU (annual basis). Permit Revision 3 at 3 (Section B.2 (d)-(f)). These limits ensure that on both a short-term (3-hour average) and a long-term (12-month average) basis, NO_x emissions stay below a specific limit. These limits apply at all times – i.e., both during the ozone season as well as outside of the ozone season.

While Petitioners appear to disagree with KDAQ's analysis with regard to netting, Petitioners fail to provide any information demonstrating that KDAQ failed to adhere to the federal or Kentucky rules regarding the netting analysis, or that the permit fails to include an applicable requirement with regard to netting. Therefore, the Petitions are denied as to these issues.

b. Concerns regarding contemporaneous nature of emissions

With regard to the requirement that emissions increases and decreases be "contemporaneous," Petitioners raise three main concerns. First, that KDAQ used baseline emissions instead of actual emissions. Second, that the SO_2 reductions were required by title IV of the CAA (the acid rain program). And third, that only the two years immediately prior may be used for netting purposes. Petition 1 at 17. In this discussion, Petitioners define "actual emissions" as "those that occur either immediately prior or in the two years prior to" a new limit. Petition 1 at 17.

Petitioners appear to raise two arguments regarding the applicable emissions calculations for determining contemporaneous emissions – one regards the Kentucky rules that are currently SIP-approved, and one regards the Kentucky rule that were SIP-approved at the time of the permitting action. Consistent with federal rules and Kentucky's current SIP-approved rules regarding contemporaneous emissions for netting purposes, "baseline actual emissions" are used for calculating increases and decreases to evaluate the contemporaneous nature of the emissions changes. 401 KAR 51:001 §1(2)(d)(1) (excluding the use of "actual emissions" for calculating a significant emissions increase); 40 CFR § 52.21(3)(i)(b); 401 KAR 51:001 §1(146).[26] These rules explain that facilities like LG&E may choose any consecutive 24-month period within the five year look-back period. 401 KAR § 51:001 §1(20)(a); 40 CFR § 52.21(b)(48) (definitions of "baseline actual emissions"). Applicable requirements explain that the "increase or decrease in actual emissions is contemporaneous with the increase from the particular change only if ... [f]or construction that commences on and after January 6, 2002, the change occurs between the date five (5) years before construction on the change commences, and the date that the increase from the change occurs." 401 KAR 51:001 § 1(146)(b); 40 CFR § 52.21(b)(3)(ii). In Kentucky's

[26] Petitioners suggest that "actual emissions" should have been used instead; however, the rules specify that "baseline actual emissions" be utilized for this purpose.

current rules, baseline actual emissions for calculating increases and decreases in emissions for netting purposes are be determined consistent with the definition of "baseline actual emissions." 40 CFR § 52.21(b)(48); 401 KAR 51:001 § 1(20); *see also* 67 *Fed. Reg.* at 80,202/2-3. Consistent with the definition of baseline actual emissions, any consecutive twenty-four month period within the five years preceding a major modification may be used to calculate baseline actual emissions. *Id.* Further, under existing regulations, different twenty-four month periods (for baseline actual emissions) allowed for different NSR regulated pollutants. 40 CFR § 52.21(b)(48)(ii)(d); 401 KAR 51:001 § 1(20)(b)(2); s*ee also*, Memorandum entitled, "*Request for Clarification on Policy Regarding the 'Net Emissions Increase,'*" from John Calcagni to William B. Hathaway (September 18, 1989) at 3.

KDAQ described its netting analysis in the SOB for Revision 2 (at 4-6). See also, KDAQ RTC Revision 2 at 14-15. In the instant case, in order to complete the netting calculation, one calculation was completed to determine if the emission decreases at Unit 1 were creditable and contemporaneous, and another calculation was completed to determine the emissions increases at Unit 31. *Id.* These two numbers were then added to determine if there was a 'net emissions increase' of the pollutants at issue. For this calculation, LG&E chose January 2001-December 2002 as the consecutive 24-month period for SO_2, and January 2000 to December 2001 as the consecutive 24-month period for NO_x. KDAQ SOB Revision 2 at 5. The emission decreases were permitted in January 2005 (Revision 1 – Minor Modification). LG&E's 2004 Application was submitted in December 2004, and Revision 2 was issued in January 2006. EPA understands that construction commenced sometime between January 2006 and September 2008. Thus, the chosen consecutive twenty-four month periods were within the contemporaneous time period required by Kentucky's rules (i.e., 5 years as explained above).

Petitioners argue that KDAQ's netting analysis was performed pursuant to NSR rules effective in Kentucky at the time of the analysis, but not yet SIP-approved. Petition at 17. Petitioners suggest that had Kentucky followed its SIP-approved rule, the netting analysis would have been different because it would have used "actual emission" as opposed to "baseline actual emissions." Kentucky's 2003 rules define "actual emissions" as "[a]ctual emissions as of a particular date shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during the two (2) year period which precedes the particular date and is representative of normal source operation. The cabinet may allow the use of a different time period upon a determination that it is more representative of normal source operation." 401 KAR 51:017(1)(b)(2003). Thus, KDAQ had the authority under the SIP-approved rules (or the state-effective reform rules) to use any two year period so long as it was more representative of normal source operation. Petitioners have not demonstrated that the two years selected by KDAQ were not 'more representative' or that KDAQ's analysis in choosing those two years was flawed.

Petitioners also raise the concern that the SO_2 reductions used for the netting were required by the CAA title IV Acid Rain Program. Petition 1 at 17. To support this claim, Petitioners point to data indicating that SO_2 emissions from Unit 1 "have consistently declined since 1999...to comply with the Acid Rain Program." Petition 1 at 17. Petitioners overlook, however, that LG&E sought a specific *further* reduction in emissions than was previously required by applicable requirements (as articulated in its title V operating permit), in order to

utilize the netting option for the anticipated construction of Unit 31. KDAQ SOB Revision 1 (Minor Modification) at 1. LG&E's current title V permit also contains numerous provisions consistent with title IV, found in Section J (Acid Rain) of the permit. Further, consistent with EPA's interpretation of the federal PSD netting rules, reductions obtained through either title IV (Acid Rain) requirements or other programs, like the NOx SIP Call, may also be used for PSD netting. *See, e.g.*, 57 *Fed. Reg.* 55620, 55626 (November 25, 1992) ("Emission reductions at title IV boilers which are part of an approved title IV averaging group are creditable for purposes of banking, bubbling or netting under title I only to the extent that the emissions reductions at any boiler, subgroup of boilers or the entire group of boilers are surplus to their individual and combined title I emission limitations, enforceable, quantifiable and permanent and take place in a single attainment or nonattainment area"); *see also* Letter from Stephen Rothblatt (EPA Region 5) to Timothy J. Method (Indiana Department of Environmental Management) at 2 (March 29, 1994). Thus, Petitioners failed to demonstrate that the netting performed by LG&E was not consistent with applicable requirements.

EPA's Response to Petition 2 Netting Issues[27]

In Petition 2, Petitioners raise two additional concerns regarding netting. Petition 2 at 28-29. First is the claim that LG&E did not properly document its emissions calculations associated with the increase in size and operation of the auxiliary boiler. Second is the claim that LG&E did not properly document its emissions associated with the emergency diesel generator. *Id.*

The 2007 Application explains LG&E's emissions calculations associated with the changes made to the auxiliary boiler and the emergency diesel generator. 2007 Application at Chapter 3.0 and 4-1. Specifically, LG&E explains:

> Some emissions from the auxiliary boiler increased due to the 1,000 hours of additional operation. However, the sulfur dioxide and sulfuric acid mist emissions decreased due to the switch to ultra low sulfur diesel fuel oil in the new auxiliary boiler. The emissions from the emergency [diesel] generator also changed as a result of the proposed change to ultra low sulfur diesel fuel oil along with the proposed change in the number of hours of operation on an annual basis. Since the optimized design suggests that the emergency diesel fire water pump is not required, the emissions from this source will cause a decrease in the overall [potential-to-emit] summary.

2007 Application at 3-1. Additional emissions information is provided in Appendices C and D to the 2007 Application. In reviewing the information provided, KDAQ adopted LG&E's analysis of the emissions impacts of the proposed changes. Petitioners argue that the application and the SOB do not include the specific calculations. Petition 2 at 29. However, when reviewed in conjunction with the 2004 Application and permitting documents (i.e., KDAQ SOB Revision

[27] In Petition 2, Petitioners note, "their continuing concerns with the insufficiency of the original netting demonstrations" and cite to briefs submitted during the permit appeal through the Kentucky administrative process. Petition 2 at 28. EPA considered Petitioners' netting concerns described in the Petitions and a response to those concerns are included in this Order.

2), all the requisite information is provided. The emissions information provided, and the conclusions reached, are reasonable in light of the totality of the changes. Petitioners do not claim that the end result was incorrect, but rather, that the application failed to contain the requisite information. When taken together, the 2004 and 2007 Applications provide all the information required by applicable regulations – and do provide specific emissions information for the changes described in Revision 3. 2007 Application at 3-5; *see also* KDAQ RTC Revision 3 at 14. Thus, Petitioners have failed to demonstrate that the permit is not in compliance with the Act.

For all the reasons discussed above, Petitioners have failed to demonstrate that KDAQ's analysis for LG&E's netting (including determinations regarding the creditable and contemporaneous nature of the emissions) did not meet a requirement under the CAA. Therefore, EPA is denying Petitioners' request to object to the permit for the netting concerns raised in both Petitions.

4. *Petitioners' Claims Regarding BACT for the Auxiliary Boiler*
(Section II.F. of Petition 1 and Sections V.b.i and ii of Petition 2)

Petitioners' Claims. In Petition 1, Petitioners state that the BACT analysis for the auxiliary boiler should have included consideration of low-sulfur coal, coal blend, or natural gas. Petition 1 at 26-27. In Petition 2, Petitioners state that a revised BACT analysis was required for the auxiliary boiler, including the consideration of add-on controls. Petition 2 at 34-35. Petitioners have two main concerns. First, Petitioners suggest that KDAQ did not undertake a new BACT determination for the auxiliary boiler, which increased in size and will operate significantly more hours under Revision 3, and instead relied on the Revision 2 determination. Petition 2 at 35. Second, Petitioners argue that a proper BACT determination for the auxiliary boiler must at least consider add-on controls, such as an oxidation catalyst. Petition 2 at 36. Petitioners identify a facility in California (the Crockett Cogeneration Facility) where Petitioner's believe an oxidation catalyst was used. *Id.*

EPA's Response. For the reasons discussed below, EPA is granting the Petition with regard to Petitioners' claims that the BACT analysis for the auxiliary boiler in Revision 3 was not adequate.

In Revision 2, LG&E planned for the facility to maintain the three existing auxiliary boilers, and as part of the construction of Unit 31, to add a new auxiliary boiler. KDAQ SOB Revision 2 at 1. The new auxiliary boiler was included as part of LG&E and KDAQ's BACT analyses for the construction of the new unit. KDAQ SOB Revision 2 at 23; *see also* 2004 Application at Appendix I-54 - I-57. KDAQ concluded that "BACT" for the auxiliary boiler was represented by operational limits on the auxiliary boiler in terms of both fuel content and operating time. *Id.*; Permit Revision 3 at 7. In its response to Petitioners' comments on this issue, KDAQ explained that the construction of the new auxiliary boiler was not subject to a major PSD/BACT analysis for NO_x and SO_2 because of the netting for those pollutants. KDAQ RTC Revision 2 at 25. LG&E also articulated this point in the 2004 Application. 2004 Application at I-54. KDAQ also explained that for this size boiler, there is only a "negligible"

difference in emissions for natural gas versus low-sulfur oil for the pollutants subject to BACT – PM, VOC, and CO. KDAQ RTC Revision 2 at 25.

In Revision 3, LG&E determined that the existing three auxiliary boilers were not necessary due to the revised design of the new auxiliary boiler. 2007 Application at 2-1. LG&E explained that the size of the auxiliary boiler would increase, as would the operating times. *Id.* Specifically, the changes to the auxiliary boiler in Revision 3 included increasing the size from 40 million British Thermal Units (mmBTU)/hour to 100 mmBTU/hour and the annual operating hours from 1,000 to 2,000 per year. KDAQ SOB Revision 3 at 2 and 13. As a result of the changes, LG&E conducted a revised BACT analysis for the auxiliary boiler for PM/PM_{10}, CO, VOC, and SAM. LG&E did not conduct BACT analyses for NO_x or SO_2 due to its determination that LG&E netted out of BACT for the major modification project as a whole. As part of the Revision 3 changes, the permit was modified to require the use of ultra low-sulfur diesel fuel and low NO_x burners (Revision 2 required use of low-sulfur fuel oil). *Id.* KDAQ determined that these were "BACT-level" controls. Permit Revision 3 at 37; KDAQ SOB Revision 3 at 13. With regard to emissions resulting from the Revision 3 changes, KDAQ explained that emissions of all pollutants with the exception of CO, lead, and fluorides decreased as a result of the proposed changes. KDAQ SOB Revision 3 at 6. The SOB explains that the net emissions increase for CO for the Revision 3 modifications is 9.4 tpy. KDAQ SOB Revision 3 at 5. As part of KDAQ's Revision 3 review, "[t]he Division reevaluated BACT for the project revisions and [sic] determined that the BACT emission limits established in the January 2006 permit remain unchanged." KDAQ SOB Revision 3 at 10. The SOB includes more specific information for the revised BACT analysis for the affected units and pollutants. KDAQ SOB Revision 3 at 11-15.

In Petition 1, Petitioners raise concerns that the BACT analysis for the auxiliary boiler should have included consideration of low-sulfur coal, coal blend, or natural gas (as opposed to fuel oil). The auxiliary boiler is not burning coal; thus, Petitioners' statements regarding coal are misplaced because coal would typically result in higher emissions than fuel oil (particularly the proposed Grade No. 2-D S15 or equivalent fuel oil). *See, e.g.*, AP-42 Compilation of Air Pollutant Emission Factors, Stationary Point and Area Sources, Fifth Edition, at Chapter 1, Tables 1.1-3 (coal), 1.3-1 (oil), and Appendix A-6 (heating values). Petitioners fail to provide any information supporting why low-sulfur coal should be part of the BACT analysis for the auxiliary boiler.[28] Petition 1 at 26-27. As a result, Petitioners have not demonstrated that the BACT analysis for the auxiliary boiler was required to consider coal options. In response to Petitioners' comments regarding natural gas, KDAQ responded that, "[t]here is a negligible difference in PM, VOC, and CO emissions from a 40 mmBTU/hour boiler firing natural gas versus one firing oil." KDAQ RTC Revision 2 at 25. KDAQ explained the basis of the "negligible difference" as stemming from AP-42 emissions factors, noting that such factors do not take into consideration use of low-sulfur fuel and operational limits (i.e., the 1,000 hour annual operating limit contained in Revision 2). *Id.*

In Petition 2, Petitioners claim that the changes made as part of Revision 3 (increasing the size and hours of operation) required a revised BACT analysis for the auxiliary boiler. The only

[28] In addition, coal blends for the auxiliary boiler were not a part of the LG&E application.

PSD pollutant that was increased as a result of the Revision 3 changes was CO. In the response to comments for Revision 3, KDAQ explains, "The prior BACT determination was based on a top down BACT analyses for carbon monoxide (CO). The proposed design and operation of the [auxiliary] boiler continues to constitute BACT." KDAQ RTC Revision 3 at 18. However, this statement is not consistent with KDAQ's response to comments on Revision 2, wherein the BACT analysis for CO emissions from the auxiliary boiler was specifically based on the size and operating hours of the auxiliary boiler. KDAQ RTC Revision 2 at 25. While EPA appreciates that a 100 mmBTU/hour boiler is a small industrial boiler, KDAQ's reliance on the 40 mmBTU/hour boiler size and a limit of 1,000 annual operating hours as a basis to support the Revision 2 BACT analysis raises questions concerning KDAQ's reliance on the Revision 2 BACT analysis to support the Revision 3 changes, because those changes included increases to both the boiler size and the operating hours.

Thus, EPA is granting Petitioners' request with regard to the auxiliary boiler and requiring KDAQ to perform a revised BACT analysis for the Revision 3 changes, including the increase in size and operating hours. As noted earlier, KDAQ's Revision 2 BACT analysis indicated a "negligible" difference in the use of natural gas for certain pollutants, so whether a "negligible" difference would still exist in light of the Revision 3 changes should be addressed as part of KDAQ's revised BACT analysis. This analysis should be documented in the SOB. Should any changes to permit conditions be necessary following the revised analysis, a permit revision will be necessary to incorporate those changes.

5. *Petitioners' Claims Regarding the BACT Analysis for Support Operations at the Facility*

(Section II.H. of Petition 1 – Partial Response)

Petitioners' Claims. Petitioners allege that EPA must object to the permit because the limits set for "various pollutants at various facilities" are not BACT. Petition 1 at 27. For this proposition, Petitioners cite to 401 KAR 51:017 § 8 ("Control Technology Review"). This allegation is followed by a bulleted list of three one-sentence statements alleging that (1) permit limits for various support facilities at the Trimble County facility are not BACT; (2) permit limits for fluorides (HF) are not BACT; and (3) permit limits for SAM are not BACT. Petition 1 at 27-28. Petition 1 is not clear whether issues 2 and 3 are related to the proposed new unit or the support facilities listed in the first bullet (coal blending, material handling operations, ash barge loading, fly ash silos, backup diesel generator, and the emergency diesel fire water pump). Because the one-sentence introducing the bulleted list refers to "various pollutants at various facilities," coupled with the prior independent sections specific to the proposed new unit, EPA concludes that Petitioners' claims in the bulleted list all regard the support facilities listed in the first bullet. In an Order issued on September 10, 2008, EPA responded to all the issues except those relating to the backup diesel generator and the emergency diesel fire water pump because those support facilities were affected by Revision 3. *See* Order 1 at 11-12. We respond to these remaining issues below.

EPA's Response. As a threshold procedural matter, these issues were not raised during the public comment process for this permit. Petitioners' Exhibit A. Nor do Petitioners claim that it was impracticable to raise such claims during the public comment period or that the grounds

for the claims arose after the close of the comment period. Thus, Petitioners failed to meet threshold requirements described in Section 505(b)(2) of the CAA, for raising these issues for the first time in a Petition to the Administrator.

Although we are not required to respond to these issues in light of the procedural deficiencies, we nevertheless respond briefly to the substance of the issue. As part of the permit analysis, KDAQ undertook a BACT analysis for project emission units subject to PSD requirements. KDAQ SOB Revision 2 at 23-24. KDAQ SOB Revision 2 at 14. In addition, KDAQ's BACT analysis for the new boiler included a BACT analysis for support facilities that were considered "project emission units" – that is, support facilities that were subject to PSD review as a result of the new boiler project. KDAQ SOB Revision 2 at 23-24; *see also* 401 KAR 51:001 § 1(66) (definition of emissions unit). KDAQ determined that support facilities such as limestone handling, the backup diesel generator (also referred to as the "emergency generator"), and the emergency diesel fire water pump, were subject to BACT review. KDAQ SOB Revision 2 at 23-24. In Revision 3 to the permit, the emergency diesel fire water pump was eliminated. KDAQ SOB Revision 3 at 14. Thus, issues associated with this support facility are now moot. With regard to the backup diesel generator, KDAQ did review the BACT analysis previously done for that support facility as part of its Revision 3 review. KDAQ SOB Revision 3 at 14. As part of Revision 3, the backup diesel generator will use ultra low sulfur diesel (or equivalent) fuel and the hours of operation are limited to 52 per year. KDAQ determined that these limitations constituted BACT for this unit. KDAQ SOB Revision 3 at 14.

Petitioners did not raise any additional concerns about the BACT analysis for support facilities in Petition 2. In addition, in Petition 1, Petitioners provided no basis as to why the BACT analysis performed by KDAQ for the identified facilities was inconsistent with applicable requirements. Petitioners' conclusory allegations regarding the permit are insufficient to demonstrate that the permit is inconsistent with the CAA, including the requirements of the SIP. For the reasons discussed above, the Petition 1 is denied as to this issue.

6. *Petitioners' Claims Regarding BACT for PM*
(Section V.c. of Petition 2 and II.C. of Petition 1)

Petitioners' Claims. Petitioners raise concerns regarding the PM/PM_{10} BACT analysis in Petitions 1 and 2 and all of these issues are being addressed in this Order. In Petition 1, Petitioners state that the permit fails to require BACT for both PM and PM_{10} at Unit 31 by solely containing a BACT limit for "particulate emissions." Petition 1 at 18. Further, Petitioners allege that lower PM/PM_{10} limits are achievable at the facility and were incorrectly eliminated as BACT by the applicant; Petitioners cite to limits allegedly achieved at other facilities to demonstrate this point. Petition 1 at 19. Petitioners state that the PM/PM_{10} limits for the new and existing cooling towers are also not BACT (including the drift elimination rate). Petition 1 at 21. Finally, Petitioners explain specific concerns regarding the BACT analysis, such as claiming KDAQ performed an improper cost analysis.

In Petition 2, Petitioners' issues are primarily related to the installation of the DESP, and whether a facility's decision to include additional controls after a BACT analysis is completed implicates the prior BACT analysis. Petition 2 at 31-33. First, Petitioners suggest that the

addition of the DESP invalidates the prior BACT analysis. Second, Petitioners explain that the BACT limit for PM/PM10 should be based on both the PJFF and DESP, which together, would be expected to result in a decrease of PM/PM10 emissions. *Id.* Petitioners cite to LG&E's application materials to support their contentions that the combined control efficiency for PM will improve and thus, the previous BACT analysis did not represent the "maximum degree of control that is available." Petition 2 at 32.

EPA's Response to Petition 1 Issues

a. Distinction between PM and PM_{10}

Petitioners state that it is unclear whether the limits in the permit are set for PM or PM_{10}. PM and PM_{10} are regulated as separate pollutants,[29] but they are very similar in terms of control technology, emission points, and emission rates. As a result, the BACT analyses for these pollutants is often similar, and there is nothing that precludes the analysis resulting in the same limit and/or BACT-level controls for each pollutant. *See, e.g., Prairie State*, slip op. at 3, 106-107 (explaining a PM BACT analysis). Kentucky's SIP-approved rules at 401 KAR 51:001 § 1(181) defines particulate matter but does not specify a size diameter. PM_{10} is separately defined in 401 KAR 51:001 § 1(186). In the permit record, KDAQ explained that "Kentucky's regulation is clear that PM_{10} is a subset of particulate matter." KDAQ RTC Revision 2 at 20. The SOB for Revision 2 groups PM and PM_{10} together under the name "particulate matter," which indicates Kentucky's evaluation involved both pollutants. KDAQ SOB Revision 2 at 18. Further, the permit sets limits for both PM and PM_{10}, although the same limit is used. Permit Revision 3 at 28 (0.018 lbs/mmBTU (filterable and condensable) based on the average of three one-hour tests). Accordingly, the record indicates that KDAQ considered both pollutants although they were evaluated together with emissions of PM_{10} considered as a subset of PM. KDAQ RTC Revision 2 at 20. The permit includes a BACT limit for PM and PM_{10} – KDAQ and LG&E undertook the required analysis and determined that the two limits were the same, which is not uncommon. KDAQ SOB Revision 2 at 18-20; *see also* 2004 Application at Section 3.0, Appendix I (Part 5.0 – "Particulate Emissions Control"). Petitioners have thus failed to demonstrate that the analysis performed by KDAQ was inconsistent with applicable requirements.

b. Concerns that the PM/PM_{10} limits are not BACT

Petition 1 also raises concerns with the emission limits set for PM/PM_{10} and suggests that they are not BACT, in part because several other facilities noted in Petition 1 were issued permits with allegedly lower PM and/or PM_{10} limits. As a general matter, the 2004 Application and the SOB explain the BACT analysis done by LG&E and KDAQ for this permit. 2004 Application at Section 3.0, Appendix I pgs. 14-23; KDAQ SOB Revision 2 at 18-20. For Unit 31, Section B.2(a) (Permit Revision 3 at 28) lists the PM/PM_{10} limits for both filterable and condensable. Permit Revision 3 at 28. These limits also include those imposed by federal New Source Performance Standards (40 CFR Part 60, Subpart Da). *Id.* In addition, KDAQ

[29] PM_{10} is a subset of particulate matter, i.e., it is particulate matter that is less than 10 micrometers in size.

considered the other facilities identified by Petitioners in their comments to Kentucky during the Commonwealth's public comment period, and KDAQ responded to Petitioners' allegations for each of the facilities cited by Petitioners. KDAQ RTC Revision 2 at 21; *see also* 2004 Application Appendix I-14 (for discussion of other facility control mechanisms). KDAQ's response includes a reasoned basis for distinguishing each of the cited facilities from the LG&E situation. *Id.* Specifically, KDAQ's RTC points out factual differences between LG&E and the facilities noted by Petitioners. In some cases, Petition 1 notes these differences, but Petitioners disagree with KDAQ about their impact on the analysis. Generally, however, Petition 1 raises the exact same claims to EPA that they raised to KDAQ during the permit process but fails to explain or demonstrate how KDAQ's responses were unreasonable or inconsistent with applicable requirements. Petition 1 at 18-22. The permit record demonstrates that KDAQ considered Petitioners' comments and provided a response that supports the PM/PM_{10} limits in the LG&E permit. Because Petitioners have made no claim to EPA explaining why KDAQ's reasoned responses to their concerns are insufficient, or how the analysis was otherwise inadequate, they have failed to demonstrate that the permit is not consistent with applicable requirements, or that there is a flaw in the permit with regard to the PM/PM_{10} limits.

c. Concerns regarding the cooling towers, PM limits, and drift elimination rate[30]

The LG&E Trimble facility has one existing natural draft cooling tower (Unit 20) and, as part of the construction on Unit 31, LG&E proposed to construct a new linear mechanical draft cooling tower (Unit 41). KDAQ SOB Revision 2 at 1. KDAQ performed a BACT analysis associated with construction of Unit 31 for both the cooling towers because it was anticipated that Unit 20 may be used for Unit 31 until construction on Unit 41 is completed. KDAQ SOB Revision 2 at 23. KDAQ's BACT analysis for the cooling towers resulted in a drift elimination rate but not a specific PM/PM_{10} limit. With regarding to the cooling towers, Petitioners raise the following concerns: (1) the permit fails to set a PM/PM_{10} emission limit for Unit 41; (2) the proposed drift elimination rate for Unit 41 does not represent BACT; and (3) the BACT analysis performed by KDAQ for Unit 41 was not adequate because KDAQ failed to consider a high efficiency drift eliminator and the cost analysis was not correct. Petition 1 at 21-22.

There is no PM/PM_{10} "limit" for the cooling towers identified in the permit because particulate matter from a cooling tower is typically controlled by drift elimination as opposed to add-on control technology. In the RTC, KDAQ explained that "[p]articulate matter from cooling towers is generated by the presence of dissolved and suspended solids in the cooling tower circulation water, which is potentially lost as 'drift' or moisture droplets that are suspended in the air [move] out of the cooling tower." KDAQ RTC Revision 2 at 27. In its 2004 Application, LG&E explained that through controlling drift rate, LG&E would be able to limit PM/PM_{10} emissions. 2004 Application at Appendix I-31. Accordingly, the permit does contain a limit on PM/PM_{10} emissions from the cooling towers through the application of the drift rate.

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[30] Petitioners appear to raise several cooling tower related concerns – some of which pertain to Unit 20 and some to Unit 41, although Petition 1 is not always clear on this point. EPA has made a good faith, reasonable effort to identify Petitioners' issues vis-à-vis the appropriate cooling tower.

For the two cooling towers, the permit sets a drift elimination rate (0.0005%), a circulating water rate, and references Kentucky rules regarding visible fugitive dust and particulate matter (Permit Revision 3 at 20, 48; 401 KAR 63:010). This appears consistent with what Petitioners requested during the permit process and is the same as the issues they raised to EPA in Petition 1. Petition 1 at 22. The draft permit for Revision 2 had higher drift elimination rates for both Units 20 and 41, set at 0.0008% and 0.001%, respectively. Draft Permit Revision 2 at Section B (Emission Units 20 and 41). The current permit has a lower drift elimination rate for both units – set at 0.0005% (for Unit 20, this rate only applies when servicing Unit 31). Permit Revision 3 at 20 (Unit 20); Permit Revision 3 at 48.[31] With regard to that rate, KDAQ stated that the drift rate of 0.0005% represents the most stringent level of drift elimination proposed as BACT for the type of cooling tower at LG&E (a linear mechanical draft cooling tower). KDAQ RTC Revision 2 at 27. As the drift elimination rate contained in Revision 3 is consistent with that identified by Petitioners in Petition 1, this issue was thus resolved by KDAQ in the permitting process.

Petitioners also raise concerns regarding the BACT analysis which resulted in the drift rate. KDAQ performed a BACT analysis for Unit 41, reviewed LG&E's analysis, and reached determinations regarding BACT limits for the cooling towers. KDAQ SOB Revision 2 at 23; 2004 Application at Appendix I-30 - I-35. As part of this analysis, LG&E conducted a review of the RBLC Clearinghouse[32], and considered drift rates from a variety of facilities in Kentucky, Washington, and West Virginia. 2004 Application at Appendix I-30. LG&E then evaluated the alternative cooling tower systems and reached the conclusion that the drift rate of 0.0008% represented BACT. *Id.* at I-31. LG&E concluded that this rate could be met with the linear mechanical draft cooling tower for Unit 41, along with a lower drift rate on Unit 20. Ultimately, the permit drift rate limit was set at 0.0005%. Permit Revision 3 at 48. Petitioners suggest that a high efficiency drift eliminator should have been considered. Petition 1 at 21-22. However, there is no stand-alone device called a "high efficiency drift eliminator." Rather, the cooling towers provide for the air containing particulate to flow through an area with items such as baffles (also referred to as fill media) essentially trying to dislodge the water droplets from the air and allow the water to recirculate into the water flow. 2004 Application at Appendix C-5. The air flow can be forced with a fan, or it can occur naturally. The use of a fan seeks to increase the amount of dislodged droplets. Unit 41 is a linear *mechanical* draft cooling tower and thus utilizes the fan method to dislodge droplets. Because this method was adopted in the final permit, the final permit reflected a rate of 0.0005% rather than the 0.0008% rate in the draft permit. The rate adopted in the final permit is the rate which Petitioners identified as appropriate. Petition 1 at 22. Thus, it appears that this particular issue was resolved by KDAQ during the permitting process.

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[31] Following the public comment period on the permit, KDAQ added requirements for LG&E to monitor and record monthly total dissolved solids to the permit. KDAQ RTC Revision 2 at 27.

[32] The RBLC is the reasonably available control technology (RACT), best available control technology (BACT), Lowest Achievable Emission Rate (LAER) Clearinghouse – commonly referred to as the RBLC Clearinghouse.

Also with regard to the BACT analysis for Unit 41, Petitioners raise concerns about the cost analysis. Petitioners suggest that the cost allocation in terms of the cooling system as a whole versus just the "control" element was not accurate. Petition 1 at 22. Petitioners analogize this to considering the cost of a boiler in the BACT analysis for NO_x while also considering the addition of an SCR. Petition 1 at 22. The cost analysis is summarized in the 2004 Application at I-34 - I-35. Appendix C provides additional specifications on the cooling towers and the associated costs. LG&E did include cost analysis (and PM reductions) as part of the review, and identified an appropriate BACT limit for Units 41 and 20. Although the LG&E BACT analysis does not specifically address Petitioners' point, LG&E did consider dry cooling among other technologies. When considering dry cooling, a completely distinct type of cooling tower is at issue (as opposed to a wet cooling tower). 2004 Application at I-34 - I-35. Further, the technology of drift control is such that even incremental improvement in drift control can involve substantial changes in the cooling tower design. *See, e.g.,* AP 42 Compilation of Air Pollutant Emission Factors, Stationary Point and Area Sources at Chapter 13.4 (discussing wet cooling towers and fluctuations in drift depending on design). For example, adjusting air velocity may result in the need for a smaller passageway. Such adjustments also trigger other issues, such as a possible increase or decrease in the heat transfer coefficient of the tower. Thus, the relationship between a cooling tower and the drift elimination technique can be distinguished from that of a boiler and a conventional add-on control device such as an SCR (where the boiler design does not directly implicate the SCR design). The BACT analysis for the cooling towers performed by LG&E and KDAQ considered the cost of the cooling tower as whole which Petitioners have not demonstrated is an unreasonable approach in this factual context. Further, as noted earlier, KDAQ revised the permit to include the lower drift elimination rate sought by Petitioners. As a result, Petitioners have not identified a flaw in the permit and the Petition is denied as to this issue.

For the reasons discussed above, Petitioners failed to demonstrate that the permit is inconsistent with the CAA, or Kentucky's SIP-approved rules. Therefore, Petition 1 is denied with regard to the matters discussed above.

EPA's Response to Petition 2

In Petition 2, Petitioners' issues are primarily related to the installation of the DESP in Permit Revision 3, and whether a decision to include additional controls after the BACT analysis for Permit Revision 2 was completed implicates that prior BACT analysis. Petition 2 at 30-33. First, Petitioners suggest that the addition of the DESP invalidates the prior BACT analysis. Second, Petitioners explain that the BACT limit for PM/PM_{10} should be based on both the PJFF and DESP, which together, Petitioners argue, would be expected to result in a decrease of PM/PM_{10} emissions. *Id.* An overview of the BACT analysis process, as well as the BACT definition, are discussed on page 13 of this Order. As part of the Revision 2 application, LG&E conducted a top-down BACT analysis consistent with applicable requirements for Unit 31. 2004 Application at Appendix I at I-14-I-23. This analysis included the consideration and elimination of a DESP through a top-down BACT methodology. *Id., see also* KDAQ SOB Revision 2 at 18-20. Petitioners raised no concerns with the elimination of the DESP from the PM/PM_{10} BACT analysis at that time.

With regard to Petitioners' first argument – that the BACT analysis is reopened because of the addition of the DESP – Petitioners cite to no support for this conclusion. In fact, there is nothing in the CAA or any other applicable requirement that suggests that merely because a company voluntarily installs a particular control device, that any prior BACT determination is automatically invalidated. The nature of the BACT determination is that control technology may in fact be eliminated through the analysis for a number of reasons including technical or economic infeasibility. *See, e.g.*, 42 U.S.C. § 7479 (3); 40 CFR § 52.21(b)(12). Contrary to Petitioners' assertion, the BACT analysis does not require facilities to add on every possible control technology – but rather, to establish an emission limitation based on the maximum degree of reduction for each pollutant, taking into account energy, environmental, economic impacts, and other costs.[33] *Id.* In the preamble to EPA's 1974 new source review rulemaking, EPA made specific changes to underscore that in the BACT analysis, the emphasis is on the "emissions rather than the presence of any particular control equipment." 30 *Fed. Reg.* 42510, 42514 (December 5, 1974). Further, in 1979, EPA issued a Memorandum entitled, *Guidance for Determining BACT Under PSD*, addressing this issue. Memorandum from David G. Hawkins to Regional Administrators, I-X, *Guidance for Determining BACT Under PSD*, January 4, 1979. Specifically, in the portion of the Memorandum discussing presentation of alternative systems that could achieve a higher degree of emission control, the Memorandum explains,

> [i]f no better control technology is available for an emission point, then such finding should be stated and supported, and no further analysis is required. Other equipment with similar control capabilities need not be presented (e.g., a baghouse versus an equivalent ESP at a particulate emitter). Unrealistic alternatives need not be presented such as placing in series control equipment which is normally used alone (e.g., an ESP followed by a baghouse).

Id. at 6 (emphasis in original). Thus, there is no basis in the CAA or its implementing regulations (or Kentucky law) for the proposition that a prior BACT analysis is automatically invalidated by the subsequent addition of control technology for a non-PSD purpose (and where the addition does not trigger PSD review).

As KDAQ explained, the DESP was added as part of Revision 3 to "ensure that saleable fly ash is captured prior to potential contamination due to [powdered activated carbon] injection for mercury control." KDAQ SOB Revision 3 at 2. Thus, the addition of the DESP has no direct relationship to prior BACT analysis done as part of Revision 2. *See also* 42 U.S.C. § 7412(b)(6) (specifically excluding hazardous air pollutants, including mercury, from PSD review). In response to Petitioners' comment, KDAQ stated,

> Revision 3 does not involve any modification of Emission Unit 31. Therefore, Emission Unit 31 BACT limit for PM is not under review in this permitting action. The project revisions have resulted in insignificant changes to the project's original potential-to-emit as specified in the Statement of Basis Table

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[33] BACT is distinguishable from its more stringent, nonattainment new source review counterpart, "lowest achievable emission rate" or LAER. *See, e.g.*, 42 U.S.C. § 7501(3).

> 3.4. Additionally, the PSD applicability on a pollutant-by-pollutant basis and the associated BACT determination for new equipment remain unchanged.

KDAQ RTC Revision 3 at 17. Because the DESP was added to control mercury emissions, the addition does not affect the Revision 2 BACT analysis. KDAQ noted this point in explaining in the SOB for Revision 3 that, "the installation of the DESP does not affect the BACT emission limits for particulate...or filterable particulate...established in the January 2006 Permit...for Emission Unit 31." KDAQ SOB Revision 3 at 12. In this case, Revision 3 was not changing a fundamental parameter of the BACT analysis. Rather, the Revision was including an additional control device for a purpose unrelated to BACT (to result in a saleable fly ash per added mercury controls). Further, there is no indication that the addition of the DESP is a "PSD-triggering" event – that is, emissions are not expected to increase as a result of the addition of a DESP, nor is the DESP expected to impact the facility's compliance with the previously established PM/PM_{10} BACT limit. Notably, both LG&E and KDAQ reviewed the Revision 2 BACT analysis following LG&E's decision to add the DESP as part of Revision 3. For the reasons discussed below (and in greater detail in the 2007 Application), the PM/PM_{10} limits established through the Revision 2 BACT analysis were not changed. Thus, in this case, Petitioners have not demonstrated that the BACT analysis was affected by the addition of the DESP.

Petitioners also suggest that the PM/PM_{10} limit should have been revised because the addition of the DESP "is likely to result in appreciably lower particulate matter emissions than a fabric filter alone." Petition 2 at 32. To support this claim, Petitioners make a series of mathematical calculations; however, as is explained below, a closer look at their analysis shows that Petitioners failed to take into account a number of operational characteristics of fabric filters and DESPs. Further, as was discussed above, the BACT limit is not intended to be the most stringent limit possible (that is, BACT is not the "lowest" achievable emission rate). Thus, even if the addition of the DESP is likely to reduce PM/PM_{10} emissions, Petitioners cite to no authority for the suggestion that the BACT determination must be revisited or the PM/PM_{10} limit must be reduced merely because it could be reduced. In the Revision 2 application, LG&E explains its decision regarding PM/PM_{10} control devices as follows:

> While the bag life of a fabric filter baghouse in this application is uncertain, the use of a fabric filter baghouse instead of an ESP is selected based on the ability of the fabric filter baghouse to maintain emission levels independent of ash characteristics, to provide additional control of mercury and SO_3, to allow lower levels of absorbent/reagent use for mercury and H_2SO_4 while providing greater control, and the fact that fabric filter baghouses have been the technology of choice in recent permits for similar applications.

2004 Application at Appendix I-22. As part of the BACT analysis in Revision 2, LG&E considered a baghouse and ESPs, and decided upon the chosen technology based on the appropriate top-down analysis. In Revision 3, LG&E decided to add a DESP for the following reason:

> [t]he refined design determined the installation of a new dry [ESP] (DESP) for Unit 2 [a/k/a Unit 31] is necessary to separate fly ash out of the Unit 2 exhaust gas

> stream prior to the potential injection of PAC. Without the additional dry ESP, fly ash from Unit 2 could never be sellable because of the carbon from the control of mercury emissions...Also, the dry EP reduces the amount of potentially mercury contaminated fly ash. The dry ESP will be located between [Unit 31's] SCR and fabric filter baghouse, thus allowing for the removal of sellable/usable fly ash if that becomes a potential alternative in the future. The addition of the DESP will not affect the permitted particulate emission rate of 0.018 lb/mmBTU, as described in Condition 2a for Emission Unit 31 from the Final Qir Quality Permit issued on January 4, 2006. The addition of the DESP will also not affect the filterable particulate emission rate of 0.015 lb/mmBTU, as described in Condition 2b for Emission Unit 31 from the Final Air Quality Permit issued on January 4, 2006. The DESP will not change the flow or temperature as presented in the 2004 Application. The physical structure of the DESP and the affect of the incorporation of the DESP to the air pollution control technologies were reviewed and incorporated into the downwash for the air dispersion modeling.

2007 Application at 2-10. In this context, the DESP is not intended to achieve a greater reduction of PM/PM_{10}, although KDAQ estimates an "insignificant coincidental benefit" is possible. KDAQ SOB Revision 3 at 23. The reason for this expectation is based in part on the operation of the fabric filter. As explained by LG&E in the 2004 Application, a fabric filter's efficiency for controlling particulate emissions is based upon the buildup of cake and the pressure associated with this buildup. 2004 Application at Appendix I-18. "The collected particulate forms a cake on the bag, which can enhance the bag's filtering efficiency." *Id.* With the addition of the dry ESP before the fabric filter, even the small reduction in particulates from the dry ESP may have an impact on the efficiency of the fabric filter such that the ultimate particulate emissions may remain unchanged. Petitioners' basic calculations in Petition 2 do not take into consideration the potential decrease in efficiency of the fabric filter due to the addition of the dry ESP. Petition 2 at 32. Nonetheless, as was discussed earlier, the addition of the DESP was not a PSD-triggering event and Petitioners fail to demonstrate that a new BACT limit for PM/PM_{10} was required by applicable law. For the reasons discussed above, Petitioners have not demonstrated that in Revision 3, the permit fails to comply with the applicable requirements. Therefore, Petition 2 is denied as to the issues discussed above.

7. *Petitioners' Claims Regarding BACT for SAM, PM/PM_{10}, and Ammonia*

(Section V.e. Petition 2; Section II.G. Petition 1)

Petitioners' Claims. Petitioners raise concerns regarding BACT for SAM in both Petitions. In Petition 1, Petitioners suggest that the Revision 1 Minor Modification resulted in an increase of SAM emissions of 7 tpy, thus triggering a BACT analysis for SAM (Petitioners also raise similar concerns regarding PM/PM_{10} at Unit 1 and ammonia emissions at Units 1 and 31). Petition 1 at 27. In Petition 2, Petitioners claim that the BACT analysis for SAM was not supported because, according to Petitioners, LG&E reviewed the RBLC and then concluded the BACT limit was based on a WESP; LG&E provided no supporting calculations nor did LG&E explain its assumptions; and that the "lowest emissions level achievable" by this facility was not achieved. Petition 2 at 37-38.

EPA's Response to Petition 1

In Petition 1, Petitioners suggest that the minor modifications undertaken at Unit 1 to decrease emissions of NO_x and SO_2 for netting purposes triggered major PSD review because of increases of SAM and PM/PM_{10}, as well as resulting in increases of ammonia at Units 1 and 31. Specifically, Petitioners state that the decreases of NO_x and SO_2 caused an increase in SAM of 7 tpy and an increase in PM/PM_{10} of 15 tpy. Petition 1 at 27. Petitioners provide no data or analysis to support these statements.[34] The SOB for Revision 1 (Minor Modification) includes a discussion of the creditable decreases of NO_x and SO_2 from Unit 1, as well as a BACT analysis for the six simple cycle natural gas-fired combustion turbines, which did involve significant emissions increases. However, the Revision 1 (Minor Modification) SOB does not indicate that there will be any increases in PM/PM_{10} or SAM as a result of the Unit 1 decreases in NO_x and SO_2. As was discussed earlier, new control technology was not installed for the reductions – the reductions were achieved through increased efficiency of the existing control devices. With regard to the ammonia issues, ammonia is not a PSD regulated pollutant and thus, assuming there were increases in ammonia emissions, there is no obligation for KDAQ to consider those as part of the PSD review process.[35] With regard to the new Unit 31, KDAQ did undertake a BACT analysis that involved SAM and PM/PM_{10}, among other relevant pollutants. KDAQ SOB Revision 2 at 14; *see also* 2004 Application at Appendix I. Petitioners have thus failed to present any information demonstrating that Units 1 or 31 are not properly permitted for SAM, PM/PM_{10}, and ammonia.[36]

EPA's Response to Petition 2

As part of the 2004 Application, LG&E conducted a BACT analysis for SAM emissions associated with the new Unit 31 and other modifications. 2004 Application at Appendix I-27 - I-29. The Application explains that LG&E reviewed the RBLC and considered emission limits at other sources in Kentucky and West Virginia. *Id.* at I-27. LG&E also considered various alternative sulfuric acid emission reduction systems. *Id.* Emission rates associated with the modifications are also discussed in the 2004 Application in Appendix G, "Potential to Emit

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[34] Section 505(b) of the CAA requires that Petitioner make a demonstration that the permit is not in compliance with the requirements of the Act. 42 U.S.C. § 7661d(b). A demonstration thus requires more than mere conclusory allegations. *In the Matter of Al Turi Landfill, Inc.*, Petition No. II-2002-13-A (January 30, 2004); *see also, In the Matter of the New York Organic Fertilizer Company*, Petition No. II-2002-12 at pages 7-8 (May 24, 2002); *In the Matter of Sirmos Division of Bromante Corp.*, Petition No. II-2002-03 at page 7 (May 24, 2002). Broad generic claims "lack sufficient specificity" to satisfy these criteria and will be not be reviewed. *In re Steel Dynamics, Inc.*, 9 E.A.D. 165, 239-240 (EAB 2000).

[35] To the extent that Petitioners were attempting to demonstrate that the increase in ammonia demonstrated an increase in SAM, this conclusion is not supported by the record, and Petitioners provide no documentation for such proposition.

[36] Unit 1 was permitted for construction prior to September 1978, and as a result, the emission limits applicable to that Unit are not the same as the ones applicable to the proposed new Unit 31. KDAQ SOB Revision 1 (minor modification) at 2.

Calculations." LG&E supported its decision to evaluate sulfuric acid emission reduction equipment by explaining the relationship between sulfuric acid and SAM. *Id.* at I-27. As part of the BACT analysis, LG&E considered semi-dry scrubber systems; WESP; alkali injection systems; as well as SCRs and baghouses. *Id.* at I-27 - I-29. LG&E concluded that the BACT limit for SAM could be achieved with the use of good combustion controls and a WESP downstream from the WFGD controls. *Id.* at I-29. These controls were chosen in part because of their anticipated collateral reductions of PM/PM_{10} and mercury. *Id.* The permit includes a SAM emissions limit for Unit 31 of no greater than 26.6 lbs/hr based on a three (3) hour rolling average. Permit Revision 3 at 29 (Section B.2.(j)). The permit also includes a Compliance Assurance Monitoring (CAM) Approach for SAM. Permit Revision 3 at 32 (Section B.4.(j)). This analysis was consistent with a top-down BACT analysis because LG&E (1) identified all available control technologies; (2) eliminated technically infeasible options; (3) ranked remaining control technologies by control effectiveness; (4) evaluated the economic, environmental, and energy impacts of the options; and (5) selected BACT. *Prairie State*, slip op. at 17-18.

In Petition 2, Petitioners make additional statements regarding this BACT analysis. First, Petitioners state that "BACT does not ask what other plants are currently achieving, but what can this plant achieve for the future." Petition 2 at 36. There is nothing in the CAA or federal rules, or in the Kentucky rules, that requires the BACT analysis to assess the control that might be applied in the future. As was discussed earlier in this Order, the BACT analysis compares options available at the time of the permitting analysis and takes into account facility-specific factors to determine what is BACT. 40 CFR § 52.21(b)(12); 401 KAR 51:001 § 1(25). Petitioners next state that the SAM limit does not represent the "lowest emissions level achievable by this plant as required by the BACT regulations." Petition 2 at 38. However, the BACT process is not required to result in the development of the "lowest emissions level achievable." Petitioners appear to be intertwining the definitions of BACT and LAER. LAER, which is the standard used in nonattainment areas, is distinct from the BACT methodology and is intended to result in the lowest achievable emissions rate. LAER also does not allow the consideration of certain factors that are allowed under the BACT analysis. *See, e.g.*, 40 CFR Part 51, Appendix S, Section II (18); *see gen'lly*, 44 *Fed. Reg.* 3,274 (January 16, 1979). LG&E did not evaluate LAER for this facility, nor was it required to by any applicable requirements. LG&E did evaluate BACT, and a summary of that review is discussed above.

As described above, the 2004 Application contains a BACT analysis following the top-down analytical methodology. This analysis is also described and discussed in the KDAQ SOB for Revision 2. These documents contain far more than a "conclusion" that BACT is a limit of 26.6 lbs/hr as Petitioners suggest (Petition 2 at 37). In terms of the supporting calculations, the 2004 Application describes the specific calculations performed by LG&E to support the BACT conclusion. *See, e.g.*, Appendices I and G. Contrary to Petitioners' suggestion, and as explained above, the BACT analysis performed by LG&E and KDAQ went beyond simply reviewing the RBLC and comparing the LG&E facility to other facilities in Kentucky and West Virginia. Petition 2 at 38. It also considered what could be achieved at the LG&E facility considering facility-specific factors. For the reasons discussed above, Petitioners have failed to demonstrate that the permit is inconsistent with applicable requirements. Therefore, the Petitions are denied as to the issues discussed above.

8. *Petitioners' Claims Regarding Consideration of $PM_{2.5}$*
(Section VI Petition 2)

Petitioners' Claims. Petitioners raise a number of concerns regarding $PM_{2.5}$. Petition 2 at 38-46. Specifically, Petitioners argue that LG&E may not meet its obligations for $PM_{2.5}$ by using PM_{10} as a surrogate; that the LG&E permit cannot lawfully issue without quantification of $PM_{2.5}$ emissions; that the permit failed to contain an air quality analysis for $PM_{2.5}$; and that the permit failed to contain a BACT determination for $PM_{2.5}$.

EPA's Response. EPA grants the Petition on this issue to require further consideration of $PM_{2.5}$. Petitioners' concerns regarding $PM_{2.5}$ raise the threshold issue of whether LG&E may use the PM_{10} surrogate approach to meet the PSD requirements for $PM_{2.5}$. As discussed below, the permit record does not provide an adequate rationale to support the use of the PM_{10} surrogate approach for this permit. As the other concerns raised by Petitioners relate at least in part to whether KDAQ's use of PM_{10} as a surrogate was appropriate, EPA directs KDAQ to address these claims as well.

Petitioners make several arguments to support their view that KDAQ's use of PM_{10} as a surrogate for $PM_{2.5}$ was not appropriate. While EPA does not necessarily agree fully with all of Petitioners arguments, two points raised by Petitioners are particularly persuasive. First, Petitioners essentially argue that KDAQ's permit record does not, as a technical matter, provide support for the use of PM_{10} as a surrogate for $PM_{2.5}$. *See, e.g.*, Petition 2 at 40. Second, while they disagree with the use of the surrogate policy as a general matter, Petitioners emphasize that even the surrogate policy was only intended for use until technical difficulties associated with analysis of $PM_{2.5}$ have been resolved. *See, e.g.*, Petition 2 at 43-45. EPA addresses and elaborates on these and related difficulties with KDAQ's record on this issue below.

Background on $PM_{2.5}$ NAAQS and CAA

EPA establishes NAAQS for certain pollutants, pursuant to Section 109 of the CAA, 42 U.S.C. § 7409. Once a NAAQS is established, the CAA sets forth a process for designating areas in the nation as attainment, nonattainment, or unclassifiable, thus triggering additional requirements consistent with the CAA and its implementing regulations. Following establishment of a NAAQS, EPA also promulgates implementation rules that provide specific details of how states must comply with the NAAQS based on the corresponding designations for areas within the state. Generally, the SIP is the primary means by which states comply with CAA requirements to attain the NAAQS. *See* CAA Section 110(a) and Sections 171 - 193, 42 U.S.C. § 7410(a) and §§ 7501 - 7515.

On July 28, 1997, EPA revised the NAAQS for PM to add new standards for "fine" particulates, using $PM_{2.5}$ as the indicator. 62 *Fed. Reg.* 39,852 (July 28, 1997). On October 17, 2006, EPA revised the NAAQS for both $PM_{2.5}$ and PM_{10}. 71 *Fed. Reg.* 61,236 (October 17, 2006). On October 23, 1997, EPA issued a memorandum from John S. Seitz regarding implementation of the 1997 standards entitled, "*Interim Implementation for the New Source Review Requirements for $PM_{2.5}$*" (Seitz Memorandum). The Seitz Memorandum explained that

sources would be allowed to use implementation of a PM_{10} program as a surrogate for meeting $PM_{2.5}$ NSR requirements until certain technical difficulties were resolved. Seitz Memorandum at 1. On April 5, 2005, EPA issued a second guidance memorandum from Stephen D. Page entitled, "*Implementation of New Source Review Requirements in PM-2.5 Nonattainment Areas*" (Page Memorandum), which re-affirmed the October 23, 1997 Memorandum. Page Memorandum at 1. On May 16, 2008, EPA promulgated the final rule entitled "Implementation of the New Source Review (NSR) Program for Particulate Matter Less than 2.5 Micrometers ($PM_{2.5}$) (May 2008 $PM_{2.5}$ NSR Implementation Rule). 96 *Fed. Reg.* 28,321 (May 16, 2008). In the preamble to that rule, EPA explained the transition to the $PM_{2.5}$ NSR requirements beginning on page 28,340. Specifically, EPA concluded that, if a SIP-approved state is unable to implement a PSD program for the $PM_{2.5}$ NAAQS based on that rule, the state may continue to implement a PM_{10} program as a surrogate to meet the PSD program requirements for $PM_{2.5}$ under the PM_{10} Surrogate Policy in the Seitz Memorandum.[37] 96 *Fed. Reg.* at 28,340-28,341.

Use of PM_{10} as a Surrogate for $PM_{2.5}$

When EPA issued the PM_{10} Surrogate Policy in 1997, the Agency did not identify criteria to be applied before the policy could be used for satisfying the $PM_{2.5}$ requirements. However, courts have issued a number of opinions that are properly read as limiting the use of PM_{10} as a surrogate for meeting the PSD requirements for $PM_{2.5}$. Applicants and state permitting authorities seeking to rely on the PM_{10} Surrogate Policy should consider these opinions in determining whether PM_{10} serves as an adequate surrogate for meeting the $PM_{2.5}$ requirements in the case of the specific permit application at issue.

Courts have held that a surrogate may be used only after it has been shown to be reasonable to do so. *See, e.g., Sierra Club v. EPA*, 353 F.3d 976, 982-984 (D.C. Cir. 2004) (stating general principle that EPA may use a surrogate if it is "reasonable" to do so and applying analysis from *National Lime Assoc. v. EPA*, 233 F.3d 625, 637 (D.C. Cir. 2000) that is applicable to determining whether use of a surrogate is reasonable in setting emissions limitations for hazardous air pollutants under Section 112 of the Act); *Mossville Envt'l Action Now v. EPA*, 370 F. 3d 1232, 1242-43 (D.C. Cir. 2004) (EPA must explain the correlation between the surrogate and the represented pollutant that provides the basis for the surrogacy); *Bluewater Network v. EPA*, 370 F.3d 1, 18 (D.C. Cir. 2004) ("The Agency reasonably determined that regulating [hydrocarbons] would control PM pollution both because HC itself contributes to such pollution, and because HC provides a good proxy for regulating fine PM emissions"). Though these court decisions do not speak directly to the use of PM_{10} as a surrogate for $PM_{2.5}$, EPA believes that the overarching legal principle from these decisions is that a surrogate may be used only after it has been shown to be reasonable (such as where the surrogate is a reasonable proxy for the pollutant or has a predictable correlation to the pollutant). Further, we believe that this case law governs the use of EPA's PM_{10} Surrogate Policy, and thus that the legal principle from the case law applies where a permit applicant or state permitting authority seeks to rely upon the PM_{10} surrogate policy in lieu of a $PM_{2.5}$ analysis to obtain a PSD permit.

[37] The Seitz Memorandum is commonly referred to as EPA's 1997 Surrogate Policy.

With respect to PM surrogacy in particular, there are specific issues raised in the case law that bear on whether PM_{10} can be considered a reasonable surrogate for $PM_{2.5}$. The D.C. Circuit has concluded that PM_{10} was an arbitrary surrogate for a PM pollutant that is one fraction of PM_{10} where the use of PM_{10} as a surrogate for that fraction is "inherently confounded" by the presence of the other fraction of PM_{10}. *ATA v. EPA*, 175 F.3d 1027, 1054 (D.C. Cir. 1999) (PM_{10} is an arbitrary indicator for coarse PM ($PM_{10-2.5}$) because the amount of coarse PM within PM_{10} will depend arbitrarily on the amount of fine PM ($PM_{2.5}$)). In another case, however, the D.C. Circuit held that the facts and circumstances in that instance provided a reasonable rationale for using PM_{10} as a surrogate for $PM_{2.5}$. *American Farm Bureau v. EPA*, 559 F.3d 512, 534-35 (D.C. Cir. 2009) (where record demonstrated that (1) $PM_{2.5}$ tends to be higher in urban areas then in rural areas, and (2) evidence of health effects from coarse PM in urban areas is stronger, EPA reasoned that setting a single PM_{10} standard for both urban and rural areas would tend to require lower coarse PM concentrations in urban areas. The court considered the reasoning from the *ATA* case and accepted that the presence of $PM_{2.5}$ in PM_{10} will cause the amount of coarse PM in PM_{10} to vary, but on the specific facts before it held that such variation was not arbitrary). EPA believes that these cases demonstrate the need for permit applicants and permitting authorities to determine whether PM_{10} is a reasonable surrogate for $PM_{2.5}$ under the facts and circumstances of the specific permit at issue, and not proceed on a general presumption that PM_{10} is always a reasonable surrogate for $PM_{2.5}$

This case law suggests that any person attempting to show that PM_{10} is a reasonable surrogate for $PM_{2.5}$ would need to address the differences between PM_{10} and $PM_{2.5}$. For example, emission controls used to capture coarse particles in some cases may be less effective in controlling for $PM_{2.5}$. 72 *Fed. Reg.* 20,586, 20,617 (April 25, 2007). Petitioners made this specific point in noting that finer material is not as efficiently removed by baghouse as larger particles. Petition 2 at 40. As a further example, the particles that make up $PM_{2.5}$ may be transported over long distances while coarse particles normally travel only short distances. 70 *Fed. Reg.* 65,984, 65,997-98 (November 1, 2005). Under the principles in the case law, any person seeking to use the PM_{10} Surrogate Policy properly would need to consider these differences between PM_{10} and $PM_{2.5}$ and demonstrate that PM_{10} is nonetheless an adequate surrogate for $PM_{2.5}$.

Finally, the PM_{10} Surrogate Policy contains limits. As stated in the 1997 Seitz Memorandum, the PM_{10} Surrogate Policy provided that, in view of significant technical difficulties that existed in 1997, EPA believed that PM_{10} may properly be used as a surrogate for $PM_{2.5}$ in meeting NSR requirements "until these difficulties are resolved." Seitz Memorandum at 1. In their petition, Petitioners presented their explanation for why these technical difficulties have been resolved. Petition 2 at 45. While Petitioner may have overstated this point, subsequent to the filing of the Petition, EPA noted in the May 2008 $PM_{2.5}$ NSR Implementation Rule that "these difficulties have largely been resolved." 73 *Fed. Reg.* at 28,340/2-3.

In this case, the record for the LG&E permit does not provide an adequate rationale to support the use of PM_{10} as a surrogate for $PM_{2.5}$ under the circumstances for this specific permit. Overall, the record does not show how the use of the PM_{10} Surrogate Policy is consistent with the case law discussed above in light of the differences between PM_{10} and $PM_{2.5}$, and does not demonstrate that the use of the Policy here falls within the limits of the Policy. For these reasons

and based on the record now before EPA, the Petition is granted on the claim that the permit record does not support the use of PM_{10} as a surrogate for $PM_{2.5}$.[38]

Going forward and without suggesting that the following two steps are necessary or sufficient to demonstrate that PM_{10} is a reasonable surrogate for $PM_{2.5}$, we offer the following as a possible approach to making that demonstration:

First, the source or the permitting authority establishes in the permit record a strong statistical relationship between PM_{10} and $PM_{2.5}$ emissions from the proposed unit, both with and without the proposed control technology in operation. Without a strong correlation, there can be little confidence that the statutory requirements will be met for $PM_{2.5}$ using the controls selected through a PM_{10} NSR analysis. A strong statistical relationship could be established in a variety of ways. In the case where the unit in question is a new unit, the applicant could rely on emissions data from similar units at the facility or at other facilities to develop a correlation that demonstrates the relationship between the two species. In the alternative, if actual emissions test data are not available for a similar unit, the applicant may be able to access and analyze the underlying source test data that has been used to develop emission factors for sources of the same type (including the type of control equipment). In developing such correlation, a simple ratio of AP-42 emissions factors or of the results of a single compliance stack test would not appear to be sufficient. Instead, reasonable consideration would be given to whether and how the $PM_{2.5}$:PM_{10} ratio may vary with source operating conditions, including variations in the fuel rate and in control equipment condition and operation. This consideration may be based on engineering analysis of the facility including the proposed control technology and/or review of existing or new emissions test data across a range of conditions at existing sources that are similar in design to the proposed unit.

Second, the source or the permitting authority demonstrates that the degree of control of $PM_{2.5}$ by the control technology selected in the PM_{10} BACT analysis will be at least as effective as the technology that would have been selected if a BACT analysis specific to $PM_{2.5}$ emissions had been conducted. We present here two possible paths to accomplish this. The first would be to perform a $PM_{2.5}$-specific BACT analysis, in which case the requirement is met if the control technology selected through the PM_{10} BACT analysis is physically the same as what is selected through the $PM_{2.5}$ BACT analysis, in all respects that may affect control efficiency for $PM_{2.5}$. The second path would be to perform a $PM_{2.5}$-specific BACT analysis, and show that while the type and/or physical design of the control technology may be different, the efficiency for $PM_{2.5}$ control of the technology selected through the PM_{10} BACT analysis is equal to or better than the efficiency of the technology selected through the $PM_{2.5}$ BACT analysis, across the range of operating conditions that can be anticipated for the source and the control equipment. This

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[38] In 2007, EPA denied a petition requesting that EPA object to the title V permit for Spurlock for failure to include a BACT limit for $PM_{2.5}$ emissions. *In re East Kentucky Power Cooperative*, Petition No. IV-2006-4 at 41-42 (Order on Petition) (August 30, 2007). EPA found that, under the circumstances presented in that matter, KDAQ's use of PM_{10} as a surrogate for $PM_{2.5}$ was appropriate. *Id.* EPA's decision in the present Order reflects the circumstances presented in this LG&E matter, including a more comprehensive petition, and an evolving understanding of the technical and legal issues associated with the use of the PM_{10} Surrogate Policy.

demonstration may be based on engineering review and/or old or new emissions test data from units and control equipment similar to the proposed unit with the proposed control equipment.

Again, these two steps are not intended to be the exclusive list of possible demonstrations that a source or permitting authority would make to show that PM_{10} is a reasonable surrogate for $PM_{2.5}$. Sources and permitting authorities are encouraged to carefully consider the case law and the limits of the Surrogate Policy to determine what information and analysis would need to be included in the permit application and record before relying on the Surrogate Policy.

9. *Petitioners' Claims Regarding Units Used for Expressing Emission Limits*

(Section VII Petition 2; also addressing where raised in Petition 1 – Pb, SAM, and VOC)

Petitioners' Claims. Petitioners claim that the permit must establish enforceable emission rates in both units of mass per unit time as well as mass per mmBTU in order to demonstrate continuous compliance. Petition 2 at 46. In Petition 1, Petitioners raised this generally with regard to the enforceability of the limits set for lead, SAM, and VOC. Petition 1 at 32, 34, and 35. In Petition 2, Petitioners provide additional discussion in support of their claims regarding the units used for articulating the emission limits. In addition, in Petition 2, Petitioners state their position that hourly rates should have been set for PM and VOC (which references CO because CO is the surrogate for VOC).

EPA's Response. Kentucky's SIP-approved regulations define "emission standard," as "the numerical expression of quantity per unit of time or other parameter that limits the amount of a regulated air pollutant that a source or emission unit is allowed to emit to the ambient air." 401 KAR 52:001 § 1(30). The lbs/mmBTU standard is a limit on the amount of a pollutant that may enter the environment. While a pounds per hour or tons per year limit, as urged by Petitioners, would be a "quantity per unit of time" consistent with Kentucky's SIP-approved regulations, Kentucky's rules also allow units to be expressed in lbs/mmBTU by authorizing use of an "other parameter that limits the amount of a regulated pollutant." 401 KAR 52:001 § 1(30).

With regard to the SAM emissions limit for Unit 31, the permit establishes a pounds per hour emission rate of 26.6 based on a three hour rolling average for Unit 31. Permit Revision 3 at 29 (Section B.2(j)). The pounds per hour unit is a mass per unit time rate, and is thus consistent with Kentucky's SIP-approved regulations.

With regard to the other pollutants, Petitioners have failed to demonstrate that the permit is inconsistent with a requirement under the Act. While Petitioners recognize that the lbs/mmBTU limit can be converted into a pounds per hour limit through a calculation (Petition 1 at 33), Petitioners raise concerns that this calculation involves the use of additional information, such as heat input, which is not directly regulated by the permit. Petition 2 at 46. However, this does not impact the ability to calculate a pounds per hour rate should one be desired – heat input

data is generally available from these types of facilities.[39] In support of their position, Petitioners cite to a Region 9 title V permit guidance (Petition 2 at 46),[40] which Petitioners quote as stating, "[t]he title V permit must clearly include each limit and associated information from the underlying applicable requirement that defines the limit." Petition 2 at 46. While Petitioners may prefer a pounds per hour limit, the lbs/mmBTU standard is consistent with applicable requirements and provides the required information. Petitioners also cite to EPA Region 4's comments (reprinted in relevant part in KDAQ RTC Revision 2 at 6). In those comments, Region 4 recommended that limits be expressed in pounds per hour, but did not indicate that such representation was required. EPA believes that pounds per hour emission limits present additional benefits for enforcement purposes, and thus, EPA recommends that permitting authorities utilize those types of limits. However, the applicable requirements for the LG&E facility do not require that such a limit be established, and Petitioners have not demonstrated such limits are necessary to assure compliance. For these reasons, Petitioners have failed to demonstrate that the permit is inconsistent with a requirement under the Act.

For the reasons discussed above, the Petitions are denied as to the above issues.

10. Petitioners' Claims Regarding BACT and Clean Fuels
(Section VIII Petition 2)

Petitioners' Claims. In Petition 2, Petitioners argue that the BACT analyses for SAM and PM failed to consider the use of "clean" fuels – such as low sulfur coal for Unit 31. Petition 2 at 48-49. Petitioners explain that LG&E identified emissions differences associated with different coal blends, and none were eliminated as technically infeasible. Petitioners thus conclude that BACT for SAM and PM must include the consideration of low-sulfur coal and/or use of a coal-specific blend. *Id.*

EPA's Response. As was explained earlier, the BACT analysis requires the consideration of fuel alternatives where the source's design is not implicated, and where such fuels have a reasonable expectation to result in lower emissions of the pollutants at issue. *See, e.g., In re East Kentucky Power Cooperative*, Petition No. IV-2006-4 (Order on Petition) (August 30, 2007). Petitioners rely on the *East Kentucky* Petition Order to support their claims for the LG&E facility. In the *East Kentucky* matter, the issue of low-sulfur coal was raised because the facility was subject to PSD review for SO_2, which is not the case with LG&E. There is no indication in the record (or in any information provided by Petitioners) that low-sulfur coal would impact SAM and PM emissions. Moreover, LG&E does discuss low-sulfur coal in its PM BACT

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[39] Petitioners cite to the *East Kentucky Power Cooperative* title V petition order for support of the idea that a heat input limit is required in the LG&E permit. Petition 2 at 47. The *East Kentucky* matter, however, involved a permitting issue where the heat input limit was initially in the permit (as a requirement), and subsequently removed, thus resulting in EPA requiring it to be 'returned' to its place in the permit. No similar situation exists here.

[40] As an initial matter, we note that the Region 9 guidance is simply guidance and does not establish a binding requirement. In any event, it provides no support for Petitioners' contention because it does not speak to the specific issue raised by Petitioners – that these limits should be expressed in pounds per hour.

analysis, and Petitioners do not demonstrate any deficiencies with that discussion. 2004 Application at I-15-I-16.

Further, LG&E did include specific information about coal blends as part of its 2004 Application. 2004 Application at Appendix I (coal blends are discussed for the pollutants identified by Petitioners – PM and SAM). For PM/PM_{10}, LG&E included coal blends as part of its BACT analysis. *Id.* at Appendix I-14. LG&E evaluated other facilities' PM/PM_{10} rates and coal blends, as well as pointing out differences between the LG&E project and the facilities identified in the application. The PM/PM_{10} BACT analysis then evaluated different coal related options including low-sulfur coal and coal washing, and ultimately concluded that none of the different coal options was likely to result in lower PM/PM_{10} emissions. *Id.* at Appendix I-16. Thus, contrary to Petitioners' claims, LG&E did consider different coal options, but they were subsequently eliminated through the BACT process for PM/PM_{10}. With regard to SAM, the BACT analysis does not include as detailed a coal discussion as the PM BACT analysis. *Id.* at Appendix I-27-29. In that analysis, LG&E concludes that, "[e]ffective controls for H_2SO_4 include only post-combustion controls." *Id.* at I-28. Petitioners provide no information demonstrating why this conclusion is incorrect. Further, while Petitioners generally raise the SAM BACT analysis as a concern, Petitioners' claims regarding SAM appear more related to PM BACT (i.e., that sulfur levels are related to the formation of the condensable fraction of total PM) than to the SAM BACT analysis. Petition 2 at 48; *Id.* Accordingly, Petitioners provide no information demonstrating that further consideration of coal blends as part of the SAM BACT analysis is required.

For additional support of their claims, Petitioners cite to their Exhibit 15 (attached to Petition 2), a document provided to Petitioners as part of the administrative appeal on the permit. Exhibit 15 is a document produced by LG&E that includes performance guarantee information from various companies/vendors that relate to the anticipated performance of the air pollution control train for Unit 31, as described in the application. *See* Petition 2 Exhibit 15 (Cover Letter). There is nothing that indicates that this document was a part of the permit record before KDAQ at the time of Revision 2 or 3, or that it was ever provided to KDAQ. These documents are internal LG&E engineering documents regarding the construction of modifications at LG&E Trimble which Petitioners obtained as part of the permit appeal process. Petitioners interpret Exhibit 15 as demonstrating that Coal Type B has the lowest sulfur content, and in conjunction with a wet ESP, would result in lower emissions of SAM than the performance coal or Test Coal A. Petition 2 at 28; Petition 2 Exhibit 15 at 0021862. LG&E's BACT analysis for SAM explains the basis for choosing good combustion controls, a wet ESP, and a WFGD as the controls necessary to achieve the SAM limit. 2004 Application at Appendix I-29. LG&E explains that this suite of controls has additional benefits of reducing PM/PM_{10} and mercury, as well as SAM. Further, the BACT analyses did consider coal blends (even though they were not a part of the application). Exhibit 15 does not demonstrate that a particular coal blend is reasonably likely to lead to significant additional emission reductions for either PM or SAM, instead focusing on the suggestion that coal blends may result in lower SAM emissions. Further, Petitioners fail to explain why LG&E's rejection of coal blends was inconsistent with the applicable requirements, and thus have failed to demonstrate that the permit is not consistent with applicable requirements.

For the reasons discussed above, the Petitions are denied as to the above issues.

C. Petitioners' Claims Regarding Enforceability of Permit Terms and Compliance Assurance Monitoring

(Section III.A and B of Petition 1)

In Section III of the Petition, Petitioners raise various concerns associated with the enforceability of specific permit terms. Petition 1 at Section III (beginning on page 28). In Order 1, EPA responded to the vast majority of the issues raised in this section, with the exception of issues pertaining to PM/PM_{10}, mercury, and SAM because these matters were either affected by Revision 3 or Petitioners raised additional issues in Petition 2. In some circumstances, the nature of EPA's response in Order 1 did cover an issue regarding PM/PM_{10}, mercury, or SAM as raised in Section III of Petition 1. In this Order, EPA is responding to any remaining issues raised in Section III that were not addressed in Order 1.

1. Petitioners' Claims that the Permit Fails to Include Compliance Provisions Contained in the SOB and CAM Provisions are not Enforceable

(Section III.A, B, E, F, G. of Petition 1)

Petitioners' Claims. Petitioners allege that the permit fails to incorporate compliance limitations and testing parameters specified in the SOB for PM/PM_{10}, SAM, and mercury. Specifically, Petitioners take issue with the fact that Table 5.4 in the SOB (KDAQ SOB Revision 2 at 26-27) is not included in the permit. Petition 1 at 28-29.[41] Petitioners also state that the permit contains SAM monitoring, but includes it in Section B.4.j. in Table 1 and appear concerned that this is not sufficient to establish an enforceable requirement. Petition 1 at 29.

EPA's Response.

a. SOB Concern

Pursuant to federal regulations at 40 CFR § 70.7(a)(5), a permitting authority is required to provide "a statement that sets forth the legal and factual basis for the draft permit conditions (including references to the applicable statutory or regulatory provisions)." This document, referred to as the statement of basis or "SOB," must be sent to EPA in support of the "proposed permit" and to any other person who requests it. The SOB must also be included as part of the permit record. However, the SOB is not a part of the permit even though it may provide background information, including the rationale for specific permit conditions or background on the permitting authority's interpretation of an element in the permit.

[41] Petitioners do not specify the unit to which this comment applies, instead referring to "PC boiler" which could be either Unit 1 or 31. Because the Permit at issue involves construction of a new PC boiler (Unit 31) and does not purport to modify or establish new emission limits for Unit 1, EPA interprets the comment as applying to new Unit 31.

With regard to Petitioners' specific claims that Table 5.4 of the SOB is not included in the permit, we note that the permit conditions for each emissions unit list the applicable requirements for PM/PM_{10}, SAM, and mercury, including testing requirements. The permit incorporates the applicable emission limitations and testing parameters specified in the SOB, as well as initial and periodic stack testing, and limits, for PM/PM_{10}, SAM, and mercury. *See, e.g.*, Revision 3 at 27-36 and 59-60 (Section D, "Source Emission Limitations and Testing Requirements"). For Unit 31, in addition to "Table 1: CAM Monitoring Approach" (Permit Revision 3 at 32), Parts 5-7 of Section B describe in detail the various recordkeeping, reporting, and monitoring requirements. Revision 3 at 32-36. Table 5.4 (Revision 2 SOB) only provides citations to applicable regulations and summarizes the requirements of those cited regulations. In contrast, the permit includes all the information from Table 5.4, albeit in a narrative form that is broken down by specific unit. There is no requirement that the SOB be incorporated by reference or otherwise included in a permit; nor is there a requirement that the permit contain a summary table (similar to Table 5.4) of the applicable requirements. The permit at issue is much more specific than the SOB. Petitioners have not identified a specific parameter included in Table 5.4 that is not included in the permit.

We also note that the same concern raised in the Petition to EPA was raised by Petitioners to KDAQ during the Commonwealth's public comment period. While KDAQ did not fully agree with all of the concerns raised by Petitioners, KDAQ made changes to the permit in response to Petitioners' comments. *See* KDAQ RTC Revision 2 at 27-28 (explaining that annual performance testing for VOC and lead were added to the permit). Petitioners do not explain why the changes made by KDAQ do not address the concerns they raised to the Commonwealth. In the Petition, Petitioners simply restate the same claims raised to the Commonwealth and fail to explain why KDAQ's response and subsequent changes were insufficient to address their concerns. The permit contains specific limits and associated testing requirements for PM/PM_{10}, SAM, and mercury and Petitioners do not specify how the included terms are inadequate.[42]

For the above reasons, the Petitions are denied as to the issues raised above.

General Background on CAM

On October 22, 1997, EPA promulgated final rule revisions to implement CAM for major stationary sources under title V, consistent with the CAA, as amended in 1990. 62 *Fed. Reg.* 54,900. This rulemaking resulted in changes to federal regulations found at 40 CFR part 64. These rules were intended to be implemented through the title V major source operating permit program. 62 *Fed. Reg.* at 54,901. One purpose of the rules is to ensure that permits provide a reasonable assurance of compliance with applicable requirements under the CAA where the underlying standard does not do so on its own. *Id.* at 54,900. The CAM rule specifically

[42] Petitioners also note the differences in emission limits between Units 1 and 31. This is due primarily to the fact that PSD review occurred for Unit 1 in approximately 1978. Thus, even though Unit 1 is a PC boiler, emission limitations and control technology on Unit 1 will not be the same as the new Unit 31. This difference is primarily due to technological changes from 1978 to present as well as federal and Kentucky rule changes.

exempts from coverage NSPS and National Emission Standards for Hazardous Air Pollutants proposed after the CAA was amended in 1990 (i.e., after November 15, 1990), as well as units subject to CAA acid rain program requirements. *See* 62 *Fed. Reg.* at 54,904 (codified at 40 CFR § 64.2(b) ("Exemptions")). Additionally, the CAM rule applies only to a pollutant-specific emissions unit (PSEU), which is defined as a unit that: (1) is subject to an emission limitation or standard[43] for the applicable regulated air pollutant (or a surrogate thereof); (2) uses a control device to achieve compliance with any such emission limitation or standard; and (3) has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. 40 CFR § 64.2(a).

For PSEUs to which CAM applies, the owner/operator must develop monitoring that meets specified criteria for selecting appropriate indicators of control performance, establishing ranges for those indicators, and for responding to any excursions from those ranges. 40 CFR § 64.3; 62 *Fed. Reg.* at 54,902. The CAM rule also establishes numerous recordkeeping and reporting requirements to ensure compliance. 40 CFR §§ 64.4, 64.9. The analysis of whether CAM applies at a particular unit is done on a pollutant-by-pollutant basis such that CAM may apply for certain pollutants at a unit but not for others. 62 *Fed. Reg.* at 54,922. The concept of the CAM approach is that compliance with an emission standard is assured through requiring monitoring of the operation and maintenance of the control equipment and, if applicable, operating conditions of the PSEU. 62 *Fed. Reg.* at 54,918. The CAM analysis is that "[o]nce an owner or operator has shown that the installed control equipment can comply with an emission limit, there will be a reasonable assurance of ongoing compliance with the emission limit as long as the emissions unit is operated under the conditions anticipated and the control equipment is operated and maintained properly." *Id.* More specific information regarding the CAM rule can be found in the preamble to the October 1997 rulemaking, the rules themselves (40 CFR part 64), and in the CAM Technical Guidance Document (August 1998), available on the EPA Web site.

With regard to indicator parameters and the correlation between pollutants, the preamble to the CAM rule provides:

> The CAM approach builds on the premise that if an emissions unit is proven to be capable of achieving compliance as documented by a compliance or performance

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[43] For CAM purposes, the term "emission limitation or standard" is defined as:

> any applicable requirement that constitutes an emission limitation, emission standard, standard of performance or means of emission limitation as defined under the Act. An emission limitation or standard may be expressed in terms of the pollutant, expressed either as a specific quantity, rate or concentration of emissions...or as the relationship of uncontrolled to controlled emissions...An emission limitation or standard may also be expressed either as a work practice, process or control device parameter, or other form of specific design, equipment, operational, or operation and maintenance requirement.

40 CFR § 64.1.

> test and is thereafter operated under the conditions anticipated and if the control equipment is properly operated and maintained, then there will be a reasonable assurance that the emissions unit will remain in compliance. In most cases, this relationship can be shown to exist through results from the performance testing without additional site-specific correlation of operational indicators with actual emission values.

62 *Fed. Reg.* at 54,926. The preamble to the CAM rule further provides that:

> The presumptive approach for establishing indicator ranges in part 64 is to establish the ranges in the context of performance testing. To assure that conditions represented by performance testing are also generally representative of anticipated operating conditions, a performance test should be conducted under conditions specified by the applicable rule or, if not specified, generally under conditions representative of maximum emission potential under anticipated operating conditions. In addition, the rule allows for adjusting the baseline values recorded during a performance test to account for the inappropriateness of requiring that indicator conditions stay exactly the same as during a test. The use of operational data collected during performance testing is a key element in establishing indicator ranges; however, other relevant information in establishing indicator ranges would be engineering assessments, historical data and vendor data. Indicator ranges do not need to be correlated across the whole range of potential emissions.

62 *Fed. Reg.* at 54,927. In addition, EPA has explained that established CAM parameters are not enforceable limits. The CAM rule preamble addressed this by pointing out that:

> The obligation to correct excursions as expeditiously as practicable is the enforceable component associated with establishing an indicator range under part 64. Part 64 does not establish that an excursion from an indicator range constitutes an independent violation by itself.

Id. at 54,931; *see also Id.* at 54,928. Thus, CAM provides a reasonable assurance of compliance with emission limits and consequently, the adoption of CAM as "enhanced monitoring" meets the requirement of the CAA but does not convert the CAM parameters to enforceable permit limits.

With regard to the LG&E facility, KDAQ determined that CAM requirements applied to SAM and fluorides at Unit 31. KDAQ SOB Revision 2 at 12-13. Specifically KDAQ explained,

> Pre-control emissions of SO_2, NO_x, PM/PM_{10}, [SAM] and fluorides are each greater than 100 tpy. CAM requirements under 40 CFR 64.2(b) will be met for SO_2, NO_x, and PM/PM_{10}, by compliance with the Acid Rain program and compliance with a post-November 15, 1990 NSPS standard. In accordance with Part 64, LG&E has submitted additional information on its CAM plan for [SAM]

and fluorides. Pursuant to 401 KAR 52:020, the plan will receive public notice to ensure federal enforceability.

KDAQ SOB Revision 2 at 13. This is consistent with the requirements of 40 CFR § 64.2(b) which exempts units from CAM that are regulated by the CAA acid rain program or by a post-November 15, 1990 NSPS. The terms of the CAM Plan for SAM and fluorides are discussed in the SOB (Table 4.1 on page 13) and are also included in Revision 3 at page 32.

b. CAM Issue in Section III.B. of Petition 1

Petitioners raise the issue that CAM should also be required for other pollutants such as lead and total PM/PM_{10}. Petition 1 at 30. The only support for this statement is a parenthetical "the CEMS [continuous emissions monitoring system] only measures filterable" (Petition 1 at 30), which appears to apply specifically to PM/PM_{10} and not lead. As was noted earlier, CAM requirements do not apply where Acid Rain program requirements apply. 40 CFR § 64.2(b)(1)(iii). KDAQ explained in the SOB for Revision to that "CAM requirements under 40 CFR § 64.2(b) will be met for SO_2, NO_x, and PM/PM_{10}, by compliance with the Acid Rain program and compliance with a post-November 15, 1990 NSPS." KDAQ SOB Revision 2 at 13. There are a number of compliance provisions in the permit for PM/PM_{10}. These are discussed in greater detail below, in response to Petitioners' concerns regarding the enforceability of the PM/PM_{10} limits. Furthermore, the permit requires CEMS, which provides for continuous measurement of emissions and thus provides a reasonable assurance of compliance. KDAQ SOB Revision 2 at 28. KDAQ also explained that it made some changes to the permit per Petitioners' comments (adding PM/PM_{10} testing requirements to the permit), and that KDAQ approved an alternative method for compliance with PM/PM_{10}. KDAQ RTC Revision 2 at 33. Petitioners have failed to demonstrate that the permit does not comply with a requirement under the Act, and thus, the Petitions are denied for the reasons discussed above, and those enumerated below with regard to PM/PM_{10}.

EPA addressed the majority of the lead issues raised in Order 1 at 20-21. With regard to Petitioners' contention that a CAM plan was required for lead, KDAQ explained that Unit 31 is not a PSEU for lead. KDAQ RTC Revision 2 at 29. Petitioners provide no information demonstrating that KDAQ erred in reaching this conclusion. Thus, Petition 1 is denied with respect to lead because Petitioners have failed to demonstrate that the permit is not out of compliance with a requirement under the Act.

2. *Petitioners' Claims that CAM Compliance Provisions for SAM are not Adequate to Ensure Compliance with Permit Limits*
(Section III.E. of Petition 1)

Petitioners' Claims. Petitioners raise four issues associated with their claim that the SAM limit in the permit is not enforceable: (1) that the limit should be expressed in mass per unit time instead of firing rates; (2) that a 30-day rolling average cannot be determined from a 3-hour stack test; (3) that CAM cannot be used to assure compliance with BACT limits such as this one; and (4) SO_2 is not a good indicator of SAM because they are related in a complex, non-linear way. Petition 1 at 34-35.

EPA's Response. With regard to the first issue about the units for the SAM emissions limit, contrary to Petitioners' claim, the permit establishes an emission rate of 26.6 pounds per hour (lbs/hr) based on a three hour rolling average for Unit 31. Permit Revision 3 at 29 (Section B.2(j)). The pounds per hour units are a mass per unit time rate. The same rate and units were also included in Permit Revision 2. For a broader discussion of Petitioners' concerns regarding how emissions are measured, we refer to our response in section 9, above.

With regard to the remaining issues, the permit establishes a 26.6 lbs/hr limit based on a three hour rolling average. Permit Revision 3 at 29 (Section B.2(j)). Further, in response to comments by Petitioners and EPA, KDAQ did make some changes to the permit to clarify the monitoring/compliance provisions. *See* KDAQ RTC Revision 2 at 7, 32. The permit also establishes a CAM approach to provide a reasonable assurance of compliance. Permit Revision 3 at 32. The CAM approach includes the emission limit, an association with the SO_2 CEMS, initial testing to establish the correlation between SAM and SO_2, continuous monitoring of SO_2, weekly coal sampling, in addition to other recordkeeping and quality assurance/quality control requirements. *Id.* The various compliance assurance mechanisms established for SAM are included in the permit. The issue of surrogate pollutants and CAM was discussed in the September 10, 2008 Order, in Part IV. B. and is relevant here (but not repeated). The SOB provides relevant background information not only to support the CAM approach, but also to support the use of SO_2 as a surrogate for SAM. *See* KDAQ SOB Revision 2 at 21-22. In the SOB, KDAQ explained the relationship between SAM and SO_2. KDAQ did not claim or suggest that the relationship is linear, but at the same time, KDAQ provided a reasoned explanation for why SO_2 is an appropriate surrogate. Specifically, the SOB states that, "sulfuric acid is present in the flue gasses generated from combustion of coal because a fraction of the [SO_2] produced is further oxidized to sulfur trioxide (SO_3). SO_3 reacts with water in flue gas to form sulfuric acid vapor [i.e., SAM]." *Id.* at 21. Petitioners provide no information suggesting that applicable requirements dictate that pollutants must be linearly related to serve as surrogates for each other.

Finally, as was discussed earlier in this Order, EPA's final CAM rule clearly allows for the use of appropriate surrogate pollutants and SO_2 is routinely used across the United States as a surrogate for demonstrating compliance with SAM. The applicability section of the CAM rule explains that part 64 applies "to a pollutant-specific emissions unit at a major source...if the unit satisfies all of the following criteria," including that the "unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof)..." 40 CFR § 64.2(a)(1)(*emphasis added*). EPA's preamble to the CAM rule further explains the use of surrogate pollutants as follows:

> The Agency also notes that the applicability provisions in part 64 include a "surrogate" of a regulated air pollutant to address situations in which the emission limitation or standard is expressed in terms of a pollutant (or other surrogate) that is different from the regulated air pollutant that is being controlled.

62 *Fed. Reg.* at 54,912. Further, CAM can apply to any limit in a permit. There is nothing in the CAM rule (including 40 CFR § 64.2, "Applicability") that prevents CAM from applying to a BACT limit, or the SAM limit to which it is applied in the LG&E permit. Petitioners fail to

explain that KDAQ's analysis was inconsistent with applicable requirements, or unreasonable considering the options available (i.e., no continuous emissions monitors specifically for SAM). For these reasons, the Petitions are denied as to these issues.

3. *Petitioners' Claims that the Unit 31 Mercury Limit is not Enforceable* (Section III.F of Petition 1)

Petitioners' Claims. Petitioners allege that the mercury limit set for Unit 31 is not enforceable because (1) the permit does not indicate whether the megawatt hours are gross or net; and (2) the averaging time is ambiguous and excessively long. Petition at 35.

EPA's Response. The permit sets a limit for mercury at 13 x 10^{-6} lbs/megawatt (MW) hour (Gross output) based on a 12-month rolling average. Permit Revision 3 at 29 (Section B.1.). The permit further notes that this limit ensures compliance with the CAA Section 111 New Source Performance Standard (NSPS) found at 40 CFR § 60.45Da. With regard to the issue of whether the megawatt hours are gross or net, KDAQ revised the permit in light of Petitioners' concerns and clarified that the megawatt hours are in fact gross output. KDAQ RTC Revision 2 at 32; Permit Revision 3 at 29 (Section B.2.1). With regard to the averaging time, the applicable requirement (40 CFR § 60.45Da) establishes a 12-month rolling average as the acceptable averaging time. This is the averaging time included in the permit. A CEMS will be installed for mercury – to ensure compliance with the established emission limits. Permit Revision 3 at 29 (Section B.4(a)). The averaging times are clearly established in the permit, as is the compliance mechanism, and inspectors will have access to the CEMS data and be able to assure compliance. KDAQ also explained this point in its response to comments. KDAQ RTC Revision 2 at 32. Although Petitioner's claims regarding the enforceability of the mercury limit are not supported, we note that the limit is based on the NSPS for mercury that was vacated by the court in *New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008), *cert. denied*, 77 U.S.L.W. 3148 (U.S. Feb. 23, 2009) (vacating Clean Air Mercury Rule). Because that rule was vacated by the Court, and as provided in section D, below, of this Order, we have objected to the current revision to the permit (Revision 4) on the basis that Kentucky is required to perform a case-by-case Section 112(g) analysis for mercury and other hazardous air pollutants. Because Kentucky is required to consider mercury limits pursuant to the Section 112(g) analysis, Petitioners' claims are moot.

4. *Petitioners' Claims that the PM/PM_{10} Limits are not Enforceable* (Section III.H of Petition 1)

Background Information on Particulate Matter and CEMS

Particulate matter (PM and PM_{10}) emitted from a coal-fired boiler typically includes both "filterable" and "condensable" PM.[44] Filterable PM is directly emitted from a stack or other device, and it can be a solid or liquid. This type of PM can be "caught" on a filter and controlled by, for example, the PJFF included in the permit for LG&E. Condensable PM is formed within the boiler exhaust gas flow as the result of reactions, cooling, and dilution. This PM can be

[44] The PM/PM10 BACT discussion earlier in this Order also provides some relevant background information relating to the enforceability of the PM/PM10 emission limits.

liquid or solid, but tends to have a diameter of less than 10 micrometers (therefore, within the PM_{10} size range). Controls for condensable PM emissions include those included in the LG&E permit: lime injection, WFGD, and WESP. EPA has established different reference test methods for evaluating emissions of filterable and condensable PM. The standard reference method for measuring filterable PM is EPA Method 5, described in 40 CFR Part 60, Appendix A. This method is suitable for most industrial sources, and provides a measure of the total amount of filterable solid particulate matter emitted from a stack at the source. EPA Methods 201/201A, described in 40 CFR Part 51, Appendix M, are another common method for measuring filterable PM_{10}. These methods use an in-stack cyclone that separates the PM_{10} from the total PM. If condensable PM_{10} emissions are also an issue, then EPA Method 202, or an approved variation can be applied. *See* 40 CFR Part 51, Appendix M (describing Method 202).

A continuous emission monitoring system or CEMS is the total equipment necessary for the determination of a gas or particulate matter concentration or emission rate using pollutant analyzer measurements and a conversion equation, graph, or computer program to produce results in units of the applicable emission limitation or standard. Performance Specifications are used for evaluating the acceptability of the CEMS at the time of or soon after installation and whenever specified in the regulations. Quality assurance procedures in federal rules (and Kentucky's rules) are used to further ensure the effectiveness of quality control (QC) and quality assurance (QA) procedures and the quality of data produced by any CEMS that is used for determining compliance with the emission standards on a continuous basis as specified in the applicable regulation. In summary, the purpose of PM CEMS is to quantify PM emissions as accurately and precisely as possible to ensure compliance with the applicable PM emission limits. *See, e.g.*, 69 *Fed. Reg.* 1,786, 1,789 (PS-11 Final Action).

To meet the objectives of the PM CEMS, EPA described performance specification (PS)-11 for PM/PM_{10}. Rules regarding the use of PS-11 and PM CEMS were first published in the *Federal Register* on April 19, 1996, as part of the proposed Hazardous Waste Combustion Maximum Available Control Technology standard. PS-11 was published again on December 30, 1997, for public comment on revisions made to these procedures. On January 12, 2004, EPA published a final rule regarding PS-11 and PM CEMS (69 *Fed. Reg.* 1,786). PS-11 and associated QA/QC procedures ensure that PM CEMS are properly installed, operated, and maintained. The final PS-11 rules describe installation, operation, and maintenance procedures. EPA has also published guidance on the selection and use of PM CEMS in the PM CEMS Knowledge Document (available at: http://www.epa.gov/ttn/emc/cem/pmcemsknowfinalrep.pdf) which may be revised periodically to incorporate additional guidance, example calculations, and other information that assists with understanding and complying with PS-11 applicable QA/QC procedures.

PM Limits in the LG&E Permit

Permit Revision 3 includes two separate particulate limits for Unit 31 (both of which were also included in Permit Revision 2). Permit Revision 3 at 28 (Section B.2(a) and (b)). The first limit is specific to PM_{10}, and sets a limit whereby the unit may not exceed 0.018 lb/mmBTU (for filterable and condensable) of heat input based on the average of three one-hour tests. *Id.* Compliance with this limit is determined by a CEMS and specifics regarding reporting and

maintaining CEMS data are included in the permit. *Id.* at 32-36, 59. As is described in the SOB, there are two primary control devices necessary for Unit 31 to comply with this PM_{10} limit – a pulse jet fabric filter (PJFF) and a wet electrostatic precipitator (WESP). KDAQ SOB Revision 2 at 18-20. As explained by KDAQ, a PJFF is a type of baghouse that uses fabric bags as filters to collect filterable particulates. *Id.* at 18. The WESP is another type of particulate control whereby particulates are removed by charging fly ash particles. ESPs can be wet or dry; the LG&E facility initially was permitted with just a wet ESP but added a dry ESP as part of Revision 3. KDAQ SOB Revision 3 at 12. In the SOB for Revision 2, KDAQ evaluated the different options and determined that a WESP represented a control sufficient for LG&E Unit 31 to meet the condensable PM_{10} limit. KDAQ SOB at 19-20. The PM_{10} limit described above is consistent with Kentucky rules at 401 KAR 59:016 §§ 3 and 6.

In addition to the above-described PM_{10} limit, the permit also imposes a PM/PM_{10} limit specific to filterable particulate emissions that is consistent with federal new source performance standards (NSPS) found at 40 CFR § 60.42a(c). Permit Revision 3 at 28 (Section B.2(b)). The permit further requires that compliance with the PM/PM_{10} limit be demonstrated by data provided from the PM CEMS. Where the PM CEMS is not sufficient to demonstrate compliance with the applicable limit (i.e., for condensable PM), LG&E is required to use an applicable reference method. Permit Revision 3 at 59 (Section D.4). In summary, the permit sets a limit for both filterable and condensable PM/PM_{10}, and requires that compliance be demonstrated through use of the PM CEMS and, where CEMS are not sufficient, through applicable reference methods, which includes EPA Method 202 for condensable PM emissions. As a result, Petitioners failed to demonstrate a flaw in the permit.

Petitioners' Claims. Petitioners allege that the PM/PM_{10} limits in the permit are not enforceable for the following reasons: (1) the PM CEMS is not a sufficient monitoring system to ensure "continuous" compliance because it only measures the filterable fraction of PM/PM_{10}; annual stack tests are also not sufficient to ensure compliance; (2) the limit is not expressed in units of mass per unit time; (3) for Unit 1, the concern that opacity is an indicator for PM/PM_{10}; (4) for Unit 31, the limit for PM/PM_{10} is a "sum of filterable and condensable" particles but the permit does not include any monitoring to determine compliance with the limit; (5) permit sets a drift rate from the cooling tower but has no supporting monitoring to demonstrate compliance because the limit does not specify testing frequency, methods, or location. Petition 1 at 36-38. Except for numbers 3 and 5 above, all the issues appear to regard the new Unit 31.

EPA's Response. With regard to issues 1 and 4 above regarding the demonstration of continuous compliance for both filterable and condensable PM/PM_{10} emissions, the permit establishes use of the PM CEMS as well as applicable reference methods for determining compliance. Petitioners state that "annual stack tests for PM/PM_{10} are not adequate to assure continuous compliance," (Petition 1 at 36) but the permit requires more than an annual stack test. As was explained above, the permit establishes compliance mechanisms through the use of the PM CEMS and other applicable reference methods (which would include Method 202). Petitioners are simply incorrect in stating that "there are no U.S. EPA approved alternative methods for measuring condensable PM/PM_{10}." Method 202 is such a method, and it is required by the permit. Thus, Petitioners have not demonstrated that the permit is not in compliance with the Act.

Issue 2 above regards the units used to express the PM/PM_{10} limit. This issue is discussed previously in this Order and will not be repeated here. Additionally, we note that the Kentucky SIP-approved rules establish PM/PM_{10} limits in terms of lbs/mmBTU. *See, e.g.*, 401 KAR 59:016 § 3; *see also* 401 KAR 52:001 § 1(30). For this reason, as well as those discussed in previous sections, the PM/PM_{10} limits expressed in the LG&E permit are consistent with applicable requirements.

Issue 3 above regards Unit 1, which is the original coal-fired boiler at the facility. As was noted earlier in this Order, that unit was permitted and constructed in the late 1970s, and thus, is not necessarily required to include all the same control technology or emission limits as the new Unit 31. The BACT analysis for Unit 1 is not at issue in Revisions 2 and 3 to the permit. At the time of construction of Unit 1, and even today depending on the circumstances, opacity was an acceptable indicator for PM/PM_{10}. *See, e.g.*, 62 *Fed. Reg.* at 54,912 (CAM Rule). Further, Petitioners did not raise this issue in their comments to KDAQ, and provide no information supporting their statement about opacity and Unit 1. Petition 1 Exhibit A at 21-22. Thus, Petitioners have failed to meet the minimum procedural requirements in CAA section 505(b) for this issue, and have failed to demonstrate that the permit is not in compliance with the Act.

With regard to issue 5, the permit sets a drift elimination rate for Unit 41 – the new Linear Mechanical Draft Cooling Tower – of 0.0005% drift elimination. This is consistent with what the Petitioners identify in Petition 1 as BACT (Petition 1 at 18-22). Permit Revision 3 at 48 (Section B, Emissions Unit 41). The drift rate is related to prevention of droplet loss, which in turn, has a relationship to PM emissions at the facility. Generally, the lower the drift rate, the lower the PM emissions. The permit requires an initial performance test to verify drift percent achieved by the drift eliminator, which is to be conducted consistent with the "Cooling Technology Institute (CTI) Acceptance Test Code (ATC) # 140." *Id.* In addition to the initial performance test, there is additional monitoring of the total dissolved solids in the circulating water on a monthly basis, which is an indicator of future drift. *Id.* Sections E (Source Control Equipment Requirements) and F (Monitoring, Record Keeping, and Reporting Requirements) of the permit (Permit Revision 3 at 60-61) also apply to Unit 41. Thus, Petitioners are not correct that the permit has "no supporting monitoring." Petition at 37. KDAQ responded to Petitioners' comments regarding the drift rate by adding some additional monitoring into the permit for this issue. In their Petition, Petitioners continue to raise concerns with the level of monitoring for the drift rate, but cite to no authority to explain that the permit limits are inconsistent with applicable requirements. Petition 1 at 37-28. Nor do Petitioners explain why KDAQ's response was insufficient.

For the reasons described above, Petitioners have not demonstrated that the permit fails to comply with a requirement under the Act. As a result, Petition 1 is denied as to the issues raised regarding the PM/PM_{10} limits and enforceability.

5. *Petitioners' Claims Regarding Other Conditions that are not Enforceable*

(Section III.J. of Petition 1 – Bullets 5-8)

Petitioners' Claims. In Petition 1, Petitioners include a bulleted list of issues that they believe render the permit unenforceable. These include improper reliance on manufacturer specifications not included in the permit itself; permit does not identify test methods used to determine requirements for pollutants, e.g., PM/PM_{10}; emissions caps on NO_x and SO_2 are unenforceable due to permit's lack of explanation regarding how such emissions are calculated when the CEMS are not measuring NO_x and SO_2; and failure of the permit to ensure that the project's net increase in emissions of NO_x and SO_2 continue to remain below the significance levels by omitting any ongoing requirements to measure emissions of NO_x and SO_2.[45] Petition 1 at 39-41.

EPA's Response. As a general matter, conclusory allegations regarding a permit or the permitting authority are insufficient and will not raise an objectionable issue under section 505(b) of the Act because such allegations generally do not demonstrate a specific flaw in the permit. Petitioners must make some level of demonstration and provide EPA with sufficient information to understand how the permit is defective. *In the Matter of Al Turi Landfill, Inc.*, Petition No. II-2002-13-A (Order on Petition) (January 30, 2004); *see also, In the Matter of the New York Organic Fertilizer Company*, Petition No. II-2002-12 at pages 7-8 (Order on Petition) (May 24, 2002); *In the Matter of Sirmos Division of Bromante Corp.*, Petition No. II-2002-03 at page 7 (May 24, 2002). Broad generic claims "lack sufficient specificity" to satisfy these criteria and will be not be reviewed. *In re Steel Dynamics, Inc.*, 9 E.A.D. at 239-240.

With regard to the bulleted list of items on pages 39-41 of Petition 1, Petitioners cite only to CAA Section 504(a) but fail to explain how the permit is inconsistent with a requirement under the Act. Further, it is not apparent that these individual concerns were raised in comments to KDAQ, thus the procedural requirements in section 505(b) of the CAA do not appear to have been satisfied. *See* Petition 2 Exhibit A. To the extent that some of these issues are duplicative with issues raised earlier in the Petitions, we refer to the responses already provided. Below is a brief explanation of why each of the issues raised by Petitioners is denied.

With regard to their claim that the manufacturer specifications for control equipment are not included in the permit, we note that PSD permits are preconstruction permits issued prior to construction of a particular unit. As a result, the manufacturers' specifications are not necessarily available at the time the permit is issued by the permitting authority. While the permit directs the permittee to install a particular type of control technology, the permittee does not necessarily have a contract established with a specific provider at the time of permit issuance. For this reason, PSD permits typically do not include the specific manufacturers' specifications. There is no EPA-approved regulation that requires inclusion of the manufacturers' specifications into the text of the permit. The LG&E applications (2004 and 2007) do contain some manufacturers information for certain portions of the modification. *See, e.g.*, 2004 Application, Appendices C and D. Petitioners do not identify how this information should be included into the permit, or why that would be required. However, the permit does also require that final design information be provided to KDAQ and be accessible to the public. Permit Revision 3 at

[45] These issues are issues 5-8 in the referenced section of Petition 1. We responded to issues 1-4 in the previous Order dated September 10, 2008.

66 (Section G. 18). Section E of the permit (Permit Revision 3 at 60) also discusses the permittee's obligation to comply with operation and maintenance procedures. With regard to this issue, the Petitioners failed to demonstrate that the permit is not in compliance with the Act.

The issue raised regarding test methods to determine compliance for PM/PM_{10} and other pollutants were raised previously in the Petition and responded to in those sections. This Order has thus already discussed what test methods are applicable to a variety of pollutants, including PM/PM_{10}. Petitioners are simply incorrect in alleging that "the permit does not identify the test methods that would be used to determine compliance with regulated pollutants and coal quality parameters." Petition 1 at 40. In addition to Section D (Permit Revision 3 at 59), each section of the permit applicable to specific units also contains test method information. Thus, Petitioners failed to demonstrate that the permit is not in compliance with the Act.

Petitioners' claims that the emissions caps for NO_x and SO_2 are unenforceable and that the permit lacks ongoing requirements to measure those pollutants are incorrect. The permit contains numerous testing, reporting, and recordkeeping requirements for NO_x and SO_2 associated with many units, but specifically, Units 1 and 31 – the two coal-fired boilers. In addition, the permit includes specific requirements for periods when the CEMS associated with certain units are not operational. *See, e.g.*, Permit Revision 3 at 31 (Section B.2.(h) for Unit 31). As was previously discussed in the netting section, one requirement for netting is that the reductions of NO_x and SO_2 be enforceable. In this case, the reductions were taken as lower permit limits in Revision 1 (Minor Modification). *See* KDAQ SOB Revision 1 (Minor Modification). Compliance with the new NO_x and SO_2 limits is demonstrated by use of a continuous emissions monitor. *See* Permit Revision 3 at 3, "Compliance with nitrogen oxide and sulfur dioxide emissions." Thus, Petitioners failed to demonstrate that the permit is not in compliance with the Act. The issues regarding netting were also addressed in detail earlier in this Order.

For the above reasons, Petition 1 is denied as to these issues.

D. Petitioners' Claims Regarding the Maximum Achievable Control Technology Determination

Petitioners' Claims. Petitioners allege that the permit lacks a maximum achievable control technology (MACT) determination for mercury and other HAP for the Unit 31 construction. Petition 2 at 16-27. Petitioners explain their understanding of why the case-by-case MACT requirements described in CAA Section 112(g) apply to the Unit 31 construction. Petitioners also suggest that to the extent that a 112(g) determination was done, KDAQ did not follow the proper procedures for undertaking a 112(g) determination and that the analysis is procedurally and substantively flawed. In general, they claim that KDAQ misapplied the 2-step 112(g) process by failing to properly establish a MACT floor and failing to properly undertake a beyond-the-floor analysis.

EPA's Response. On June 5, 2009, EPA issued a letter objecting to the most recent permit revision for LG&E on the basis that KDAQ must undertake a Section 112(g) analysis for all hazardous air pollutants with respect to Unit 31 in order to comply with all applicable CAA

requirements. *See also* 40 CFR § 70.5(a)(1)(ii). The legal basis of the objection is explained briefly in the letter, and is also summarized below. Because of EPA's objection, EPA is denying the Petition as moot on this issue.

On January 7, 2009, EPA issued a Memorandum entitled, "*Application of CAA Section 112(g) to Coal- and Oil-Fired Electric Utility Steam Generating Units that Began Actual Construction or Reconstruction Between March 29, 2005 and March 14, 2008.*" In that Memorandum, EPA explained that coal- and oil-fired electric utility steam generating units (EGU's) remain on the Section 112(c) list and therefore are subject to Section 112(g). In addition, the Memorandum addresses the applicability of Section 112(g) to EGUs that are major sources and that began actual construction or reconstruction between the March 29, 2005 promulgation of the 112(n) Revision Rule (removing EGUs from the CAA Section 112(c) list) and the March 14, 2008 vacatur of that rule, and concludes that those EGUs are required to comply with Section 112(g). LG&E began actual construction of Unit 31 between March 29, 2005 and March 14, 2008, and for that reason, EPA objected to the most recent permit revision for LG&E.

V. CONCLUSION

For the reasons set forth above, and pursuant to Section 505(b) of the CAA and 40 CFR § 70.8(d), I hereby grant in part and deny in part the issues in the Petitions submitted on March 2, 2006, and April 29, 2008, and which were not previously addressed in the Order dated September 10, 2008.

8/12/09
Dated

Lisa P. Jackson
Administrator