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 1 (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.

[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

[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