BEFORE THE ADMINISTRATOR

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

In the Matter of the Proposed Operating Permit for:

LOUISVILLE GAS & ELECTRIC to operate
the proposed source located at 487 Corn Creek,
Bedford, Trimble County, Kentucky

Permit No. V-08-001 (R2)
Source I.D. No. 21-223-00002

Proposed by the Commonwealth of Kentucky,
Environmental and Public Protection Cabinet

PETITION REQUESTING THAT THE ADMINISTRATOR OBJECT TO THE ISSUANCE OF THE PROPOSED TITLE V OPERATING PERMIT FOR THE TRIMBLE COUNTY GENERATING STATION

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On behalf of:

SAVE THE VALLEY

SIERRA CLUB

VALLEY WATCH

Date: March 19, 2010

Pursuant to Clean Air Act § 505(b)(2) and 40 CFR § 70.8(d), Save the Valley, Valley Watch and Sierra Club ("Petitioners") hereby petition the Administrator of the United States Environmental Protection Agency ("U.S. EPA") to object to the proposed Title V Operating Permit for the source located at 487 Corn Creek, Bedford, Trimble County ("Trimble") ("Permit"), issued by the Kentucky Division for Air Quality ("KDAQ" or "Agency") to the Louisville Gas and Electric Company, Inc. ("LG&E" or "Applicant").[1] Petitioners provided comments to the Agency on the various draft and revised proposed permits leading up to the Permit. A true and accurate copy of each set of comments relevant to this Title V petition opportunity is attached.[2] This petition is filed within sixty days following the end of U.S. EPA's 45-day review period, as required by Clean Air Act § 505(b)(2).[3] The Administrator must grant or deny this petition within sixty days after it is filed.

If the Administrator determines that this permit does not comply with the requirements of the Clean Air Act ("CAA") or 40 C.F.R. Part 70, she must object to its issuance. *See* 40 C.F.R. § 70.8(c)(1). ("The Administrator will object to the issuance of any permit determined by the Administrator not to be in compliance with applicable requirements or requirements of this part.") The Permit continues to fail to comply with the applicable CAA requirements and/or the requirements of 40 C.F.R. Part 70 in a number of ways. First, the Permit was issued pursuant to a faulty notice. Second, the Permit once again omits the required maximum achievable control technology ("MACT") limits based on an erroneous determination that the source is a minor source of hazardous air pollutants ("HAPs"). Third, the Permit also omits the required best available control technology ("BACT") limits and air quality demonstration for fine particulate matter, or $PM_{2.5}$, due to the improper use of coarse particulate matter, or PM_{10}, as a surrogate for $PM_{2.5}$. Petitioners furthermore have demonstrated that TC2 will cause or contribute to violations of the $PM_{2.5}$ NAAQS.

[1] Exhibit 1, KDAQ, Final Revised Proposed Air Quality Permit, Permit No. V-08-001R2, November 25, 2009. Unless otherwise noted, references and citations to the "Permit" in the petition are to the Final Revised Proposed permit from November 25, 2009.

[2] Exhibit 2, Letter from Faith Bugel, Environmental Law and Policy Center ("ELPC"), to James Morse, KDAQ, "Public Comments on January 2009 Revision Draft Construction and Operating Permit for the Trimble County Generating Station," October 28, 2009 ("2009 MACT Comments"); Exhibit 3, Letter from Meleah Geertsma, ELPC, to James Morse, KDAQ, "Revised Proposed Permit to Address U.S. EPA Partial Order IV-2008-3, Trimble County Generating Station, $PM_{2.5}$ PSD Review," November 13, 2009 ("2009 $PM_{2.5}$ Comments").

[3] *See* Exhibit 4, EPA Region 4: Proposed Title V Permits, Proposed Kentucky Permits ("EPA Region IV Title V webpage") (listing petition deadline of March 20, 2010).

For all of these reasons, the Permit is not in compliance with the applicable requirements and the Administrator must object.

I. BACKGROUND.

KDAQ manages a combined program for the state's Title V operating and Prevention of Significant Deterioration ("PSD") construction permits. The Permit at issue in this petition is intended to respond to various U.S. EPA objections related to the construction of a new boiler at the facility. LG&E submitted a renewal application in December 2007 for its operating permit number V-02-043 R3, which was set to expire on June 20, 2008. This operating permit included terms and conditions for a new boiler, known as Unit 31 or TC2, under a final combined Title V/PSD permit issued in January 2006. Revision 2 ("R2") of permit V-02-043 represented the new unit's initial PSD permitting. Petitioners submitted comments on Permit V-02-043 R2 to KDAQ on August 9, 2005 and a Revision 2 Title V petition to U.S. EPA on March 2, 2006.[4] Revision 3 ("R3") of the same permit covered two design revisions approved in a final permit issued in February 2008.[5] Petitioners submitted comments on Permit V-02-043 R3 to KDAQ on October 26, 2007 and a Revision 3 Title V petition to U.S. EPA on April 29, 2008.

In September 2008, the Administrator issued a Title V order ("September 2008 Order") objecting to Revision 2. The September 2008 Order found that the Revision 2 permit failed to comply with BACT requirements during periods of startup and shutdown, as well as with the requirements of a SIP-approved state toxic substances rule. KDAQ responded to the September 2008 Order by issuing a "Draft" modified permit in January 2009, now numbered V-08-001. Petitioners submitted comments on this draft permit on February 23, 2009, raising (a) the failure to comply with MACT requirements, (b) continuing problems with the BACT limits during periods of startup and shutdown, and (c) continuing issues with the state's toxic substances

[4] Exhibit 5, Save the Valley, Sierra Club and Valley Watch, Petition Requesting that the Administrator Object to the Issuance of the Proposed Title V Operating Permit for the Louisville Gas & Electric Generating Station Located at 487 Corn Creek, Bedford, Trimble County, Kentucky, March 2, 2006.

[5] Specifically, Revision 3 covered a minor revision submitted to KDAQ in August 2006 and a significant revision to the boiler project (including addition of a dry electrostatic precipitator, powder activated carbon injection, and hydrated lime injection submitted to KDAQ in February 2007).

analysis.[6] On April 21, 2009, KDAQ issued a "Proposed" permit V-08-001, including the changes from the January 2009 Draft modified permit.

The Administrator then objected in June 2009 to permit V-08-001 through a letter sent to KDAQ, on the basis that KDAQ had failed to undertake the required Section 112(g) analysis for hazardous air pollutants.[7] Another set of objections followed on August 12, 2009 in the form of a Title V petition order ("August 2009 Order").[8] This second petition order covered Revisions 2 and 3 of Permit V-02-043 described above, i.e., issues from the March 2006 and April 2008 petitions that the Administrator had not previously answered in the September 2008 Order. In the August 2009 Order, the Administrator found inadequate (a) KDAQ's reliance on PM_{10} as a surrogate for $PM_{2.5}$, and (b) the BACT limit for the auxiliary boiler.

KDAQ conducted two separate processes to address the June 2009 letter and the August 2009 Order. On August 28, 2009, in response to the June letter, KDAQ issued a determination that Unit 31 constitutes a minor source of HAPs.[9] This determination was noticed on September 2, 2009.[10] Petitioners submitted comments on the minor source determination on October 28, 2009.[11] KDAQ then determined that PM_{10} was a proper surrogate for $PM_{2.5}$, issued a revised BACT analysis and accompanying limits for the auxiliary boiler, and noticed a "Revised Proposed" permit No. V-08-001 R2 on October 14, 2009.[12] Petitioners submitted comments on the noticed permit on November 13, 2009.[13] On November 25, 2009, KDAQ issued a "Final Revised Proposed" Permit. KDAQ sent this permit along with the HAPs determination to U.S. EPA for its review on or about early December 2009. U.S. EPA's 45-day review period ended

[6] Exhibit 6, Letter from Faith E. Bugel, Senior Attorney, ELPC, to James Morse, Permit Review, KDAQ, Public Comments on January 2009 Revision Draft Construction and Operating Permit for the Trimble County Generating Station, February 23, 2009.
[7] Exhibit 7, Letter from Carol L. Kemker, Acting Director, Air, Pesticides and Toxics Management Division, U.S. EPA Region 4, to John S. Lyons, Dept. for Environmental Protection ("DEP"), Kentucky Natural Resources and Public Protection Cabinet ("NRPPC"), June 5, 2009.
[8] Exhibit 8, In the Matter of Louisville Gas and Electric Company, Trimble County, Kentucky, Title V/PSD Air Quality Permit # V-02-043 Revisions 2 and 3, Order Responding to Issues Raised in April 28, 2008 and March 2, 2006 Petitions, and Denying in Part and Granting in Part Requests for Objection to Permit, August 12, 2009.
[9] Exhibit 9, KDAQ, Revised Permit Statement of Basis, Permit V-08-001 R1, August 28, 2009 ("August 2009 SOB").
[10] *See* Exhibit 10, Air Quality Permit Notice, Revised Proposed Title V Permit V-08-001 Revision 1, September 2, 2009 ("MACT Notice").

[11] Exhibit 2, 2009 MACT Comments.
[12] Exhibit 11, Air Quality Permit Notice, Revised Proposed Title V Permit - V-08-001 Revision 2 Louisville Gas & Electric, Company, Source I.D. #: 21-223-00002 ("$PM_{2.5}$ Notice").
[13] Exhibit 3, 2009 $PM_{2.5}$ Comments.

on January 19, 2009 without an objection.[14] KDAQ issued a "Final" permit for V-08-001 Revision 2 on January 28, 2010.[15] This final permit contained several minor changes from the Final Revised Proposed permit submitted to U.S. EPA.

In sum, the proposed Permit V-08-001 Revision 2 incorporates KDAQ's responses to two U.S. EPA objections (the June 2009 MACT letter and the August 2009 PM2.5 and auxiliary boiler Order).[16]

II. STANDARD OF REVIEW.

In reviewing a Title V petition, the Administrator must object where petitioners "demonstrate" that the permit "is not in compliance with the requirements of [the Clean Air Act], including the requirements of the applicable implementation plan." *See* 42 U.S.C. § 7661d(b)(2). The Administrator explains in her August 2009 Order that the EPA will "generally look to see whether the Petitioner has shown that the state did not comply with its SIP-approved regulations governing PSD permitting or whether the state's exercise of discretion under such regulations was unreasonable or arbitrary."[17] This inquiry includes whether the permitting authority "(1) follow[ed] the required procedures in the SIP; (2) [made] PSD determinations on reasonable grounds properly supported on the record; and (3) describe[d] the determinations in enforceable terms."[18]

To guide her review, the Administrator has looked to the standard of review applied by the Environmental Appeals Board ("EAB") in making parallel determinations under the federal PSD permit program.[19] The EAB recently has reiterated the importance of BACT determinations, stating that they are "one of the most critical elements in the PSD permitting process and thus 'should be well documented in the record, and any decision to eliminate a control option should be adequately explained and justified.'" *In re Desert Rock Energy*

[14] Exhibit 4, EPA Region 4 Title V webpage.
[15] Exhibit 12, KDAQ, Final Permit, Permit No. V-08-001 R2, January 28, 2010.
[16] *See* Exhibit 13, Email chain between Meleah Geertsma, ELPC, and James Morse, KDAQ, "Re: Clarification re permit number for Trimble," last email dated February 19, 2010.
[17] Exhibit 8, August 2009 Order at 5 (citing *In re East Kentucky Power Cooperative, Inc.* (Hugh L. Spurlock Generating Station) Petition No. IB-2006-4 (Order on Petition) (August 30, 2007); *In re Pacific Coast Building Products, Inc.* (Order on Petition) (December 10, 1999); *In re Roosevelt Regional Landfill Regional Disposal Company* (Order on Petition) (May 4, 1999)).
[18] *Id*. (citing 68 Fed. Reg. 9,892 (March 3, 2003) and 63 Fed. Reg. 13,795 (March 23, 1998)).

Company, LLC, PSD Appeal Nos. 08-03, 08-04, 08-05, & 08-06, Slip Op. at 50 (September 24, 2009) ("*Desert Rock*"). The Board has remanded permits where the permitting authority's BACT analyses were "incomplete or the rationale was unclear." *Id.* Thus, the Administrator should review KDAQ's BACT determinations with an eye to the completeness of the record and underlying rationale. If either of these aspects is inadequate as demonstrated by Petitioners, the Administrator must object. Given the similar centrality of the air quality demonstration, Petitioners believe at least this level of inquiry is needed on air quality modeling issues as well.

III. THE ADMINISTRATOR MUST OBJECT BECAUSE THE PUBLIC NOTICE WAS DEFICIENT.

The Administrator must object because the public notice failed to include the "end date[s]" of the public comment period and U.S. EPA's review period. Under Kentucky's Title V regulations, "the *public notice shall include*… [t]he *end date* of the public comment period" and the "*end date* of the U.S. EPA's review period." 401 KAR 52:100 Section 5(6) and (7) (emphasis added). A failure to comply with mandatory notice requirements is grounds for an objection. *See Sierra Club v. Johnson*, 436 F.3d 1269 (11th Cir. 2006).[20] The dictionary meaning of the word "date" is "a particular month, day, and year at which some event happened or will happen,"[21] "time stated in terms of the day, month, and year,"[22] or "a specified day of a month."[23] Thus, KDAQ is required to specify in the notice itself the day, month, and year on which the public comment period and EPA review period will end.

However, rather than include the required "end date[s]" in the notice, KDAQ states merely that written comments "must be received within 30 days following the date of this notice."[24] With respect to the U.S. EPA's 45-day review period, the notice includes a similar statement and ironically references a U.S. EPA website where the public can obtain more

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[19] *Id.* at fnt. 6. Petitioners note that they disagree with the importation of the EAB's clearly erroneous standard into the Title V process. A "preponderance of the evidence" standard is more appropriate for reviewing state agency Title V determinations, due to, among other things, the centrality of the U.S. EPA's oversight function in Title V.
[20] *See also* Exhibit 8, August 2009 Order at 5 (the Administrator's review includes whether the permitting agency has complied with the procedural requirements of the SIP).
[21] Random House Dictionary, Random House, Inc., 2010.
[22] American Heritage Dictionary of the English Language, Fourth Ed., Houghton Mifflin, 2009.
[23] *Id.*
[24] *See, e.g.*, Exhibit 11, $PM_{2.5}$ Notice; Exhibit 10, MACT Notice.

information on the federal agency's review period.[25] The omission of the *dates* from the notices violates the plain language of the regulations.

In addition, even if the public could ascertain the date of the notice independently from the notice itself, the omission of the *end* dates creates confusion about when the periods actually close. In Kentucky, confusion has arisen in part due to a lack of clarity about how the agency counts the 30-day period. Prior to January 2010 and thus during the comment period for the Permit, KDAQ interpreted its regulations to *include* the date of notice in the required 30 day period.[26] KDAQ subsequently modified its position after consulting with its attorneys and clarified that the 30 days begins the day *after* publication.[27] The purpose of the explicit requirement to include the end dates of the periods is to avoid such confusion. Confusion as to the end dates consumes the public's critical comment time in a manner that detracts from the already limited opportunity to comment. This lost time is especially problematic in a state such as Kentucky, which has repeatedly refused to extend the public comment period when requested and in fact has read its regulations to prohibit extensions beyond the 30 day period.[28]

For these reasons, the Administrator must object and direct KDAQ to renotice the relevant permits (both the draft permit addressing the MACT objection and that addressing the $PM_{2.5}$/auxiliary boiler objection) including the end dates for the 30-day comment period and U.S. EPA's review period in the notice itself. At minimum, the Administrator should require KDAQ to comply with the notice requirements in all future permit proceedings by including the end dates for the public and U.S. EPA review periods in the notices themselves, as the Kentucky SIP explicitly requires.

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[25] *Id*. "U.S. EPA has up to 45 days following issuance of the proposed permit to submit comments. The status regarding EPA's 45-day review of this project and the deadline for submitting a citizen petition will be posted at the following website address: http://www.epa.gov/region4/air/permits/ Kentucky.htm shortly after the end of this 30-day comment period."

[26] *See* Exhibit 14, email from James Morse, KDAQ, to Faith Bugel, ELPC, "Public Comment Period for KY Syngas," January 6, 2010 ("Kentucky Syngas Email"). It is Petitioners' understanding that this interpretation was not in keeping with either that of U.S. EPA or other states. Notably, Petitioners did not become aware of this improper interpretation until after the close of the comment period for the Trimble MACT and $PM_{2.5}$ revisions.

[27] *See id.*

[28] *See* Exhibit 15, Email from John Lyons, Director, DEP, NRPPC, to Meleah Geertsma, ELPC, June 19, 2007 (stating in response to request for extension of a public comment period due to the newness of the technology that "401 KAR 52:100, Sections 2(2)(a) & 2(2)(b), are *very prescriptive* in that the comment period 'shall' begin on the date the notice is published and *'shall' end thirty (30) days after the publication date*" (emphasis added)).

IV. THE ADMINISTRATOR MUST OBJECT BECAUSE THE NEW UNIT WILL BE A MAJOR SOURCE OF HAZARDOUS AIR POLLUTANTS.

The Administrator must object because it continues to lack appropriate case-by-case MACT determinations for HAPs, instead relying on an erroneous minor source determination. HAPs are regulated under Section 112 of the Clean Air Act. 42 U.S.C. § 7412. The purpose of the Clean Air Act's HAPs program is to force the stringent control of these highly detrimental pollutants because they could "cause, or contribute to, an increase in mortality or an increase in serious irreversible[] or incapacitating reversible[] illness." *New Jersey v. EPA*, 517 F.3d 574, 577 (D.C. Cir. 2008) (quoting legislative history of Section 112). As confirmed in the objection letter of June 2009, TC2 is subject to Section 112(g) requirements.[29] Due to the importance of controlling HAPs, it is crucial that sources accurately identify HAP emissions. If, as here, a source feigns its way into the minor source category and thereby illegally circumvents the requirement for stringent controls, it defeats the purpose of the MACT program.

The first major error in the HAPs analysis for the Permit is that it relies on faulty and unsupported estimates of potential to emit ("PTE"). KDAQ relies upon the applicant's potential to emit calculation for HAPs and concludes that the plant will be a minor source, reaching neither the 10 tons per year ("tpy") level for an individual HAP or the 25 tpy level for collective HAPs that triggers case-by-case MACT. "From . . . the analysis and information that the applicant (LG&E) submitted, KDAQ with reasonable certainty agrees that the unit . . . is a minor HAP source." [30] There are numerous errors with the applicant's calculations upon which KDAQ relies, most notably the failure to calculate maximum (worst-case) emissions. The Permit then compounds the errors by failing to reflect the emission calculations in enforceable permit limits. These errors are grounds to object..

KDAQ and the applicant make clear that they calculate HAPS using PTE. "Major HAP source status for new units undergoing preconstruction review is based on potential emissions. "[31] The applicant states that "[t]he results of this demonstration are based on the evaluation of TC2's potential to emit (PTE) HAPs using the worst-case fuel in order to confirm that TC2

[29] Exhibit 7, Letter from Carol L. Kemker, Acting Director, Air, Pesticides and Toxics Management Div., U.S. EPA Region 4, to John S. Lyons, Director, DEP, NRPPC, June 5, 2009 ("[T]he Kentucky Department of Air Quality must undertake a Section 112(g) analysis for all hazardous air pollutants with respect to Unit 31 in order to comply with all applicable Clean Air Act requirements."

[30] Exhibit 9, August 2009 SOB, at 4; *see also* Exhibit 16, KDAQ, Final Revised Permit Statement of Basis, Permit V-08-001 R2, January 28, 2010 ("January 2010 SOB"), at 17.

would remain a minor source of HAPs even in reasonable 'worst-case' scenarios not anticipated to reflect actual operation and emissions."[32] KDAQ adopts verbatim the applicant's conclusion that "[t]he overall total potential HAP emission for TC2 (Unit 31) are [sic] predicted not to exceed 22.3 tons per year."[33] Within this total, KDAQ and the applicant predicts that HCl, the largest single HAP to be emitted, would not exceed 8.6 tpy, below the 10-ton major source threshold for a single HAP.[34] The applicant also predicts 6.79 tpy of HF emissions.[35] The Permit translates these calculations into only four permit conditions purportedly limiting HAPs. First, one permit condition limits total HAPs. "[C]ombined HAP emissions shall not exceed 22.5 tons per year based on a 12-month rolling total."[36] In addition, only three permit conditions limit individual HAPs:

- "Pursuant to the CAA, Section 112 (g), Hydrochloric Acid (HCl) emissions shall not exceed 9 tons per year based on a 12-month rolling total."[37]
- "Fluorides emissions shall not exceed 1.55 lbs/hr based on a three (3) hour rolling average."[38]
- "[M]ercury emissions shall not exceed 13 x 10^{-6} lbs/MWh (Gross output based on a consecutive twelve (12) month rolling average."[39]

The above emission estimates and resultant permit conditions fail to comply with applicable law.

a. Potential to Emit Legal Requirements.

The requirement that PTE be both worst-case and enforceable is reflected in Kentucky law. The applicable Kentucky SIP provision states in relevant part as follows concerning calculation of a source's PTE:

> (56) "Potential to emit" or "PTE" means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design where:
> (a) A physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours

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[31] Exhibit 9, August 2009 SOB, at 3; Exhibit 16, January 2010 SOB, at 17.
[32] Exhibit 17, Letter and appendices from Gary Revlett, Manager, Environmental Air Section, LG&E, to John S. Lyons, Director, DEP, NRPPC, Subject: Section 112 (g) Evaluation (Unit 31), Trimble County Generating Station, July 10, 2009 ("112(g) Demonstration"), at 1.
[33] *Id*., at 4.
[34] *Id*., at 2.
[35] *Id.*
[36] Exhibit 1, Permit, Cond. 2(l), at 30.
[37] *Id.*, Cond. 2(l).
[38] *Id*., Cond. 2(k)..
[39] *Id.*, Cond. 2)(m).

> of operation or on the type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable as a practical matter; and
>
> (b) This definition does not alter or affect the use of this term for other purposes of the Act or the term "capacity factor" as used in the Acid Rain Program.

401 KAR 52:001(56); 40 C.F.R. § 51.166(b)(4). In short, this provision requires first that PTE reflect the *maximum* capacity to emit a pollutant. It requires second that, to the extent that the applicant or agency claims that maximum capacity to emit is constrained in any way, the constraint must be explicitly set forth in the permit as a *physical or operational* limit – i.e., a specific limit on fuel, hours of operation, or pollution control equipment operating parameters – that is practicably enforceable.

Courts have emphasized the need to ensure that any constraints assumed on potential to emit are grounded in enforcement reality. *United States v. Louisiana Pacific Corp.*, 682 F. Supp. 1122 (D. Colo. 1987).[40] *See Weiler v. Chatham Forest Products*, 392 F. Supp. 532, 535 (2nd Cir. 2004) ("In short, then, a proposed facility that is physically capable of emitting major levels of the relevant pollutants is to be considered a major emitting facility under the Act unless there are legally and practicably enforceable mechanisms in place to make certain that the emissions remain below the relevant levels"). The *Louisiana Pacific* court described PTE as "the cornerstone of the entire PSD program," and observed that allowing illusory and unenforceable limits to curtain PTE would create a loophole that could effectively wipe out PSD requirements entirely. 682 F. Supp. at 1133. The same can be said of the MACT program with its parallel structure and process.

To be enforceable, the permit must create mandatory obligations (standards, time periods, methods). Specifically, a permit condition must: (1) provide a clear explanation of how the actual limitation or requirement applies to the facility; and (2) make it possible for KDAQ, the U.S. EPA, and citizens to determine whether the facility is complying with the condition. *See, e.g., Sierra Club v. Ga. Power Co.*, 365 F. Supp. 2d 1297, 1308 (D. Ga. 2004) (citing *Sierra Club v. Public Serv. Co.*, 894 F. Supp. 1455, 1460 (D. Colo. 1995)). Under the relevant

[40] The specific holding of *Louisiana Pacific* – that limits on PTE must be federally enforceable – has been overruled by authority stating that the limits may also be "enforceable as a practical matter." See *National Mining Ass'n v. EPA*, 59 F.3d 1351 (D.C. Cir. 2004) (holding that limits on PTE must be enforceable as a practical matter but need not necessarily be federally enforceable). However, the basic principles concerning PTE articulated in *Louisiana Pacific* remain standing.

Kentucky SIP provision, relevant caselaw, and U.S. EPA guidance[41], the only limits that render a design limitation on emissions enforceable for purposes of PTE are specific restrictions on operation and design set forth in the permit, adherence to which can be verified by authorities.

The requirement that PTE calculations be enforceable through adequate permit limits was recently upheld by the EPA Administrator in her objection to the Title V permit for BP's Whiting facility.[42] In that case, EPA agreed with the argument that the permit conditions "require monitoring only, and do not specify measures by which emissions will be limited to prevent their exceeding the PSD/NNSR significance levels, should monitoring show that emissions exceed those levels."[43] The measures necessary to limit the facility to the PTE calculations were not required by the permit "and, therefore, do not constitute federally enforceable limits that hold the facility's PTE below the . . . significance thresholds."[44]

The same is true in the present case. First, as will be discussed in more detail below, the calculations do not represent worst-case and thus do not reflect the "maximum" emissions. Second, they are not enforceable as limits on PTE because the Permit contains insufficient monitoring and other required compliance measures.

b. The PTE Calculations are Not Worst-case.

KDAQ agrees that PTE calculations should be worst-case and conservative, but claims in error that the applicant's emission calculations did indeed reflect these standards. "[P]otential emission calculations for the unit using worst-case scenarios were performed at maximum permitted capacity under its physical and operational design. These calculations were considered to provide a conservative estimate for the annual potential emissions."[45] Despite KDAQ's claim that the emission calculations were worst-case and conservative, for all the reasons discussed below, they are not. On this basis, the Administrator must object.

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[41] 401 KAR 52:001(56); *Louisiana Pacific*, supra and *Weiler*, supra; Exhibit 18, Terrell Hunt, Associate Enforcement Counsel, U.S. EPA Air Enforcement Division, and John Seitz, Director, U.S. EPA Stationary Source Compliance Division, "Guidance on Limiting Potential to Emit in New Source Permitting," June 13, 1989 ("EPA PTE Guidance").

[42] Exhibit 19, *In re BP Products North America, Inc. Whiting Business Unit*, Permit No. 089-25488—00453, Order Responding to Petitioners' Request That the Administrator Object to Issuance of state Operating Permit, October 16, 2009 ("BP Title V Order").

[43] *See* Exhibit 19, BP Title V Order, at 8-11.

[44] *Id.* at 8.

[45] Exhibit 9, August 2009 SOB, at 4; Exhibit 16, January 2010 SOB, at 17.

i. The minor source determination is based on a failure to calculate the highest potential coal usage.

KDAQ claims that the emissions calculations use "maximum unit operating parameters" when in fact they fail to reflect the highest potential coal usage.[46] KDAQ relies upon the applicant's emission calculations, in which LG&E selects what it claims is worst-case coal based on its composition but fails to account for the impact of coal usage on organic HAPs. Organic HAP emissions are a function of the amount of coal burned, since their emissions are calculated using emission factors reported as lb/ton of coal burned. Appendix A to the application uses a fuel heating value of 10,800 Btu/lb for coal and a corresponding "PTE" annual coal usage value of 2,815,367 tons/year for estimating all of the HAP emissions except the acid gases HCl and HF.[47] This coal usage corresponds to 100% bituminous coal only. There is no permit limit restricting the amount of coal used to this tonnage, and considering the intent that the unit will use a blend of coals of different heating values, it does not represent maximum potential coal usage. As is shown in Appendix C of the applicant's analysis, Unit 2 will use a blend of bituminous and PRB coals.[48] At a blend of 70% bituminous/30% PRB, the blended heat input is 10,100 Btu/lb and the maximum annual coal usage is 3,007,513 tons/yr. At the 50% bituminous/50% PRB blend, the blended heat input is 9,650 Btu/lb and the maximum annual coal usage is 3,150,877 tons/year. Thus, in calculating the PTE for organic HAPs, the applicant and agency should have considered the highest potential coal usage of 3,150,877 tons/year, a value that is 11% greater than what they use.

As discussed below, the PTE for organic HAPs is then 11% higher than what the applicant and agency assume. This amount is a significant difference considering the slim margin by which the applicant claims to be below the major source threshold and the numerous other assumptions the applicant makes and agency relies on that lead to an underestimate of HAP emissions.

[46] *Id.*
[47] Exhibit 17, 112(g) Demonstration, Appendix A.
[48] Exhibit 17, 112(g) Demonstration, Appendix C.

ii. The minor source determination relies on numerous unsupported assumptions.

Considering just HCl, the HAP analysis makes numerous unsupported assumptions. These assumptions allow the applicant to ratchet down its HAP emissions on paper without justification. As explained below, such assumptions do not represent "conservative" or "worst-case" calculations of HAP PTE, and the calculations are otherwise unsupported in the record. For these reasons, the Administrator must object. The unsupported assumptions are as follows.

1. Unsupported control equipment efficiencies for HCl.

HCl is the HAP that TC2 will emit in the greatest quantity, according to LG&E's calculations. KDAQ relies upon the applicant's claims that the outlet HCl emissions estimates from the boiler will be 1.95 lb/hr corresponding to an annual PTE of approximately 8.55 tpy.[49] Crucially, there are three key control efficiency assumptions that must all be met in order to arrive at this PTE value. In sequence, the assumptions are that the pulse jet fabric filter (PJFF) will control HCl emissions by 30%, followed by a further 97% reduction by the wet FGD, finally followed by an additional 96% control at the wet ESP. The mathematically combined control efficiency considering all three of these controls in series is 99.92%. There is a complete lack of technical support for the three control efficiencies that KDAQ and LG&E assume, especially for 30% control at the PJFF.

The PJFF 30% control assumption is unsupported. Although there can be incidental HCl capture in the PJFF (i.e., on the filter cake), no baghouse manufacturer has ever guaranteed any minimum level of control of HCl. The applicant puts forth no vendor guarantee supporting this claim, nor is it possible to do so. The problem at its core is that baghouses are designed to capture particles, while HCl is a gas. Simply, one cannot expect a consistent level of HCl control at the baghouse. One reason for the inconsistency is, as mentioned above, the only control of HCl comes from incidental capture on the filter cake. Any capture on the filter cake, however, depends on several variables, including: the thickness of the filter cake, the chemical composition of the filter cake, the concentration of substances that in theory can adsorb HCl, and the residence time of the gases as they pass through the filter cake. Adsorption is a slow process

[49] Exhibit 9, August 2009 SOB at 5; Exhibit 16, January 2010 SOB at 19; Exhibit 17, 112(g) Demonstration, Appendix B, O_2Z Report, Section 5.0, Table 1.

and requires a minimum residence time in order to be effective. None of these variables is constant and several (the composition, for example) cannot be predicted. The simplest variable, the filter cake thickness, is not constant. It starts from a very small or zero thickness right after a cleaning cycle and builds to a maximum thickness before being cleaned again. At zero thickness, the control of HCl is zero because there is no cake to adsorb HCl at all. Whether control will be greater than zero when there is cake built up will depend on the composition of the cake, which is variable and unpredictable, and residence time of the gases, which may be insufficient. For these reasons, no baghouse manufacturer has ever guaranteed any control efficiency for HCl. Therefore, no numerical value for HCl control at the baghouse can be relied upon for the purpose of limiting PTE and escaping case-by-case MACT requirements.

O_2Z, the consultant retained by the applicant for the HAPs analysis submitted as part of the application, does not provide any technical support, design calculations, vendor literature, or test data to support its crucial assumption that the PJFF can be relied upon to consistently provide 30% control of HCl. The report, without any technical support whatsoever, claims that HCl will be captured in the order of magnitude of 30-40%. This claim seems to be the only basis for the applicant's use of the 30% assumption in the removal calculations.[50] Without the 30% control in the PJFF assumption alone, the expected controlled HCl PTE increases to 2.79 lb/hr or 12.21 tpy, which is greater than the 10 tpy major source threshold.

Likewise, the 97% WFGD and 96% WESP control assumptions are unsupported. In addition to the PJFF assumption above, O_2Z does not provide any technical support, design calculations, vendor literature, or test data to support its assumption that the wet FGD can be relied upon to consistently provide 97% control of HCl or that the wet ESP can be relied upon to consistently provide an additional 96% control of HCl. The report states that "we calculate" that the removal efficiency from the wet FGD will be greater than 98% without any calculations being referenced or provided. This statement is the sole basis of the later 97% assumption of removal efficiency from the wet FGD.[51] Since any calculations of removal efficiency, at a minimum, depend on the design and operating variables of the wet FGD and wet ESP, none of which are discussed at all, these arbitrary control efficiencies are wholly unsupported.

[50] Exhibit 17, 112(g) Demonstration, Appendix B, O_2Z Report, at 14.
[51] *Id*., at 15.

Regarding the wet ESP, the report references some "experience" at Dalhousie and Coleson Cove in New Brunswick.[52] Again, no details are provided. Further, the discussion seems to support that capture efficiencies will be poor in the first field of the WESP, following the Wet FGD. The report does not discuss how this reduction in efficiency will be mitigated in the design at TC2. Similar to the other previous instances, the applicant assumes the 96% removal efficiency in the wet ESP "as a consequence of these experiences." Since no technical details are provided as to design and operating variables for the wet ESP, the 96% assumption is simply an unsupported assertion.

2. Other unsupported assumptions regarding HCl.

The applicant's initial statements in its demonstration regarding the report reveal just what a stretch the HCl calculations are. "O_2Z, using very conservative design values for the unit and control devices, along with the fuel values and operating assumptions for the worst-case fuel has developed a reasonable 'worst-case' evaluation of HCl emissions for the unit."[53] As discussed above, the design values for the unit and control devices were not only unsupported, but the evidence indicates that they are not worst-case or conservative. The O_2Z report goes on to make additional claims similarly lacking in any basis.

For Case 1, the report provides no support for the assumption that the maximum chlorine content for Eastern Bituminous Coals is limited to 3,500 ppmw. The Permit does not contain any limit on fuel chlorine content. If, for example, this fuel composition is the design limit for the boiler, 3,500 ppmw must be included as a design limit in the Permit in order to make the HCl PTE enforceable.[54]

The report relies upon proprietary software programs CO2MBUST and SO2LVE in conducting its analysis. It is improper to use undocumented proprietary software in a permit application, and there is no discussion of the capabilities and assumptions that were part of these analyses. Further, the appropriateness of such programs has not been established.[55] It is not clear why these programs were used, what input assumptions were made, and what outputs

[52] *Id.*, at 16.
[53] Exhibit 17. 112(g) Demonstration, at 2.
[54] Exhibit 17, 112(g) Demonstration, Appendix B, O_2Z Report, at 5.
[55] *Id.*, at 6.

resulted from these programs and how any outputs were ultimately used, either directly or indirectly in the calculations provided in the report.

The report notes that "…removal rates of greater than 80% have been achieved particularly in the temperature range of 250-300 F." No support for this statement is provided in citations, test data, or any other form.[56] As noted above, no consistent removal rate for a gas such as HCl can be assumed at the baghouse. The report further notes that PJFF removal rates are "significantly enhanced by both lime and activated carbon injection." No technical support or evidence is provided at all to support this claim.[57] Again, as set forth above, any non-zero removal rate at the baghouse is improper.

Without support for any of these assumptions, it is clear that the calculation of 8.54 tpy of HCl is simply wishful thinking on the part of the applicant in the hopes of avoiding MACT, and should not have been relied upon by KDAQ. As it stands, this figure is unsupported and does not represent realistic operations at the facility, let alone a worst-case scenario reflective of PTE.

iii. The minor source determination is based on a failure to account for HAP emissions during startup, shutdown, and malfunction.

The Administrator must object because the emissions calculations fail to include all HAP emissions during startup, shut down and malfunction ("SSM") and the record does not adequately explain their omission. KDAQ's and the applicant's claims regarding HAP emissions during SSM are not supported by emission calculations. The only alleged justification for not calculating any SSM emissions beyond HCl during cold starts is the claim that these emissions will not push TC2 over the minor source threshold, due to the operation of the WESP and WFGD during start-up and shutdown. "Start-up and shutdown emissions are not expected to impact or increase HAP emissions in any way that affects TC2's minor source status for HAPs."[58]

This treatment is wholly inconsistent with MACT requirements as reflected in the EPA's objection to the Big Stone Otter Tail facility, which requires (a) consideration of emissions during periods of SSM when establishing the proposed limit, and (b) a demonstration of how emissions are estimated to assure the source is below major source levels.

[56] *Id*., at 13.
[57] *Id*.
[58] Exhibit 9, August 2009 SOB at 3; Exhibit 16, January 2010 SOB at 16.

> The State must include a discussion of how emissions during periods of startup, shutdown or malfunctions were considered in establishing the potential to emit HAP for Unit #13, and if periods of startup, shutdown or malfunctions were not considered, the State must explain how the source will comply with the potential to emit limitation if such events occur in any 12-month period.[59]

A convenient and conclusory statement that emissions do not exceed the minor source threshold does not meet the requirements of the U.S. EPA's decision in Big Stone. KDAQ must provide a reasoned analysis in keeping with the Big Stone objection. If KDAQ believes different treatment from this similar source is justified, it must provide a justification. It has not.

Moreover, KDAQ's claims here regarding the operation of the WESP and WFGD during SSM fail to address levels of organic HAPs during SSM.[60] The WESP and WFGD provide control for only acid gas HAPs, not organic HAPs. Those organic HAPs which do result from incomplete combustion can be typically produced in very large quantities during very short "hot spot" incomplete-combustion events, such as occur during burner malfunction, startups and shutdowns, as well as shifts in fuel. By definition, combustion conditions such as air-to-fuel ratios and the distribution and mixing of air is not optimal during such events. The Administrator must object because the agency is required to calculate organic HAP emissions, not just HCl, during all SSM scenarios and fuel shifts, not just cold starts, and include these emissions in PTE, or provide a reasoned analysis why such emissions are not expected to exceed normal operation emission levels during these times.

iv. The minor source determination is based on the unsupported use of alternative emission factors.

The Administrator must object because the applicant used improper emission factors to calculate TC2's PTE for various HAPs. Instead of using the emission factors that would reflect worst-case emissions, the applicant selected emission factors that ratchet down the HAP emission calculations and allow TC2 to come in under the major source threshold. KDAQ claims that the emission estimates "were calculated using conservative methods based on known

[59] Exhibit 20, Letter from Carol Rushin, Acting Regional Director, U.S. EPA, Region 8, to Steven M. Pirner, P.E. Secretary, South Dakota Dept. of Environment & Natural Resources, and enclosure, U.S. EPA Region 8 Objections to Proposed Title V Renewal Operating Permit for Big Stone Power Plant in South Dakota,, January 22, 2009 ("Big Stone Objection"), Objections at 11.
[60] Exhibit 9, August 2009 SOB, at 3; Exhibit 16, January 2010 SOB, at 16.

or industry standard assumptions . . . ."[61] LG&E's discussion of emission factors in fact contradicts KDAQ's statement that the assumptions used represented industry standards or "known" assumptions. "Past industry emission testing and associated emission factors, such as AP-42 cannot adequately represent the amount and type of pollution controls installed at TC2 and will not adequately express the effectiveness of those controls in a currently published (known) emission factor."[62] Furthermore, LG&E's claims about its selected emissions factors being more representative or conservative are made without providing any basis in fact or explanation. Simply stating that another source of emission factors is inappropriate does not establish the appropriateness of the applicant's selected emission factors, nor do vague claims that the selected source is more representative. Unsupported claims regarding emission factors that enable TC2 to come in under the major source threshold must be substantiated or rejected if, as here, such a showing is lacking.

In Appendix A to its letter, LG&E provides a summary table of all HAP calculations. This table indicates that LG&E uses the proprietary LARK-TRIPP Model or EPRI's PISCES Model as the source of the emission factor for numerous organic emission calculations.[63] However, neither the submission nor the record contains any of the bases for these emission factors including why they are representative of TC2, how these emission factors were derived, the underlying stack testing data and their validity, and the quality rating of these emission factors. It simply assumes that they are more accurate and more representative than the corresponding AP-42 emission factors. This assumption should be fully supported by data and documentation. Nothing in the record shows that KDAQ evaluated these emission factors, as is the agency's duty[64], and the applicant's selection of unjustified emissions factors for HAPs makes a material difference in the emission estimates.

Furthermore, use of the LARK-TRIPP and PISCES factors (if they are indeed based on control equipment more representative of TC2) is only appropriate if the permit includes practically enforceable terms that require design and operation of TC2 and its control equipment in the same manner as the facilities used to develop these alternative emission factors. As the record does not include any information on the underlying facilities or test conditions, it is not

[61] Exhibit 9, August 2009 SOB, at 4. Exhibit 16, January 2010 SOB, at 17.
[62] Exhibit 17, 112(g) Demonstration, at 1-2.
[63] *See also* Exhibit 9, August 2009 SOB, at 2-3.
[64] *See* Exhibit 19, BP Title V Order, at 11

possible to determine whether the permit includes such terms. However, even without this information, it is highly unlikely that the permit contains the necessary terms: as detailed elsewhere in these comments, the Permit does not include sufficient design or operational conditions relevant to HAP emissions.

Based on its own assumptions as noted above, the combined HAP PTE for TC2 is 22.32 tpy. Consequently, TC2, even with all of LG&E's self-serving assumptions, is still just barely avoiding major source threshold of 25 tpy by only 2.68 tpy combined HAP emissions. Considering this slim 2.68 tpy margin, the impact of using LARK-TRIPP and PISCES emission factors for the organic compounds in lieu of the AP-42 emission factors is notable.

Looking at just the organic HAPs, and using the publicly available AP-42 emission factors, emissions of organic HAPs are not the 5.5 tpy that LG&E claims but in fact 12.6 tpy.[65] AP-42 Emission Factors should have been used for the following reasons: (1) The LARK-TRIPP emissions factors are not supported, as there is no explanation of their basis or why they are assumed to be more representative; (2) the basis for the AP-42 emissions factors are known and, in general, they are more conservative and, therefore, worst-case in the absence of support for the LARK-TRIPP factors. Emissions for six example compounds demonstrate the impact of selecting LARK-TRIPP emission factors over AP-42, as laid out in the table below.

Table 1. TC2 Organic HAP Emissions Comparison of AP-42 vs. Trimble Emission Factors Six Example Compounds

HAP	EF used by LGE (lb/ton)	AP-42 EF Table 1.1-14 (lb/ton)	PTE est. by LGE (tpy)	PTE using AP-42 (tpy)	Difference (tpy)
Acetaldehyde	6.91E-05	5.70E-04	0.0973	0.802	0.705
Acrolein	4.12E-05	2.90E-04	0.058	0.408	0.350
Benzene	8.42E-05	1.30E-03	0.119	1.830	1.710
Benzyl chloride	6.05E-06	7.00E-04	0.008	0.985	0.977
Isophorone	2.59E-05	5.80E-04	0.0037	0.816	0.780
Methyl chloride	2.38E-05	5.30E-04	0.0033	0.746	0.713
Total			**0.2893**	**5.587**	**5.24**

[65] *See* Exhibit 21, Trimble County Unit 2 (Title V Permit Unit 31) HAP Calculations.

Thus, as can be seen from the table above, just by using AP-42 emission factors instead of the unsupported LARK-TRIPP and PISCES emission factors, the difference in the PTE for only the six compounds above is 5.24 tpy, which is greater than the margin by which KDAQ allowed the applicant to avoid major source status. Of course, it should be noted that the calculations above generously rely on LG&E's lower assumption for the annual coal tons used. If the higher and required worst-case usage for coal is used to calculate organic HAPs, the difference would be greater by at least an additional 11%, again solely for the six compounds above.

Using AP-42 emissions factors, the PTE for all organic HAPs increases 5.5 tpy to 12.6 tpy, or by 7.1 tpy.[66] Then considering the underestimate of coal usage as discussed above, this figure increases another 11% to 7.8 tpy. Adding this figure to the PTE for combined HAPs, the emissions increase from 22.32 tpy to 29.42 tpy, well in excess of the 25 tpy threshold for combined HAPs and triggering MACT. This excludes the underestimation in the HCl PTE discussed above.

The Administrator must object because calculating the emissions using actual worst-case demonstrates that the TC2 facility is a major source triggering MACT.

c. The Permit Lacks Enforceable Terms and Conditions on HAPs and thus Fails to Properly Limit PTE.

i. The Permit limit on HCl fails to reflect the PTE.

The Administrator must object because the Permit fails to include an HCl limit that reflects the claimed PTE. In the applicant's demonstration and analysis, HCl PTE emissions are claimed to be 8.6 tpy. Despite these emissions being close to the 10 tpy threshold and the total HAPS being close to the 25 tpy threshold, the Permit does not even limit HCl to this supposed PTE of 8.6 tpy. The Permit instead tacks on an extra 0.4 tpy to the PTE for HCl: "Hydrochloric Acid (HCl) emissions shall not exceed 9 tons per year based on a 12-month rolling total."[67] There is no support in the record for including this significant increase in setting the permit limit. If the PTE calculation is truly reflective of worst-case PTE as the applicant and KDAQ claim, an increase of 5 percent in the limit is not warranted and the Permit should include the PTE of 8.6 tpy. Otherwise, if the applicant and KDAQ expect that the PTE could vary by as much as 5

[66] *Id.*
[67] Exhibit 1, Permit, Cond. 2(l), at 30..

percent and this factor is needed to account for, e.g., uncertainty and/or variability, KDAQ must demonstrate in the record why this 5 percent increase is warranted.

ii. The Permit lacks design and operational limits needed to assure compliance with the claimed control efficiencies.

The Administrator must object because the permit lacks design and operation limits necessary to assure compliance with the control efficiencies that the applicant relied upon in its emission calculations. As discussed above, the emissions calculations for HCl are based upon numerous assumed HCl control efficiencies for several pieces of control equipment. These are 30% control of HCl emissions by the PJFF, followed by a 97% reduction at the wet FGD, finally followed by an additional 96% control at the wet ESP. Not only are these control efficiencies unsupported by any evidence, vendor guarantees, or other documentation, but there are also no design or operational limits to assure that any of these efficiencies are in fact achieved. In order for the PTE to be an enforceable limit, such design and operational parameters must be included in the Permit

iii. The Permit contains insufficient monitoring to enforce and assure compliance with the alleged limits on PTE.

The Administrator must object because the Permit lacks monitoring necessary to assure compliance with the blanket limits on PTE. Title V permits must include compliance certification, testing, monitoring, reporting and recordkeeping requirements sufficient to assure compliance with the terms and conditions of the permit. 40 C.F.R. § 70.6(c)(1). Further, Title V permits must include periodic monitoring sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit. 40 C.F.R. § 70.6(a)(3)(i)(B). While the permit contains a limit on total HAPS, this limit is meaningless. "Pursuant to the CAA, Section 112 (g), . . . combined HAP emissions shall not exceed 22.5 tons per year based on a 12-month rolling total."[68] The Permit does not include any monitoring of total HAP emissions, just CEMs for mercury and CAM monitoring for fluorides and HCl. This renders the 22.5 ton limit just a paper limit and totally unenforceable, in violation of Section 112(g) and Title V requirements. *See Sierra Club v. EPA*, 536 F.3d 673 (D.C. Cir. 2008) (Title V

[68] *Id.*

requires monitoring and reporting requirements sufficient to ensure continuous compliance with permit limits).

U.S. EPA addressed this issue in its Big Stone objections. There, U.S. EPA stated that the permit failed "to indicate how the permittee must demonstrate that it is maintaining emissions at a level below the major source thresholds in section 112, both on an individual HAP basis (i.e., <10 tons per year individual HAP) and on a total HAP basis (i.e., <25 tons per year total HAP)."[69] Regarding total HAPs, U.S. EPA went on to say that to resolve the objection, the State must revise the permit to include

> A requirement specifying how the permittee must demonstrate compliance with the total HAP limit of 23 .8 tons per rolling 12-month period, or, alternatively, the State must include an explanation of why monitoring and reporting of HAP emissions above what is required for acid gas and mercury HAP is not necessary to assure compliance with the limit. [70]

The U.S. EPA elaborated on the need for monitoring: "Where emission measurements are to be required, the required method for measurement and the required frequency of measurement must be specified. . . . As mentioned above, the State must develop periodic monitoring requirements that assure compliance with the permit conditions and explain why the proposed requirements will, in fact, assure compliance."[71] Likewise, the Permit here must include monitoring of total HAPs or an explanation of why monitoring and reporting of total HAPs is unnecessary, especially considering that, as pointed out above, many of the HAPs have the potential to push TC2 over the major source threshold.

Without such monitoring of total HAPs, and combined with the lack of specific design and operational standards regarding control equipment, the limit of 22.5 tpy is an unenforceable and impermissible blanket limitation on PTE. Bald conclusory statements that emissions will be held under a certain level that are not backed up by specific requirements do not constitute "physical or operational" limits on maximum capacity to emit. *Louisiana-Pacific Corp.*, 682 F. Supp. at 1132-33. The court stated in that decision,

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[69] Exhibit 20, Big Stone Objections, at 11.
[70] *Id*. The permit for Seminole provides an example of the types of monitoring that translate minor source limits on PTE into enforceable permit terms through the inclusion of permit conditions requiring CEMS for HCl and HF, testing for individual organic HAPs, and testing for metals in the coal, among others. *See* Exhibit 22, Seminole Electric Cooperative, Permit PSD-FL-375A.
[71] Exhibit 20, Big Stone Objections, at 11.

> [A] fundamental distinction can be drawn between the federally enforceable limitations which are expressly included in the definition of potential to emit and the limitations which defendant argues must be included. Restrictions on hours of operation or on the amount of material which may be combusted or produced are conditions which are, relatively speaking, much easier to "federally enforce." Compliance with such conditions could be easily verified through the testimony of officers, all manner of internal correspondence, and accounting, purchasing, and production records. In contrast, compliance with blanket restrictions on actual emissions would be virtually impossible to verify or enforce. *Id*., 682 F.Supp at 1133.

This holding has been incorporated into U.S. EPA guidance concerning PTE.[72]

An emissions limit for HCl right below at the threshold for triggering MACT also fails to assure compliance due to the lack of sufficient monitoring for HCl. The high variability of HCl, and therefore need for reliable monitoring, was established at source testing in Kentucky at East Kentucky Power Cooperative's Spurlock 3 (Gilbert) facility.[73] That facility saw a 400% swing in its HCL emissions during three yearly stack tests.[74] The Permit here provides for CAM monitoring for HCl and temporary quarterly testing followed by annual testing. Considering the fact that there is no margin of error built into the emission limit, CAM plus such limited testing provides insufficient monitoring to assure that HCl emissions will stay below the 10 tpy threshold. The permit includes only initial source testing to establish the correlation between HCl to SO_2 and coal quality. There is not a perfect and direct relationship between SO_2 and HCl. The relationship between SO_2 and HCl emissions will vary according to coal quality, type of coal, boiler operating conditions, and design and operating conditions at the wet FGD and wet ESP. Such varying conditions include, but are not limited to, liquid to gas ratios, concentrations of SO_2, concentrations of the acid gases coming into the wet FGD, and the scrubber liquid pH. Quarterly or annual testing is not sufficient and there must be more frequent testing with assurances that such testing is conducted under various conditions to confirm the relationship. Consequently, CAM with SO_2 as a surrogate is insufficient to assure compliance, especially considering the HCl limit right at the MACT threshold. Thus, the annual HCl limit

[72] *See* Exhibit 18, EPA PTE Guidance.
[73] Exhibit 23, Letter from Jerry Purvis, Manager, Environmental Affairs, East Kentucky Power Cooperative, to Ben Markin, Supervisor, Combustion Section, KDAQ, Re: J.K. Smith Generating Station – Application to Construct Two CFBs, June 10, 2008.
[74] *Id.*

manufactured for the sole purpose of staying below the major source level for MACT is unenforceable.

Finally, any claims about emissions of organic HAPs are also completely unenforceable due to lack of sufficient monitoring.[75] Just as the Permit contains no monitoring of combined HAPs, it also lacks monitoring for organic HAPS. Any claim that VOCs might act as a surrogate for organic HAPs is meaningless, as the permit also fails to include CEMs or CAM for VOCs. CEMS are available for VOC and KDAQ has not established that VOC CEMs cannot be used to help ensure minor source status for HAPs

In addition, VOCs and CO are not adequate surrogates for all organic HAPs. There are three classes of organic HAPs that behave differently during combustion: (1) volatile organic compounds, which are gases, for which the VOC as proposed may be an appropriate surrogate; (2) semi-volatile organic compounds, which may be gases or solids, depending on where in the exhaust gas train they are; and (3) particulate organic compounds, such as polynuclear aromatic compounds and dioxins, which are present in the particulate fraction. The different characteristics of these groups are evident in physical and chemical data for the subject organic HAPs as reported in standard handbooks.[76] A single indicator, either VOC or CO, cannot be used as a monitoring surrogate for these three diverse groups of chemicals, as they are chemically and physically dissimilar.

Several of these compounds are not products of incomplete combustion, like VOCs and CO, but rather are formed via distinct chemical reaction pathways. Polynuclear aromatic hydrocarbons are formed in condensation reactions.[77] Dioxins are formed from the reaction of unburned hydrocarbons and chlorine. Dioxins form in the pollution control equipment at flue gas temperatures of 450 to 650 degrees F. Low chlorine fuels, such as subbituminous coals,

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[75] *See, e.g.*, Exhibit 24, *In the Matter of WE Energies Oak Creek Power Plant*, Permit No. 241007690-P10, Order Granting In Part and Denying In Part Petition for Objection to Permit, June 12, 2009, at 14-18 (permit must include parameter indicator ranges establishing the required correlation).

[76] John A. Dean, Lange's Handbook of Chemistry, 13th Ed., McGraw Hill Book Co., 1985; Robert H. Perry and Don W. Green, Perry's Chemical Engineers' Handbook, 7th Ed., 1997; David R. Lide (Ed.), CRC Handbook of Chemistry and Physics, 75th Ed., CRC Press, 1994.

[77] William Bartok and Adel F. Sarofim, Fossil Fuel Combustion: A Source Book, John Wiley & Sons, 1991; J. Warnatz, U. Maas, and R.W. Dibble, Combustion: Physical and Chemical Fundamentals, Modeling and Simulation, Experiments, Pollutant Formation, 2nd Ed., Springer, 1999; D.J. Hucknall, Chemistry of Hydrocarbon Combustion, Chapman and Hall, 1985.

would form fewer dioxins than bituminous coals, which contain much higher amounts of chlorine.[78]

Consequently, there is no monitoring for organic HAPs overall, let alone during SSM when organic HAPs pose the potential to be higher. As discussed above, such emissions are likely to push TC2 over the major source threshold for HAPs. For these reasons, the Administrator must object.

d. The Permit Continues to Contain Erroneous Language Regarding the Applicable Law.

The Administrator must object because the Permit still claims that federal and state MACT standards do not apply. "Compliance with emission limits in Subsections (a), (d), (f) and (i) shall constitute compliance with 401 KAR 63:020 with respect to toxic substances. Mercury is regulated under 401 KAR 63:020, until such time as a state or federal standard becomes applicable to these emissions. Compliance with condition 1) above ensures compliance with 401 KAR 63:020."[79] Considering the U.S. EPA's June 2009 objection, this is obviously in error. Further, it demonstrates the gross lack of attention, oversight and review that went into revising this permit to comply with U.S. EPA's objection.

e. The Administrator Should Reject KDAQ's Minor Source Determination in Her Order.

i. Improper minor source claims are rampant in the industry.

Addressing improper minor source claims here would set an important precedent countering the recent upswing in minor source assertions in response to HAPs requirements for EGU boilers. As described above, one of the major issues Petitioners raise in their MACT comments is the use of faulty and inadequate PTE calculations in the application and as the grounds for the permit. These calculations form the basis for KDAQ's erroneous determination that the source is minor for HAPs. In the industry, some applicants low-ball their PTE calculations by basing them on lax emission factors, unreasonably high control efficiencies, failures to account for significant variability over inputs and operating conditions, and other unsupported assumptions. As a result, these permit applications fail to calculate representative

[78] Helsinki University of Technology, Halogens, Dioxins/Furans, slides.

worst-case emissions and thus the maximum emissions in keeping with PTE. The errors are compounded by the resultant permits, which contain illegal blanket limits on PTE, otherwise unenforceable limits on PTE, and inadequate monitoring. As a matter of policy and since this claim of minor source status is being repeatedly and wrongfully asserted, the Administrator should address it in her order.

Such wrongful claims by applicants and agencies regarding HAPs minor source status have recently become widespread and must be confronted in a systematic way by U.S. EPA. Petitioners are aware of the following proposed plants improperly claiming minor source status, in addition to TC2: Duke Cliffside, Bigstone Ottertail, EKPC Smith, Spurlock, and Sunflower Holcomb. While U.S. EPA has established its concerns with such HAP determinations in its objection to the Big Stone plant, KDAQ's determination post-dating this objection shows that additional emphasis must be placed on properly addressing the problems identified by U.S. EPA for Big Stone and here by Petitioners.[80] The Administrator can achieve this outcome by objecting on the bases laid out by Petitioners[81], thereby advancing consistent treatment of HAPs in keeping with U.S. EPA's stated policy.

ii. Raising the issues within the comment period was "impracticable" because KDAQ's process was illegal and otherwise muddled and inadequate.

KDAQ declined to respond to Petitioners comments on the MACT revision, ostensibly due to their submittal after the close of KDAQ's comment period. The Administrator should still address Petitioners' MACT arguments raised in their comments and this petition both for the

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[79] Exhibit 1, Permit, Cond. 2(p), at 30.

[80] Petitioners are aware that Region 4 submitted comments to KDAQ during the 45-day review period for the Permit. Exhibit 25, Letter from Kenneth R. Lapierre, Acting Director, Air, Pesticides and Toxics Management Division, U.S. EPA Region 4, to John S. Lyons, Director, Department of Environmental Protection, Kentucky Natural Resources and Public Protection Cabinet, January 19, 2010. In these comments, Region 4 states without elaboration that it believes KDAQ has adequately responded to U.S. EPA's June 2009 objection, and requests several minor clarifications. Region 4's overall determination is inconsistent with the position taken by Region 8 on the Big Stone case. Region 8's statements there on HAPs are more persuasive and better reflect the legal requirements, due to the indepth analysis and reasoning behind that position. Region 8 took a hard look at the permit and fully examined all of the HAPs-related issues, as reflected in its detailed objection letter. Thus, for the reasons set forth in these comments, and for the sake of consistency in HAPs determinations, Petitioners ask the Administrator to object.

[81] In the alternative, the Administrator may issue an objection to address these issues at her own initiative. 42 U.S.C. § 7661d(e). If the Administrator chooses not to object in the context of her petition answer, but finds Petitioners' comments and the issues raised to have merit, Petitioners strongly urge the Administrator to use this mechanism. She may also reopen the Permit pursuant to 40 C.F.R. 70.7(f) and (g).

policy reasons set forth above and due to the impracticability of raising these comments during the comment period. *See* 42 U.S.C. § 7661d(b)(2) (petition may be based on issues not raised during the public comment period if "the petitioner demonstrates in the petition to the Administrator that it was impracticable to raise such objections within such period.")[82] Here it was impracticable to submit the comments within the comment period because (a) the notice and underlying permit itself were illegal, (b) the duration of the comment period was insufficient to provide an opportunity for meaningful public comment, especially given the overlapping issues in two Title V objections, and (c) the notice was otherwise confusing and misleading. In the alternative, the Administrator should reopen the permit and comment period such that the full suite of issues can be considered together.

KDAQ's notice on HAPs and underlying permit were illegal because the agency noticed a permit that it knew was substantively unsupported and inadequate at the time. The noticed permit responded to only one U.S. EPA objection, HAPs, even though KDAQ had received a second objection on $PM_{2.5}$ and the auxiliary boiler. The agency specifically noted that the comment period dealt solely with the HAPs issue, and comments would be accepted on that issue only.[83] Consequently, KDAQ knowingly noticed a permit that was invalid due to its failure to comply with the subsequent U.S. EPA order. For this reason, the notice and public comment period were themselves substantively illegal. *See, e.g., Desert Rock*, Slip. Op. at 20-22 (granting requested remand of entire permit where reconsideration of some issues could result in substantive changes to other portions of the permit).

Second, it was impracticable for Petitioners to submit their MACT comments to KDAQ within the comment period because the complicated issues and timing of the notice in relation to the $PM_{2.5}$ revision necessitated a longer comment period than the agency allowed. As detailed in the $PM_{2.5}$ Notice, there were rapid objections to the Permit on multiple issues. As a result, comment periods for related issues overlapped. This caused a tight timeframe in which the public was required to assess the objections, review draft permits responding to those objections,

[82] Petitioners note that the Administrator has the discretion to consider issues not previously raised even where there is no showing of impracticability or subsequent grounds. *See, e.g.,* August 2009 Order at 32 (noting that "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.") Due to the importance of the issue as a policy matter, the grounds for doing so here are strong.

[83] *See, e.g.*, Exhibit 9, KDAQ, Revised Permit Statement of Basis, Permit No. V-08-001 R1, August 28, 2009 ("This issuance of Revision 1 of the permit V-08-001 is to only address the U.S. EPA objections contained in their June 5, 2009 letter.")

and provide comment. Further, it allowed no time for interested persons to assess the manner in which these issues, and the manner in which the agency was proposing to address them, might relate to each other (e.g., how BACT limits at the Auxiliary Boiler might affect HAPs emissions; how treatment of $PM_{2.5}$ emissions might affect heavy metal HAPs emissions). In light of these overlapping and interrelated objections and draft permits, 30 days was inadequate for meaningful public comment.

Further, as taken up above, KDAQ's permit notices continually fail to indicate the calendar end date by which comments are due. The subjectivity and confusion created by such deficient public notices is underscored by statements by a KDAQ representative indicating that these public notices are open to interpretation.[84] Petitioners raised these concerns regarding the comment period with KDAQ; KDAQ, however, declined to extend the comment period.[85] As a result of this confusion as to the close of the public comment period, Petitioners submitted comments a mere two weeks after the close of the 30-day period. Petitioners note that there would have been no significant prejudice or delay in extending/reopening the comment period on the MACT revision due to the fact that a new comment period on $PM_{2.5}$ and other revisions started on or about October 9.[86]

For these reasons, the Administrator should consider Petitioners' MACT arguments in issuing her order.

V. THE ADMINISTRATOR MUST OBJECT BECAUSE THE PERMIT FAILS TO COMPLY WITH PSD REQUIREMENTS FOR FINE PARTICULATE MATTER.

The Administrator must object because KDAQ fails to justify its PM_{10} surrogacy approach, and therefore the Permit fails to meet BACT and air quality requirements for $PM_{2.5}$. The use of PM_{10} to attempt to comply with the PSD program's requirements for $PM_{2.5}$ is not justified as a matter of law or fact. The U.S. EPA has repeatedly rejected attempts to use PM_{10}

[84] *See* Exhibit 14, Kentucky Syngas Email..
[85] Exhibit 25, Email chain between Faith Bugel, ELPC, and Sean Alteri, KDAQ, October 9, 2009.
[86] KDAQ also had already missed its deadline for responding to the MACT objection, so extending the comment period would not have substantially changed the state agency's position vis-à-vis its legal duties. The statute requires the permitting agency to "submit a permit revised to meet the objection" within 90 days after the date of the objection. *See* 42 U.S.C. §§ 7661d(b)(3) and (c). KDAQ's window thus expired on or about September 5, 2009, several weeks before the public comment period ended. While Petitioners are not encouraging U.S. EPA to allow state permitting agencies to miss their deadlines, Petitioners recognize that the exceptional circumstances of having two pending objections on different timelines may be appropriately accommodated by the Administrator.

as a surrogate.[87] Having laid out the requirements for using a surrogate in her prior objection, it is now in the Administrator's hands to ensure that states and applicants fully comply with the CAA. KDAQ and LG&E have not done so here. Instead, the record shows that PM10 cannot be used as a surrogate for PM2.5 for either BACT or air quality purposes, as set forth below.

a. Fine Particulate Matter and the Clean Air Act.

Fine particulate matter is an extremely harmful pollutant that impacts the lungs and heart, with its heaviest burden falling on vulnerable populations like the elderly and children. According to the U.S. EPA, the $PM_{2.5}$ fraction of particulate matter is distinguishable from the coarse fraction, as the smaller particles pose the largest health risks.[88] In fact, in a 1996 report on the need to revise the PM ambient air quality standards, EPA staff found that the epidemiological data more strongly support fine particles as the surrogate for the fraction of PM most clearly associated with health effects at levels below the standards in place at that time.[89] Disturbingly, $PM_{2.5}$ has been linked to premature death, in addition to aggravation of respiratory and cardiovascular disease (as indicated by increased hospital admissions for asthma, emergency room visits, absences from school or work, and restricted activity days), changes in lung function and increased respiratory symptoms, and more subtle indicators of cardiovascular health. Clean Air Fine Particle Implementation Rule, 72 Fed. Reg. 20,586, 20,586-20,587 (Apr. 25, 2007) (codified at 40 C.F.R. Part 51). U.S. EPA also has identified lung cancer deaths, infant mortality and development problems (such as low birth weight in children) as possibly linked to $PM_{2.5}$. National Ambient Air Quality Standards for Particulate Matter, Proposed Rule, 71 Fed. Reg. 2620, 2627 (Jan 17, 2006).

Recognizing the unique characteristics of and harms from fine particulate matter, U.S. EPA in 1997 promulgated new annual and 24-hour NAAQS for $PM_{2.5}$. 62 Fed. Reg. 38,652, 38,711 (July 18, 1997); 40 C.F.R. § 50.7. U.S. EPA's bases for regulating PM_{10} and $PM_{2.5}$ separately under distinct NAAQS were and remain differences in people's exposure, where the

[87] *See, e.g.*, Exhibit 26, EPA Region 9's Motion for Voluntary Remand, *Desert Rock*, April 23, 2009, at 3-4, 9 (requesting remand of a permitting decision by Region 9 based on the PM10 surrogacy policy because the administrative record could not support use of the policy).
[88] US EPA, "$PM_{2.5}$ NAAQS Implementation," *available at* http://www.epa.gov/ttnnaaqs/pm/pm25_index.html.
[89] Exhibit 27, U.S. EPA Office of Air Quality Planning and Standards, "Review of the National Ambient Air Quality Standards for Particulate Matter: Policy Assessment of Scientific and Technical Information." Staff Paper (July 1996) ("PM Staff Paper"), V-58 to V-77 (discussing health studies of fine versus coarse particles).

particles lodge in the body ($PM_{2.5}$ penetrates deeper into the lungs), and the health effects associated with each. 71 Fed. Reg. 61,144 at 61,147 (Oct. 17, 2006). Promulgation of the $PM_{2.5}$ NAAQS triggered the requirement to apply New Source Review requirements to $PM_{2.5}$. *See* 70 Fed. Reg. 65,984, 66,043 (Nov. 1, 2005) (obligation to implement PSD for $PM_{2.5}$ was triggered on the effective date for the NAAQS).

A full Prevention of Significant Deterioration ("PSD") review consists of two primary components. First, a permit for a major modification must include BACT limits for each "regulated NSR pollutant" which the source will emit in significant net amounts following the modification. 401 KAR 51:017 Section 8(3). BACT is defined as

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

42 U.S.C. § 7479(3); 401 KAR 51:001(25) (emphasis added). Congress intended for the BACT process to be technology forcing. To this end, identifying appropriate BACT limits involves an intensive, top-down process that results in stringent emission limits for each regulated NSR pollutant. "Regulated NSR pollutant[s]" (and so those pollutants "subject to regulation") include, among other things, "pollutant[s] for which a national ambient air quality standard has been promulgated and any constituents or precursors for such pollutants identified by the U.S. EPA." 401 KAR 51:001(210)(a). As U.S. EPA promulgated NAAQS for $PM_{2.5}$ in 1997, $PM_{2.5}$ is a regulated NSR pollutant to which the BACT requirements apply.

Second, the applicant and agency must ensure that the new source or modification, in conjunction with all other applicable emissions increases or decreases, will not "cause or contribute to" a violation of any NAAQS or PSD increment. 42 U.S.C. § 7475(a)(3)(B), 401 KAR 51:017 Section 9. Again, as separate NAAQS exist for $PM_{2.5}$, the air quality demonstration applies directly and independently to $PM_{2.5}$. Compliance with NAAQS for PM_{10} does not obviate the need to comply with NAAQS for $PM_{2.5}$.

The applicant and agency must meet these requirements whether they look directly at the regulated pollutant or employ a surrogate. In other words, the use of a surrogate does not relieve the agency and applicant from the substantive duty to ensure that the permit includes limits reflecting the maximum degree of reduction of $PM_{2.5}$ and that the modification will not cause or contribute to violations of the $PM_{2.5}$ air quality standards.

b. The Administrator's Objection to KDAQ's Use of Surrogacy.

In her August 2009 Order, Administrator Jackson lays out the case law on use of a surrogate[90], applies the opinions to use of PM_{10} as a surrogate for $PM_{2.5}$ under the NSR program, and includes a suggested approach for justifying PM_{10} surrogacy.[91] The Administrator's decision highlights several important principles regarding surrogacy. Perhaps most importantly, Administrator Jackson emphasizes that the dated PM_{10} surrogacy policy "contains limits."[92] The Administrator also sets forth that any use of a surrogate must be "shown to be reasonable," i.e., the applicant and agency must demonstrate that the surrogate "is a reasonable proxy for the pollutant or has a predictable correlation to the pollutant."[93] She then offers a two-step possible approach to justifying use of PM_{10} as a surrogate for $PM_{2.5}$. First, the record must establish "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."[94] Second, the record must show

[90] The Administrator notes that two cases have considered the use of PM_{10} as a surrogate for $PM_{2.5}$, *American Trucking Associations v. EPA*, 175 F.3d 1027, 1054 (D.C. Cir. 1999) ("ATA") and *American Farm Bureau v. EPA*, 559 F.3d 512, 534-35 (D.C. Cir. 2009). Exhibit 8, August 2009 Order at 44. Both of these cases stand for the proposition that the use of a surrogate must meet the underlying statutory requirements, which in *ATA* and *American Farm Bureau* were the standards for setting appropriate NAAQS. The courts came out differently based on U.S. EPA's ability to justify its decision. In *ATA*, U.S. EPA was unable to tie the levels of particulates that would result from its use of a surrogate (PM_{10}) to set the NAAQS to the actual fraction of particulates (coarse particulates from 2.5 to 10 μm in diameter) linked to the health concerns driving the need for the NAAQS in the first place. In some instances, due to variability in the course fraction dependent on the fine fraction, the levels of coarse particulates under the surrogate PM_{10} NAAQS could exceed levels protective of health. Thus, U.S. EPA failed to show its surrogate PM_{10} NAAQS would satisfy the duty to set NAAQS at a level requisite to protect public health. U.S. EPA, in contrast, was able to justify its use of PM_{10} as a surrogate in *American Farm Bureau* because the record showed that doing so would result in lower coarse particulate levels in the urban areas of concern. In other words, U.S. EPA linked its surrogate to actual levels of coarse particulates that would be protective of health. For the reasons set forth in these comments, KDAQ's and LG&E's analyses here fall into the *ATA* box, as they fail to meet the statutory standards for PSD permitting. Neither KDAQ nor LG&E has demonstrated that their surrogate approach would result in actual levels of $PM_{2.5}$ equal to or lower than those required under a direct analysis of $PM_{2.5}$ BACT or that would not cause or contribute to violations of the $PM_{2.5}$ air quality standards.

[91] Exhibit 8, August 2009 Order, at 42-46.

[92] *Id.* at 44.

[93] *Id*. at 43.

[94] *Id*. at 45.

"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."[95] Notably, Administrator Jackson includes the caveat that she is not "suggesting that the following two steps are necessary *or sufficient* to demonstrate that PM_{10} is a reasonable surrogate for $PM_{2.5}$" (emphasis added).[96]

One significant issue that the two-step approach does not address is the use of PM_{10} as a surrogate for air quality modeling purposes. The Administrator's proffered approach is relevant to the BACT demonstration, in that the two steps focus on emissions and control technology. The August 2009 Order does not include any suggested approach for a demonstration that PM_{10} is an acceptable surrogate for $PM_{2.5}$ with regards to protection of air quality from $PM_{2.5}$ pollution. As set forth below, the use of PM_{10} as a modeling surrogate is impermissible, in that it is contrary to the law, fails to protect air quality from harmful levels of $PM_{2.5}$ and is technically unjustifiable.

c. PM_{10} Surrogacy is Contrary to Law

As an initial matter, PM_{10} cannot be used as a surrogate for $PM_{2.5}$ because doing so is contrary to the Clean Air Act and its implementing regulations. Courts in contexts other than PSD permitting have articulated the general requirement that a surrogate may not be used if contrary to law. *See, e.g., National Lime Association v. EPA*, 233 F.3d 625, 637 (D.C. Cir. 2000) (considering the use of a surrogate for hazardous air pollutants in setting national emission standards). As set forth above and in Petitioners' April 2008 Title V petition, the Clean Air Act and its implementing regulations specifically treat $PM_{2.5}$ distinctly from PM_{10} due to the particles' different physical/chemical nature and health impact profiles.[97] These recognized differences and their codification prohibit the use of PM_{10} as a stand-in for $PM_{2.5.}$

Using the 24-hour PM_{10} NAAQS as a surrogate for the annual and 24-hour $PM_{2.5}$ NAAQS, i.e., claiming that compliance with the PM_{10} NAAQS is compliance with the two $PM_{2.5}$ standards, therefore is illegal on its face. The Administrator promulgated the $PM_{2.5}$ NAAQS because they are "requisite to protect the public health," *see* 42 U.S.C. § 7409(a)(2) and (b)(1),

[95] *Id.*
[96] *Id*. at 45.

separate and apart from the already-existent PM_{10} NAAQS. The PSD program prohibits construction of any major emitting facility that fails to "demonstrate[ ] that emission from construction of operation of such facility will not cause, or contribute to, air pollution in excess of *any*… national ambient air quality standard." 42 U.S.C. § 7475(a)(3) (emphasis added); *see also id.* at (e)(1) (air quality analysis is required for "*each* pollutant subject to regulation" (emphasis added) under the Act). Meeting the PM_{10} standard does not protect public health from the impacts of $PM_{2.5}$, as reflected by the existence of separate NAAQS. The two sets of standards do not even measure the same exposure period: the PM_{10} standard limits maximum daily concentrations, while the $PM_{2.5}$ standards limit both maximum daily levels and average annual exposures. In addition, differences in the formation and dispersion characteristics of PM_{10} and $PM_{2.5}$ mean that modeling the maximum impacts for PM_{10} will not produce the maximum impacts for $PM_{2.5}$, and so will not ensure protection of the NAAQS.

Likewise, BACT must be applied for "*each*" pollutant "subject to regulation" under the Act. *Id.* at (a)(4). The differences in physical and chemical sources and formation characteristics that underlie the promulgation of separate NAAQS are factors that impact the control options and technology issues central to BACT. Therefore, PM_{10} may not be used as a surrogate for $PM_{2.5}$ as a matter of law due to the existence of two separate NAAQS properly promulgated under 42 U.S.C. § 7409.

KDAQ failed entirely to address Petitioners' comments on this issue. In response to Petitioners' comments that surrogacy is contrary to the law, KDAQ states as follows:

> The Division does not find these comments relevant to the permitting action. To comply with the Administrator's Order, the Division requested additional information from LG&E "to 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."[98]

This statement is deficient, as the comments *are* relevant to the permitting action. The Administrator's August 2009 Order includes a disclaimer regarding the 2-step approach employed by KDAQ and tasks KDAQ with evaluating the surrogacy case law in order to provide an adequate rationale:

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[97] Exhibit 5b, "Petition Requesting that the Administrator Object to the Issuance of the Final Revised Title V Operating Permit for the Louisville Gas & Electric Generating Station Located at 487 Corn Creek, Bedford, Trimble County, Kentucky," Permit No. V-02-043 Revision 3, April 29, 2008 ("Revision 3 Title V Petition"), at 38-46.

> 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.[99]

As set forth above by Petitioners, the case law articulates a baseline requirement that the use of a surrogate not be contrary to law. The existence of two separate NAAQS for PM_{10} and $PM_{2.5}$, and the lack of correlation between both air quality impacts of and sources of/control options for PM_{10} and $PM_{2.5}$, prohibits use of PM_{10} as a surrogate for $PM_{2.5}$ as a matter of law. KDAQ's analysis, to the extent any was done, falls well short of the minimum requirements necessary to justify use of a surrogate approach to demonstrating compliance with BACT and air quality standards for $PM_{2.5}$. For these reasons, the Administrator must object.

d. PM10 Surrogacy is Unreasonable Because Barriers to Direct Regulation of $PM_{2.5}$ Do Not Exist.

Even if PM_{10} surrogacy were not contrary to the law, the approach is unreasonable because there are no barriers to direct regulation of $PM_{2.5}$. Where not contrary to law, surrogacy is allowed only where "reasonable." *National Lime*, 233 F.3d at 637 (D.C. Cir. 2000). A predicate for allowing use of a surrogate in place of a specifically-regulated pollutant under this inquiry is that significant difficulties exist in regulating the pollutant itself. *See National Lime*, 233 F.3d at 630 (noting that non-volatile hazardous air pollutant metals "are difficult to measure directly"); *see also Sierra Club v. EPA*, 353 F.3d 976, 986 (D.C. Cir. 2004) (accepting EPA's argument that "a surrogate was needed in light of the impracticability of setting individual standards for each metal, due to the variability of HAPs in copper ore stocks.") The predicate that direct PM2.5 regulation be shown to be prohibitively difficult is implicit in both the Administrator's recognition that the PM_{10} surrogacy policy has limits and the May 2008 $PM_{2.5}$ NSR Implementation Rule, which allows SIP-approved states to rely on surrogacy during an interim period only where they are "unable" to directly assess and control $PM_{2.5}$. *See* 73 Fed. Reg. 28321, 28341.[100]

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[98] Exhibit 28, KDAQ, Comments and Response, Revised Proposed Title V/Construction/Operating Permit: V-08-001 R2, November 25, 2009 ("November 2009 RTC"), at 7.
[99] Exhibit 8, August 2009 Order, at 46.
[100] *See also* Exhibit 29, U.S. EPA, Implementation of the New Source Review (NSR) Program for Particulate Matter Less than 2.5 Micrometers ($PM_{2.5}$); Notice of Proposed Rulemaking to Repeal Grandfathering Provision and End the

PM_{10} surrogacy is unreasonable because technical difficulties do not prevent direct regulation of $PM_{2.5}$, as recognized by the Administrator in her Order.[101] KDAQ nevertheless has ignored this key threshold demonstration. As described in more detail below, KDAQ fails to demonstrate that the initial justifications for PM_{10} surrogacy, namely "the lack of necessary tools to calculate the emissions of PM[2.5] and related precursors, the lack of adequate modeling techniques to project ambient impacts, and the lack of PM[2.5] monitoring sites," 73 Fed. Reg. 28,321 at 28,340 (May 16, 2008), bar direct analysis of $PM_{2.5}$.

Moreover, U.S. EPA has explicitly found that direct analysis and regulation of $PM_{2.5}$ is not impractical. In its Notice of Proposed Rulemaking reconsidering several aspects of the May 2008 NSR Implementation Rule, U.S. EPA clearly describes that technical barriers do not stand in the way of direct $PM_{2.5}$ analysis:

> … the $PM_{2.5}$ implementation issues that led to the adoption of the PM_{10} Surrogate Policy in 1997 have been largely resolved to a degree sufficient for the owners and operators of sources and permitting authorities to conduct meaningful permit-related $PM_{2.5}$ analyses. For example, adequate procedures for the collection of ambient $PM_{2.5}$ are now well established throughout the country and provide data useful for the purpose of PSD permitting. Also, air quality modeling of direct $PM_{2.5}$ emissions can be accomplished using an EPA-approved model to predict ambient $PM_{2.5}$ impacts caused by new and modified sources of $PM_{2.5}$ emissions. Emissions factors for calculating $PM_{2.5}$ from various source categories and equipment are available, as are national inventories of $PM_{2.5}$ emissions.[102]

Nor does this case pose either of the possible difficulties for states in implementing a direct $PM_{2.5}$ program noted by U.S. EPA in its notice. As the Kentucky SIP contains the federal definition of "regulated NSR pollutant," 401 KAR 51.001 Section 1(207), the state has

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PM_{10} Surrogate Policy, EPA-HQ-OAR-2003-0062: FRL-9113-2, February 4, 2010, at 32-37 ("February Proposed Repeal") (discussing limitations on the surrogacy policy in light of case law and technical justifications).

[101] *See* Exhibit 8, August 2009 Order at 44, stating that any difficulties initially supporting PM_{10} surrogacy for $PM_{2.5}$ *twelve years ago* "'have largely been resolved" (citing 73 Fed. Reg. at 28,340/2-3). While not agreeing that some degree of inconvenience and extra cost to the applicant is necessarily a legally sufficient justification for surrogacy, Petitioners also note that regulating $PM_{2.5}$ directly does not involve the same level of "impracticability" as does setting separate numeric limits for each species of metallic HAP. *See National Lime*, 233 F.3d at 637 (noting EPA's position that use of a surrogate "'eliminates the cost of performance testing to comply with numerous standards for individual metals.'") The agency and applicant here need only set limits and test for one additional pollutant, $PM_{2.5}$. There has been no demonstration on the record here that such direct limits and testing are impractical and/or prohibitively expensive. In fact, that other applicants have agreed to include $PM_{2.5}$ limits and compliance requirements proves otherwise.

"sufficient legal authority" to address $PM_{2.5}$ directly when issuing PSD permits.[103] The permitting of TC2 also does not implicate the small sources concern that may accompany the lack of a $PM_{2.5}$ significance threshold in the Kentucky SIP.[104] TC2 will produce over 500 tons per year ("tpy") of PM[105], well above the federal $PM_{2.5}$ significance threshold of 10 tpy.

That other facilities have proposed and/or accepted direct $PM_{2.5}$ limits show that direct analysis of and limits on $PM_{2.5}$ are feasible. These facilities include, but are not limited to, the following:

- Wolverine Power Supply Cooperative – proposed $PM_{2.5}$ limits of 0.024 lb/MMBtu, 72.7 pph and 54.5 pph (during startup and shutdown) for two CFB boilers, based on BACT analysis submitted to state permitting authority[106];
- Virginia City Hybrid Center – $PM_{2.5}$ limits of 0.012 lb/MMBtu on a 3-hour average for each of two CFB boilers and 31.32 pph;
- Plant Washington – the applicant proposed a work practice standard to identify the most appropriate fabric for the baghouse that removes $PM_{2.5}$, emission limits of 0.01236 (total) lb/MMBtu and 0.00636 lb/MMBtu (filterable), with a proposed compliance test method of Method 201/201A (including OTM-27 for filterable and OTM-28/CTM-39 for condensable $PM_{2.5}$)[107]; the draft permit contains a limit of 0.0123 lb/MMBtu total $PM_{2.5}$, on a 3-hour average[108].

At least one facility faced with a surrogacy challenge has agreed to install $PM_{2.5}$-specific controls, submit $PM_{2.5}$ reports, propose $PM_{2.5}$-specific numeric emission limits and install PM CEMS as a condition of a settlement agreement.[109] Neither LG&E nor KDAQ has shown why similar analysis cannot be done and similar limits set for TC2.[110]

States also have required and applicants have conducted cumulative $PM_{2.5}$ modeling demonstrations. The North Carolina Division of Air Quality requires $PM_{2.5}$ modeling using the

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[102] Exhibit 29, February Proposed Repeal, at 28-29. U.S. EPA is requiring direct regulation of $PM_{2.5}$ in delegated states under its May 2008 NSR implementation rule, demonstrating that technical barriers do not exist. *See* 73 Fed. Reg. 28, 321 (May 16, 2008).
[103] *Id*. at 36.
[104] *Id.*
[105] *See* Exhibit 30, KDAQ, Permit Statement of Basis, Permit No. V-02-043 R3, July 26, 2007, at Table 3.4.
[106] Exhibit 31, Draft Permit to Install, Wolverine Power Supply Cooperative, Permit No. 317-07, at 24 and 25 of 57, Cond. I.4a-4c.
[107] Exhibit 32, Plant Washington, Power4Georgians, LLC, Prevention of Significant Deterioration Air Permit Application, May 13, 2009 – Supplemental Data ("Washington County $PM_{2.5}$ BACT analysis"), at Table F-2.
[108] Exhibit 33, Georgia Department of Natural Resources, Environmental Protection Division, (Draft) Air Quality Permit, Permit No. 4911-303-0051-P-01-0, Plant Washington ("Washington County draft permit"), at Cond. 2.13(e).
[109] Exhibit 34, Settlement Agreement of March 10, 2008, among United States Steel Corporation, Gateway Energy & Coke Company, LLC, the American Bottom Conservancy, and the Sierra Club.

guidance provided in section 2.1.3 of the AERMOD User's Guide Addendum from January 2007.[111] The Wolverine Power Supply Cooperative likewise used AERMOD to model $PM_{2.5}$ impacts.[112] Connecticut has required $PM_{2.5}$ modeling since 2007.[113] While Petitioners are not commenting on the merits of any particular state or applicant approach, it is clear that the means exist to conduct a full $PM_{2.5}$ air quality modeling assessment now. And perhaps most notably, the applicant itself has conducted and submitted $PM_{2.5}$ modeling (though as discussed below, the modeling contains numerous flaws). In the face of these examples, KDAQ has not identified any legitimate existing barriers to direct analysis of $PM_{2.5}$.

KDAQ again fails to address Petitioners' comments on the lack of technical barriers. In an attempt to support its failures regarding $PM_{2.5}$, KDAQ states as follows:

> The commenter explains, "… LG&E and KDAQ have not identified any legitimate existing barriers to direct analysis of $PM_{2.5}$." To date, EPA has not finalized rulemaking to establish increments, Significant Impact Levels (SILs), or Significant Monitoring Concentrations (SMCs) for $PM_{2.5}$ analysis. Additionally, EPA has not promulgated an approved regulatory model for $PM_{2.5}$. In absence of these key elements in a $PM_{2.5}$ analysis, the use of PM_{10} as a surrogate for $PM_{2.5}$ is reasonable and appropriate for this permit.[114]

These supposed justifications do not establish the existence of prohibitive technical barriers to direct analysis and regulation. First, none of the cited reasons go to direct assessment of $PM_{2.5}$ for BACT purposes, but only speak to modeling. Second, as described above, U.S. EPA has clarified that direct modeling assessment of $PM_{2.5}$ is feasible. In fact, the agency contradicts KDAQ's assertion about lack of an EPA-approved model, stating that "air quality modeling of direct $PM_{2.5}$ emissions can be accomplished using an EPA-approved model to predict ambient $PM_{2.5}$ impacts…"[115] In addition, in making its determination in the February Proposed Repeal, U.S. EPA was fully aware that it had not finalized SILs and SMCs for $PM_{2.5}$ and so implicitly

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[110] Petitioners cite these permits only for the proposition that $PM_{2.5}$ limits are required and feasible, without commenting further on the substantive appropriateness of these limits for the proposed facilities.
[111] Exhibit 35, North Carolina Division of Air Quality, "Modeling and Meteorology Alerts," and "Modeling $PM_{2.5}$."
[112] Exhibit 36, Wolverine Power Supply Cooperative, "Dispersion Modeling – $PM_{2.5}$ PSD Class II for a 600 Megawatt (Net) Solid Fuel Steam Electric Power Plant," September 30, 2008 ("Wolverine September 2008 $PM_{2.5}$ Modeling").
[113] Exhibit 37, "CTDEP Interim $PM_{2.5}$ New Source Review Modeling Policy and Procedures," August 21, 2007.
[114] Exhibit 28, November 2009 RTC, at 7. .
[115] Exhibit 29, February Proposed Repeal at 28; *see also* Exhibit 5b, April 2008 Petition, at 45.

found this point to be of no significance to this baseline question.[116] KDAQ relies on several other supposed justifications for air quality modeling surrogacy as taken up below, none of which are legitimate.

Given the Act's strong language regarding protection of the NAAQS, the existence of a separate NAAQS for $PM_{2.5}$ due to its unique physical/chemical nature and health impacts, and the lack of technical difficulties in directly regulating $PM_{2.5}$, the Administrator need not even reach the question of whether PM_{10} is a "reasonable" surrogate from the emissions correlation and control perspectives.

e. PM_{10} Surrogacy is Unreasonable For Best Available Control Technology Purposes.

PM_{10} surrogacy furthermore is unreasonable because differences exist in the control technologies and efficiencies for $PM_{2.5}$ and PM_{10}. The three-prong test laid out by the courts for HAP surrogacy requires a showing that (1) the regulated pollutant is "invariably present" in the surrogate, (2) controls for the surrogate "indiscriminately capture[ ]" the regulated pollutant, and (3) controls for the surrogate are the "only means by which facilities 'achieve' reductions" in the regulated pollutant. *See Sierra Club*, 353 F.3d at 984 (citing analysis from *National Lime*). LG&E and KDAQ attempt to apply this analysis to PM_{10} surrogacy, based on the possible two-step approach described in U.S. EPA's order.[117] They do not succeed.

Far from indiscriminate capture of $PM_{2.5}$, PM_{10} controls preferentially reduce larger particles and are far less efficient with regard to smaller particulate matter, especially condensable PM. In addition, PM_{10} controls are not the only means by which reductions in $PM_{2.5}$ can be achieved; several $PM_{2.5}$-reducing technologies were omitted entirely by LG&E and KDAQ. As the surrogacy tests and approaches described by the courts and EPA are multi-step analyses, either one of these factors is sufficient independently to invalidate surrogacy. The

[116] While U.S. EPA did not explicitly address the lack of final SILs and SMCs, Petitioners believe that this gap in no way justifies avoidance of, in the agency's words, a "real analysis demonstrating that the $PM_{2.5}$ requirements are met." *See* Exhibit 29, February Proposed Repeal at 31-32. SILs and SMCs are regulatory shortcuts that applicants and agencies have relied on for avoiding a full NAAQS analysis. Setting aside questions over the legality of such shortcuts, the absence of final SILs and SMCs leaves in place the underlying requirement to conduct a full, cumulative NAAQS assessment. Thus, where EPA has not promulgated final SILs and SMCs, the applicant and agency must still comply with the cumulative NAAQS analysis requirements.

[117] Exhibit 38, KDAQ, Revised Permit Statement of Basis, Revised Proposed Permit No, V-08-001 R2, October 13, 2009, at 7-8 ("October 2009 SOB"); Exhibit 16, January 2010 SOB at 8-9.

Administrator must object and require addition of $PM_{2.5}$-specific controls, emission limits, and compliance measures consistent with BACT.

i. PM_{10} controls do not indiscriminately capture $PM_{2.5}$.

As is evident from Table 2.5 in the January 2010 SOB, each of the PM_{10} controls is more effective at removing PM_{10} compared to $PM_{2.5}$. These controls discriminate, then, on the basis of particle size. The applicant's analysis attempts to brush aside this point by arguing that, in aggregate, the control efficiency of $PM_{2.5}$ and PM_{10} is very similar: "Although PM_{10} control levels achieved are slightly higher than for $PM_{2.5}$…The minor differences in control efficiency are not material given that the overall control efficiencies for both PM_{10} and $PM_{2.5}$ are greater than 99.95%".[118] This argument is incorrect for three reasons.

First, the differences in efficiencies, though seemingly minor, are nonetheless real. The chosen set of controls, individually and as a whole, preferentially control larger particles. On this basis alone, PM_{10} surrogacy is unreasonable. Further, the differences in control efficiencies are not as minor as they seem. Increasing the control of $PM_{2.5}$ from its currently predicted level (99.952%) to the estimated control efficiency of PM_{10} (99.987%) would additionally reduce potential emissions of $PM_{2.5}$ by over 9 tons per year.[119] This is significant, given that total controlled PM2.5 emissions are expected to be approximately 12.7 tpy, based on the rate of 2.9 lb/hour provided in the surrogacy demonstration.

Second, the degree of discrimination between capture of PM_{10} and capture of $PM_{2.5}$ will increase in the instance that any of the controls are non-operational or less than fully operational. Each of the control devices (Dry ESP, PJFF, WFGD, WESP) is more efficient in its control of PM_{10} than $PM_{2.5}$. Absence of any one control will therefore result in disproportionately reduced control and increased emissions of $PM_{2.5}$ as compared to PM_{10}. By considering only full operation of all controls, the statistical relationship analysis reaches an erroneous conclusion that "there is a strong and predictable correlation between $PM_{2.5}$ and PM_{10} emissions, and this correlation is consistent under the range of operating scenarios and conditions expected."[120] The relationship between $PM_{2.5}$ and PM_{10} varies when some of the control equipment is not operating

[118] *See* Exhibit 39, Supplemental Submission in Support of PM_{10} as a $PM_{2.5}$ Surrogate for Trimble County Unit 2 Project, September 29, 2009 ("September 2009 Supplement"), at 8.
[119] 0.035% x uncontrolled $PM_{2.5}$ emissions of 6040 lb/hr = 2.1 lb/hr. (2.1 lb/hr x 8760 hr/yr)/(2000 lb/ton) = 9.25 tpy.

or is operating to a lesser extent, as well as when different fuels are used. Such scenarios are within the range of operating scenarios at TC2, and thus should have been included in the analysis. Indeed, U.S. EPA specifically states in the August 2009 Order that, under the offered approach,

> … the source or the permitting authority [would establish] 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.
>
> ***
>
> …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*.[121]

The increasingly discriminatory control of PM_{10} as compared to $PM_{2.5}$ under feasible operating scenarios further discredits the surrogacy approach.

Third, the data from EPA's AP-42 document does not appear to include condensable particulate matter in its cumulative size distribution, an exclusion that helps to obscures the fact that the selected PM_{10} control devices do not also indiscriminately capture $PM_{2.5}$. The currently selected control devices are more efficient in their removal of PM_{10} than condensable PM. The inclusion of condensable PM in the size distribution data would further lower the removal efficiency of $PM_{2.5}$ relative to PM_{10} (and again highlighting the need for further $PM_{2.5}$-specific controls, designs, limits, and compliance methods). It is also unclear whether the "Total PM" data in Tables 2.3 and 2.4 include condensable PM.[122] If so, the control efficiency for condensable PM may be overestimated by the reliance on EPA's size distribution data. This would again disproportionately impact $PM_{2.5}$ control efficiency estimates.

Thus it is clear that the surrogacy approach is not supported on the basis that control technologies for PM_{10} do not indiscriminately control $PM_{2.5}$. The disproportionately low $PM_{2.5}$ control efficiency should be ameliorated to the maximum extent feasible through the use of

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[120] *See* Exhibit 39, September 2009 Supplement, at 4.
[121] Exhibit 8, August 2009 Order, at 45 (emphases added).
[122] The "Total PM" data in Tables 2.3 and 2.4 is, in fact, completely unsupported and entirely undocumented. This data is the basis for the statistical analysis regarding boiler emissions via the size distribution data. For example, the "Total PM" data implies an overall control efficiency for the dry ESP of 98%. EPA's AP-42 Section 1.1 assumes a

$PM_{2.5}$-specific designs and other controls to meet $PM_{2.5}$-specific limits under $PM_{2.5}$-specific test methods, as described below.

Regarding the overlapping first prong of U.S. EPA's suggested approach, KDAQ merely reiterates the applicant's data by citing the tables on particle size distribution and removal efficiency critiqued by Petitioners.[123] KDAQ concludes that "the projected capture efficiency for $PM_{2.5}$ is greatest in the dry ESP, PJFF, and WESP. The same control relationship exists for PM_{10}."[124] These statements do not adequately respond to the Order and thus fail to establish the reasonableness of surrogacy. First, they do not address differences in efficiencies during full operation of the equipment cited by Petitioners. Nor do they address that capture of the two pollutants will differ when a piece of control equipment is not fully functioning, an aspect explicitly required to be taken into account by the Order. They do not address condensable emissions either. The Response to Comments does not fill the gaps left by the Statement of Basis. Instead, in supposedly responding to the above comments, the RTC merely talks about control technologies used for control of PM. This reference goes to the second step of the Administrator's suggested approach, not the first step of showing a strong statistical relationship.

In sum, KDAQ fails to demonstrate that PM_{10} is a reasonable surrogate under the surrogacy case law and the statistical relationship prong of the Administrator's suggested approach. Petitioners' comments establish that such a relationship does not exist, and so cannot be used to excuse direct control of $PM_{2.5}$. For these reasons, the Administrator must object.

ii. The BACT analysis fails to consider $PM_{2.5}$-specific control options for the boiler.

Surrogacy also is unreasonable because KDAQ erroneously concludes that "[t]here are no other technologies that would specifically target $PM_{2.5}$ emissions that were not considered in evaluating PM_{10} controls."[125] This statement ignores several control options specific to $PM_{2.5}$. These options are set forth below. Because the control strategy selected through the $PM_{2.5}$ BACT analysis is not "physically the same" as that selected by the PM_{10} analysis "in *all* respects

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control efficiency for dry ESPs of 99.2%. This discrepancy calls into question the validity of either the "Total PM" data or the design control efficiency of the dry ESP.

[123] Exhibit 38, October 2009 SOB, at 9-10; Exhibit 16, January 2010 SOB, at 11.

[124] *Id.*

[125] *Id.*

that may control efficiency for $PM_{2.5}$" (emphasis added),[126] surrogacy is not reasonable.[127] KDAQ thus fails to comply with BACT step 1 and all subsequent steps, as well as the August 2009 Order. For these reasons, the Administrator must object.

1. LG&E and KDAQ fail to consider clean fuels as a $PM_{2.5}$ control option.

Clean fuels are a control option for $PM_{2.5}$, yet KDAQ fails entirely to discuss the impact of clean fuels on $PM_{2.5}$ emissions relative to PM_{10}. As KDAQ notes, "[t]he two PM BACT analyses would differ only if a particular technology offered different control efficiency for PM_{10} versus $PM_{2.5}$…"[128] The use of clean fuels will produce greater relative control of $PM_{2.5}$ than of PM_{10}: different fuels will produce lower SO_2 and lower acid gas emissions, and thus lower condensable and secondary $PM_{2.5}$, without producing an equivalent percent reduction in PM_{10}. KDAQ thus erred in omitting clean fuels from BACT step 1 for $PM_{2.5}$, where it is required to list all available control options, and to subsequently only eliminate cleaner fuels in the remaining steps of the top-down process following the proper analysis.

The Clean Air Act explicitly requires that a BACT analysis consider use of "clean fuels," as BACT is defined as:

> an emission limitation based on the maximum degree of reduction of each pollutant… which…is achievable for such facility through application of production processes and available methods, systems, and techniques, including…*clean fuels*.

42 U.S.C. § 7479(3) (emphasis added); *Sierra Club v. United States EPA*, 499 F.3d 653, 655 (7th Cir. 2007) ("The Act is explicit that "clean fuels" is one of the control methods that the EPA has to consider.") EPA has recognized this requirement, stating that "the 1990 Clean Air Act amendments… expressly require consideration of clean fuels in selecting BACT," and the EPA considers clean fuels as "an available means of reducing emissions to be considered along with other approaches to identifying BACT level controls." *In re Inter-Power of New York, Inc*., 5

[126] Exhibit 8, August 2009 Order, at 45.
[127] Similarly, because KDAQ's control technology assessment is incomplete, it is not possible to determine whether the control efficiency for $PM_{2.5}$ is equal to or better than that for PM_{10} across the range of anticipated operating conditions.
[128] Exhibit 38, October 2009 SOB, at 9; Exhibit 16, January 2010 SOB, at 10.

E.A.D. 130, 134 (E.A.B. 1994).[129] Longstanding EPA policy with regard to BACT has "required that a permit writer examine the inherent cleanliness of the fuel." *Inter-Power*, 5 E.A.D. at 134.[130] In response to a state agency's claim that it lacked the authority to require a facility to use a particular fuel, the Environmental Appeals Board has noted that "the definition of BACT includes consideration of both clean fuels and use of air pollution control devices." *In re Haw. Commercial & Sugar Co.*, PSD Appeal No. 92-1, 4 E.A.D. 95, 99 n.7 (E.A.B. 1992); *see also In re E. Ky. Power Coop., Hugh L. Spurlock Generating Station*, Petition No. IV-2006-4, Order at 30-32 (EPA Adm'r Aug. 30, 2007) (finding that state permitting agency erred by failing to establish BACT based on cleaner fuel where there was no demonstration by the agency that cleaner fuel "is not achievable for this source considering technical feasibility or economic, environmental, or energy impacts"). Moreover, the *National Lime* court emphasized that in determining whether surrogacy is reasonable, the agency must take into account "fuel switching" and other inputs. 233 F.3d at 639 ("PM might not be an appropriate surrogate for HAP metals if switching fuels would decrease HAP metal emissions without causing a corresponding reduction in total PM emissions").

The use of clean fuels is a significant factor affecting $PM_{2.5}$ emissions and thus BACT, due to the influence of fuel sulfur, chlorine and fluoride content, among other things, on condensable PM constituents and secondary PM. U.S. EPA numerous times has required facilities to consider lower sulfur fuels in the BACT analysis. Here, the applicant estimates that use of the "performance coal," a 70/30 blend of eastern bituminous and western subbituminous coal will result in controlled SO_2 emissions that are approximately 1% higher than when burning a lower sulfur 50/50 blend of bituminous and subbituminous coals, demonstrating that burning lower sulfur coals does impact SO_2 emissions above and beyond use of add-on control

[129] Congress added the "clean fuels" language for clarification purposes and to codify EPA's longstanding practice, not to add an additional consideration to the definition. ("The phrase 'clean fuels' was added to the definition of BACT in the 1990 Clean Air Act amendments. EPA described the amendment to add 'clean fuels' to the definition of BACT at the time the Act passed, 'as * * * codifying its present practice, which holds that clean fuels are an available means of reducing emissions to be considered along with other approaches to identifying BACT level controls.' EPA policy with regard to BACT has for a long time required that the permit writer examine the inherent cleanliness of the fuel." *Inter-Power of New York*, 5 E.A.D. at 134 (emphasis added, internal citations omitted); *see also Old Dominion Electric Cooperative*, 3 E.A.D. at 794, n. 39 (EAB 1992) ("BACT analysis should include consideration of cleaner forms of the fuel proposed by the source."); *Hibbing Taconite*, 2 E.A.D. at 842-843 (remanding a permit because the permitting agency failed to consider burning natural gas as a viable pollution control strategy).

equipment.[131] In addition, emissions of HCl and HF, constituents of condensable $PM_{2.5}$, are influenced by the level of chlorine and fluoride in the fuel, and LG&E's emissions estimates and HCl/HF limits are based on the worst-case fuel.[132]

The record for TC2 provides no justification for ignoring the relative impact of different fuels on $PM_{2.5}$ emission levels. LG&E's discussion of clean fuels in the initial PM_{10} BACT analysis submitted back in 2004 only mentions coal cleaning and fuel ash content as they relate to PM emissions.[133] It does not include a full consideration of the impact of various fuel types (in terms of, e.g., sulfur, chloride and fluoride content) on $PM_{2.5}$ emissions relative to PM_{10}. The record also omits the required cost-effectiveness analysis for elimination of the cleanest fuel, which is an available control option under step 1. Nor does the Permit contain fuel conditions and limitations that ensure the lowest emissions of $PM_{2.5}$. For these reasons, surrogacy is not justified.

KDAQ omits clean fuels from its SOB and in its RTC erroneously cites to the Administrator's Order as addressing this issue.[134] The Administrator's August 2009 Order does not consider clean fuels as it pertains to $PM_{2.5}$ BACT and surrogacy, i.e., whether clean fuels must be considered given the relationships between fuels and $PM_{2.5}$ precursors as they differ

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[130] One circuit court of appeal has affirmed this policy in a context analogous to the present case by holding that low sulfur fuel as appropriate as BACT for a facility proposing to burn high sulfur fuel. *Hawaiian Elec. Co., Inc. v. EPA*, 723 F.2d 1440, 1442 (9th Cir. 1984).

[131] *See* Exhibit 40, LG&E, Air Permit Application Support Document, TC2, December 2004, excerpt pages 1-1 and 1-2 and Appendix E ("Trimble 2 Coal Fired Generating Plant," emission calculation sheets for "Performance coal" and "Test Coal B.") Sheets show an SO_2 emissions rate of 0.1088 lb/MMBtu for Performance coal and 0.1074 lb/MMBtu for Test Coal B. This difference is equivalent to an additional 42.6 tpy of SO_2 using performance coal instead of the 50/50 blend: (0.0014 lb/MMBtu x 6,942 MMBtu/hour x 8,760 hours/year) / 2,000 lb/ton = 42.6 tpy. Moreover, these calculations do not address the even lower levels of SO_2 that could be achieved with a fuel blend that includes more than 50 percent western subbituminous coal.

[132] *See*, *e.g.*, Exhibit 17, Letter and attachment from Gary Revlett, LG&E Environmental Affairs, to John Lyons, KDAQ, July 10 2009, "Section 112(g) Demonstration/Evaluation; Unit 31, Trimble County Generating Station" (demonstration based on use of "worst-case" fuel for coal chlorine content). We note that comparison of the specific fuels and outlet concentrations here is not possible because LG&E opted to submit this information solely for "worst case" 100% eastern bituminous coal.

[133] Exhibit 41, Black & Veatch, Inc., Best Available Control Technology and Maximum Achievable Control Technology Analyses for Louisville Gas & Electric Company's Trimble County Unit 2, December 1, 2004, at I-15 to I-16.

[134] Exhibit 38, October 2009 SOB, at 9-11; Exhibit 16, January 2010 SOB, at 9-12; and Exhibit 28, November 2009 RTC at 10-11. The RTC also cites the Kentucky Secretary's order from the state administrative proceeding. Leaving aside core differences in the issues presented here versus in front of the Kentucky Secretary (which are the same as for the August 2009 Order), Petitioners note that KDAQ conflates the standard governing the Title V petition process with judicial collateral estoppel. The Secretary's order does not itself preclude the Administrator from addressing these issues in the first instance, nor does it weigh against the Administrator doing so if the Secretary failed to apply the law correctly. Indeed, the Title V process contemplates overturning erroneous state-level decisions.

from impacts of fuels on PM_{10}. Instead, the Order addresses clean fuels as it was raised in Petitioners' April 2008 Title V petition. Consideration of the issue there was limited to the impacts of clean fuels on sulfuric acid mist and "PM," as well as to the less detailed information provided in the April 2008 petition.[135] In contrast, Petitioners here raise clean fuels specifically with respect to how fuel parameters differently impact $PM_{2.5}$ versus PM_{10}, which poses different legal and factual questions than in the April 2008 petition. U.S. EPA furthermore has rearticulated its position on clean fuels since the August 2009 Order, clarifying that the applicant and agency must undertake a full analysis of clean fuels in BACT determinations.[136] KDAQ and LG&E did not do so in this case.

For these reasons, KDAQ failed to take into account a control option for $PM_{2.5}$ and thus to establish that PM_{10} surrogacy is reasonable.

2. LG&E and KDAQ omit discussion of the fabric filter bag material.

The $PM_{2.5}$ BACT surrogacy determination also fails to consider the type of bag material to be used in the baghouse. Because $PM_{2.5}$ is controlled by the fabric filter at a different rate than is PM_{10} depending on the filter media used, surrogacy is not justified. The filtration media determines the control efficiency of a baghouse for very small particles. There is a wide range of media that can be used, most of which are much more efficient for larger particles than smaller particles. The media Ryton, for example, is commonly used in similar applications for PM control. This media removes 99.9% of larger particles, but operates at far lower efficiencies for the smaller particles. Thus, other media must be considered in setting BACT. Filtration media are available that allow 99.99% of the $PM_{2.5}$ fraction to be removed.[137] These include, but are not necessarily limited to, PTFE membrane filters[138] and W.L. Gore's L3650.[139] Several $PM_{2.5}$

[135] Exhibit 8, August 2009 Order at 47-48.

[136] *See, e.g.*, Exhibit 42, *In the Matter of Cash Creek Generation, LLC*, Henderson County, Kentucky, Title V/PSD Air Quality Permit, #V-07-017, Petition Nos. IV-2008-1 and IV-2008-2, Order Responding to Issues Raised in January 31, 2008 and February 13, 2008 Petitions, and Denying in Part and Granting in Part Requests for Objection to Permit, December 15, 2009, at 7-10.

[137] *See* generally summary of U.S. EPA's ETV test results, Exhibit 43, File name "Fabric Filtration Media ETV 3-08." Certified Fabric Filtration Media are certified by the U.S. EPA Environmental Technology Verification Program using the "Generic Verification Protocol for Baghouse Filtration Products" to Achieve 99.99% Removal of $PM_{2.5}$.

[138] Exhibit 44, McIlvaine Hot Topic Hour, Filter Media Selection for Coal-Fired Boilers, September 13, 2007, Presentation by Todd Brown, Daikin America, Inc.

[139] Exhibit 45, EPA, ETV Joint Verification Statement, Baghouse Filtration Products, W.L. Gore & Associates.

BACT analyses for similar sources have recognized that the type of filter material used in the fabric filter impacts relative control of $PM_{2.5}$ versus $PM_{10.}$[140]

Despite these clear differences in fabric filter media control of PM_{10} versus $PM_{2.5}$, and other similar sources that have looked at fabric filter media in $PM_{2.5}$ BACT analyses, KDAQ completely omits discussion of this control option from its $PM_{2.5}$ surrogacy BACT determination. This omission is in violation of BACT requirements. *See, e.g.*, *In re Desert Rock*, PSD Appeal No. 08-03 (EAB Sept 24, 2009), at 69 (finding a BACT determination inadequate because "the Region did not explain in its BACT analysis how IGCC could be considered as a 'potentially available control technology' under step 1 of the BACT analysis for two other EPA-issued permits (i.e., federal permitting decisions) at similar facilities"). The Permit, in addition, requires only the use of a fabric filter baghouse to control PM/PM_{10}, without mention of the filter material.[141]

KDAQ also fails to justify exclusion of the filter bag material in its RTC. In attempting to address Petitioners' above comments, KDAQ states that:

> Selection of the filtration media is specific to the control equipment based upon its engineering design. Through the BACT analysis, the selected control equipment is evaluated. After reviewing the provided information, the Division determines that the proposed control train is at least as effective as a control scenario selected through a specific $PM_{2.5}$ BACT analysis.
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> While, [sic] the commenter asserts that Diakin [sic] AMIREZ membrane filters are commonly used for similar PM applications, the design characteristics of the filter membrane are not provided to demonstrate if the membrane will be able to handle the particulate loading. Thus, without a sound engineering analysis of the references filtration media, the Division cannot consider the membrane filtration as applicable to the proposed control train.[142]

This statement is in error for several reasons. First, if KDAQ is asserting that the differential capture of $PM_{2.5}$ seen with various filter media is already considered in the BACT analysis by

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[140] *See, e.g.*, Exhibit 46, Wolverine Power Supply Cooperative, Best Available Control Technology (BACT) for Particulate Matter Less than 2.5 microns Application No. 317-07, September 2008; Exhibit 47, Southern Montana Electric Generation and Transmissions Cooperative, Highwood Generating Station Circulating Fluidized Bed Boiler: BACT Analysis for Emissions of Particulate Matter with Aerodynamic Diameter Equal to of Less Than 2.5 Microns ($PM_{2.5}$), September 26, 2008 ("Highwood $PM_{2.5}$ BACT"), at 32-36.

[141] Exhibit 1, Permit, Cond. 1, at 28.

[142] Exhibit 28, November 2009 RTC, at 12. Petitioners note that this is a mischaracterization of the fabric filter comment. Petitioners noted that the Ryton material is frequently used for similar applications, but that other alternative materials can achieve better control and should be included in the BACT analysis.

virtue of the engineering design of the control equipment, KDAQ is wrong. Nowhere in the BACT analyses (either for PM_{10} or for the present $PM_{2.5}$ justification) is there any mention of different fabric filter designs and the filter media that go with them, let alone how the various designs and accompanying filter media impact $PM_{2.5}$ emissions. Without such an inquiry, KDAQ cannot determine, as it claims, that the proposed control train is at least as effective as that which would have been selected through a $PM_{2.5}$ BACT analysis in all respects that may control efficiency for $PM_{2.5}$.

Second, Petitioners have met their burden under Title V to "demonstrate" that the agency and applicant failed to meet applicable BACT requirements with respect to an available control option. The applicant and agency are required to identify all available control technologies, i.e., "all control options with potential application to the source," then show in a fully-documented, top-down process why a certain control is not technically feasible.[143] *See Desert Rock*, Slip Op. at 50 (agency must fully document BACT determinations in the record). Here, Petitioners have cited extensive studies of filter material and other similar sources that have considered fabric filter media in-depth in BACT analyses. Thus, KDAQ and LG&E were required to list filter media in BACT step 1 and were required to show on the record that, as they claim, certain filter media are not technically feasible (due to, e.g., cited issues with particulate loading) in BACT step 2. They did not, and so the record is insufficient to support the BACT surrogacy determination. *See id.*, Slip. Op. at 63. In sum, Petitioners have sufficiently demonstrated that KDAQ failed to consider available control options for $PM_{2.5}$ that differ from those analyzed for PM_{10}.

Third, KDAQ attempts to improperly invert the inquiry in the BACT analysis by demanding that the public have detailed information on the proposed design of the unit and control equipment. Detailed design information is uniquely within the control of the applicant. Petitioners' comments sufficiently demonstrate that different fabric filter media are clearly available control technologies for $PM_{2.5}$ that differ in their removal relative to PM_{10}, and so

[143] Exhibit 48, NSR Manual at B.5-7 and B.10. Step one requires a comprehensive list of *all* available control technologies: "In the course of the BACT analysis, one or more of the options may be eliminated from consideration because they are demonstrated to be technically infeasible or have unacceptable energy, economic, and environmental impacts on a case-by-case (or site-specific) basis. However, at the outset, applicants should initially identify all control options with potential application to the emissions unit under review." It is in Step two that any technically infeasible options are eliminated. Here, "[a] demonstration of technical infeasibility should be clearly documented and should show, based on physical, chemical, and engineering principles, that technical difficulties would preclude the successful use of the control option on the emissions unit under review."

should have been taken into account by the applicant (and thus agency) with its specific design knowledge. Petitioners note that KDAQ's attempted inversion is especially inappropriate where neither the agency nor the applicant has made public the design documents necessary for the full assessment they claim the public must conduct. Indeed, such documents have been designated "confidential business information" in the state administrative proceeding, and those and subsequent design documents have not been placed in the public permit file at all.

Fourth, even if the agency could sidestep its duty in this manner, Petitioners did submit to KDAQ several documents that include design, performance and particulate loading information for various filtration products. These documents include the ETV Joint Verification Statement for Gore filtration material types (submitted as Exhibit 11), the Wolverine $PM_{2.5}$ BACT analysis (which provides a link to a study of filter materials at a pulverized coal plant, submitted as Exhibit 13), and a list of ETV certified fabric filter media (including the test condition inlet particle concentration, submitted as Exhibit 12). At the very least, these documents provide sufficient information to guide the agency and applicant in their own required filter media inquiry, which the August 2009 Order requires them to conduct..

For these reasons, surrogacy is not justified and the Administrator must object.

3. LG&E and KDAQ omit a dry ESP from the $PM_{2.5}$ surrogacy demonstration.

The $PM_{2.5}$ surrogacy demonstration also is inadequate because KDAQ failed to include a dry ESP in its analysis. A dry ESP must be considered as an available $PM_{2.5}$-specific control relevant to the $PM_{2.5}$ BACT analysis, as it results in additional filterable $PM_{2.5}$ and SO_2 (condensable and secondary particulate) control relative to PM_{10}. The $PM_{2.5}$ BACT analysis for the Highwood Generating Station, for example, recognized use of a dry ESP as an available control option to be considered alone and in conjunction with other control options in a proper top-down $PM_{2.5}$ BACT analysis.[144]

Here, TC2 will use a DESP. As noted by KDAQ, the addition of the DESP will "further decrease the potential emissions of SO_2 from the project by 0.9 tpy from those potential

[144] Exhibit 47, Highwood $PM_{2.5}$ BACT, at 17-19.

emissions indicated in the 2004 Application."[145] This is a change of approximately 2 percent from the prior potential-to-emit of 39 tons per year.[146] In addition, the use of a DESP upstream of the fabric filter will decrease PM emissions relative to the baghouse alone by about 1.5% (from 567.4 tpy[147], to 559 tpy[148]). That TC2 will actually use a DESP presumptively shows that neither other cost nor environmental impacts justify its elimination. From the perspective of the required $PM_{2.5}$ BACT analysis, then, a DESP is an available control technology for $PM_{2.5}$ in step 1 that was not considered in setting PM_{10} BACT. Mercury reductions from use of a DESP are a related environmental benefit that counsels against removing a DESP from consideration in step 2, i.e., the agency cannot *eliminate* a DESP in step 2. KDAQ as a result must include the DESP in assessing the appropriate $PM_{2.5}$ BACT limit.

In response, KDAQ again cites to the Administrator's Order and erroneously claims that the Administrator "already addresses this issue relating to the addition of DESP" in the August 2009 Order.[149] Contrary to KDAQ's assertion, the Order only addresses whether the PM_{10} BACT analysis must be revisited given the later addition of the DESP.[150] This question is separate and apart from the surrogacy question here, which focuses on whether there are additional $PM_{2.5}$ controls that were not taken into account in the PM_{10} analysis. In fact, that KDAQ refused to include the DESP in its PM_{10} analysis supports including the control in the $PM_{2.5}$ BACT assessment.

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[145] Exhibit 30, KDAQ, Permit Statement of Basis, Permit No. V-02-043 R3, July 26, 2007 ("Revision 3 SOB"), at Table 3.4, note **. .

[146] *Id*.

[147] Exhibit 49, KDAQ, Permit Statement of Basis, Permit No. V-02-043 R2, 2005 ("2005 SOB") at 4, Table 3.1

[148] Exhibit 30, Revision 3 SOB, at 4, Table 3.4

[149] Exhibit 28, November 2009 RTC, at 13.

[150] Exhibit 8, August 2009 Order at 36-39. To the extent that the Administrator believes the conclusion in the Order does impact the $PM_{2.5}$ BACT analysis, Petitioners request that the Administrator reconsider the approach in the Order due to conflicts with the controlling statutory and regulatory language. The definition of BACT explicitly requires consideration of numerous types of control options and lists these options in the plural. *See* 40 C.F.R. § 51.166(b)(12). Nothing in the language of the BACT definition presumptively allows an applicant to propose only a single control option to the automatic exclusion of control combinations. Indeed, U.S. EPA's practice of requiring applicants and agencies to assess clean fuels in combination with add-on controls shows that BACT contemplates using more than one control option. This proper reading of the BACT definition does not open applicants to excessively expensive and absurd loading on of additional controls. Instead, the BACT definition explicitly requires that additional control options that are not cost effective be eliminated through the proper consideration of "environmental, and economic impacts." *Id*.

The 1979 guidance cited in the Order is consistent with this required process, as it allows applicants to avoid "unrealistic" sequential controls. Exhibit 8, August 2009 Order at 37. It is hardly "unrealistic" to require assessment of reductions that can be achieved by combined controls that the facility *will actually install*. To ignore the actually-installed additional controls in setting the BACT emission limit would be contrary to the statutory

For these reasons, surrogacy is not justified and the Administrator must object.

iii. BACT for $PM_{2.5}$ requires assessment of BACT for SO_2 and NO_x as precursors.

KDAQ inadequately addresses precursor emissions in its $PM_{2.5}$ BACT surrogacy determination, although these emissions are significant contributors to $PM_{2.5}$ levels and should be included in PSD review for $PM_{2.5}$. As U.S. EPA has set forth,

> Precursors contribute significantly to ambient $PM_{2.5}$ concentrations, producing approximately half of the concentration nationally. In most areas of the country, $PM_{2.5}$ precursor emissions are major contributors to ambient $PM_{2.5}$ concentrations.

73 Fed. Reg. 28,321 at 28,325. In terms of precursors, LG&E and KDAQ must consider at minimum SO_2 and NO_x as part of PSD for $PM_{2.5}$. SO_2 is presumptively a precursor for $PM_{2.5}$. *Id*. at 28,327. In addition, KDAQ must consider NO_x as a precursor because it has failed to show that NO_x is not a significant contributor to ambient $PM_{2.5}$ concentrations.[151]

As SO_2 and NO_x are precursors to $PM_{2.5}$, controls for these pollutants must be part of the $PM_{2.5}$ BACT analysis. KDAQ concluds (parroting LG&E's submission) that "[g]iven the additional emphasis on controlling the condensable fraction of PM in conducting the PM_{10} BACT analysis, the control train, including consideration of the WESP, selected as BACT for PM_{10} would have been the same if $PM_{2.5}$ was evaluated separately."[152] This statement is in error, as the control "train" selected as BACT for PM_{10} is solely a fabric filter baghouse.[153] In addition, due to netting, TC2 never underwent a full BACT analysis for SO_2 and NO_x. The proposed revised permit cannot issue without a proper top-down BACT analysis for $PM_{2.5}$ precursors demonstrating that the emission limits for SO_2 and NO_x are in fact BACT and not simply similar to BACT.

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language, as the resulting BACT limit would not reflect the "maximum degree of reduction" that is achievable taking other factors into account.

[151] *Id*. at 28,328. "NO_x is presumed to be a significant contributor to ambient $PM_{2.5}$ concentrations in all PSD and NA NSR areas. However, a State or EPA may rebut this presumption for a specific area if the State demonstrates to the Administrator's satisfaction or EPA demonstrates that NO_x emissions in that area are not a significant contributor to that area's ambient $PM_{2.5}$ concentrations… If a State or EPA does not make such a demonstration, NO_x must be regulated as a precursor under the PSD, NA NSR, and minor source programs for $PM_{2.5}$."

[152] Exhibit 38, October 2009 SOB, at 11; Exhibit 16 January 2010 SOB at 11.

[153] *See* Exhibit 1, Permit, Cond. 1, at 28..

Proper SO_2 and NO_x BACT limits, and so BACT limits on SO_2 and NO_x as $PM_{2.5}$ precursors, would entail additional emission limits in different forms than the current Permit limits. BACT is not a control technology, but rather an emission limit. 42 U.S.C. § 7479(3); 401 KAR 51:001(25) Thus, even if the controls selected by the applicant for NOx and SO2 are those that would underlie BACT limits for these pollutants, the non-BACT limits themselves may still be inadequate. Here, NO_x and SO_2 limits in lb/MMBtu are necessary to ensure that the maximum degree of reduction is achieved at all times, over all levels of operation.[154] Limits in lb/hour are also necessary. The permit, however, only includes limits on these pollutants in tons per day, tons per year, and lb/MWh.[155] Thus, BACT for PM2.5 requires additional emission limits on PM2.5 precursors.

iv. $PM_{2.5}$-specific BACT limits are necessary for the boiler.

The Administrator must object because the permit lacks $PM_{2.5}$-specific limits. Such limits are necessary because, in their absence, the unit could comply with its PM_{10} limit while violating the implied $PM_{2.5}$ limit. Again, BACT is not a control technology, but an emission limit. As BACT is applicable to $PM_{2.5}$, the permit must include emission limits on, and terms and conditions for, $PM_{2.5}$ (or their functional equivalent, which the current PM_{10} limits, terms and conditions are not).[156] These limits must be made continuously enforceable through adequate compliance demonstration methods as well.

Given that $PM_{2.5}$ is a subset of PM_{10}, and that a 1:1 ratio between PM_{10} and $PM_{2.5}$ cannot be expected under all operating scenarios, a $PM_{2.5}$ BACT limit would appropriately be lower than a PM_{10} BACT limit. Indeed, LG&E's supplement indicates expected $PM_{2.5}$ emissions an order of magnitude lower than the permitted PM_{10} limits.[157] As such, it is entirely feasible that

[154] *See* Exhibit 48, NSR Manual at B.56. Petitioners note that while a lb/MMBtu figure may be calculated from the unit's heat rate, doing so does not produce an enforceable limit in lb/MMBtu. The heat rate is contained in the Permit only in the descriptive information, and descriptive information in SIP-approved states does not constitute an enforceable limit (in contrast, in delegated states, the unit must operate in compliance with its application, which often includes the heat rate). The unit thus may operate above the heat rate stated4 in the Permit. Therefore, an enforceable limit in lb/MMBtu is needed.

[155] Exhibit 1, Permit, Cond. B.2(d), (e), (g), and (h), at 29.

[156] While EPA's order was silent on whether a surrogacy demonstration would need to include separate $PM_{2.5}$ emission limits, the order specifically states that EPA was not suggesting that the statistical relationship and control technology approaches are "sufficient to demonstrate that PM_{10} is a reasonable surrogate for $PM_{2.5}$." Exhibit 8, August 2009 Order at 45.

[157] The PM_{10} limits given in the permit are 0.015 lb/mmbtu (filterable), on a 24 hour daily (block) average, and 0.018 lb/mmbtu (filterable + condensable), average of three one-hour tests. At full capacity, 6,942 mmbtu/hr, these

the PM_{10} limits could be met while violations of $PM_{2.5}$ limits are ongoing. This is particularly true because the data indicate that several of the control technologies could be non-operational, simultaneously, without violation of the PM_{10} limit.

For example, according to Table 2.4 in the October 2009 SOB, without the WFGD and WESP, PM_{10} emissions would be 102 lb/hr. Assuming full operation (6,942 mmbtu/hr), this is equivalent to a PM_{10} emissions rate of 0.014 lb/MMBtu, well below the permitted limits of 0.015 lb/mmbtu (filterable, 24-hour daily block average) and 0.018 lb/MMBtu (filterable + condensable, 3 hour average). The lack of these controls, especially the WESP, would significantly decrease control efficiency and increase emissions of $PM_{2.5}$. In this example, potential $PM_{2.5}$ emissions could be increased as much as 245 tons per year while meeting the existing PM_{10} limits.[158]

Finally, Petitioners note that BACT must consider levels of control that are being achieved in practice by other facilities. Test data shows that the Manitowoc facility is achieving a PM_{10} level of 0.0120 lb/MMBtu using Method 5 and Method 202 for filterable and condensable particulates.[159] This level of PM_{10} is significantly below the PM_{10} BACT limit for Trimble, and thus corresponds to a significantly lower $PM_{2.5}$ BACT limit. KDAQ and LG&E have not demonstrated why TC2 cannot achieve a similarly low corresponding $PM_{2.5}$ BACT limit.

KDAQ failed entirely to address these comments on the inappropriateness of omitting $PM_{2.5}$ limits. Instead, the agency merely reiterates in essence that it has provided an "adequate rationale" for use of PM_{10} as a surrogate.[160] As put forth above, it has not.

KDAQ also makes the offbase statement that "applying an emission limitation without a means of demonstrating compliance is inappropriate."[161] This statement is in error, and so does not support the surrogacy approach, for two reasons. First, the record fails to document that there are no means for demonstrating compliance with a $PM_{2.5}$ emission limitation. KDAQ merely states that "[c]urrently, technical issues related to conducting performance testing for

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amount to 104.13 and 124.96 lb/hr, respectively. The analysis presented here indicates total PM, PM_{10}, and $PM_{2.5}$ emissions of only 2.9 lb/hr, $+/-_{10}$% depending on fuel type.

[158] *See* Exhibit 38, October 2009 SOB, at 9. From Table 2.4, 59 – 2.9 is an increase of 56.1 lb/hr. (56.1 lb/hr x 8760 hr/yr)/(2000 lb/ton) = 245.7 tpy.

[159] Exhibit 50, Manitowoc Public Utilities, "Preliminary Stack Test Review," Jul. 7, 2006, at "Discussion of Results."

[160] *See* Exhibit 28, November 2009 RTC, at 15.

[161] *Id.*

$PM_{2.5}$ in a wet stack remain unresolved."[162] It does not describe these technical issues or provide any supporting materials. Stating only that issues exist is a conclusion, not a determination supported by the record.

Second, where measurement problems are fully documented in the record, BACT consists of a "design, equipment, work practice or operational standard or combination thereof," accompanied by a numeric estimate of the emissions level to be achieved by such a standard. 40 C.F.R. § 51.166(b)(12); 401 KAR 51:001(25)(c). Thus, even had KDAQ supported its claim of technical measurement difficulties, the permit must still contain an alternative $PM_{2.5}$-specific narrative limit accompanied by a numeric estimate of the accompanying expected $PM_{2.5}$ emissions level.[163] The Administrator must object because KDAQ failed to comply with these requirements to demonstrate technical measurement difficulties for $PM_{2.5}$ and to include an alternative BACT $PM_{2.5}$ narrative limit if such difficulties exist.

v. The Permit fails to list operating limits for $PM_{2.5}$ from the boiler.

Even if KDAQ were justified in using the surrogacy approach for the numeric $PM_{2.5}$ BACT emission limit (which it is not), the permit must include operating limits for $PM_{2.5}$. As noted above, LG&E and KDAQ must comply with BACT requirements for $PM_{2.5}$ whether or not they use a surrogate, which means the inclusion of an alternative narrative limit if technical measurement difficulties are supported in the record. There are no technical barriers to listing the control technologies identified as controls for $PM_{2.5}$ in the permit as BACT for $PM_{2.5}$. Nevertheless, the permit completely omits $PM_{2.5}$ from the operating limits section.[164] The permit must include an operating limit listing BACT for $PM_{2.5}$ as, at a minimum, the controls identified by LG&E and KDAQ as relevant to $PM_{2.5}$: PJFF, dry ESP, WESP, WFGD, and SCR.[165] As set forth in these comments, the operating limit also must include at minimum use of clean fuels, the

[162] *Id*.
[163] Petitioners note that KDAQ must include these narrative measures and emission estimates now. If any measurement difficulties do in fact exist and KDAQ sufficiently documents them, the agency should also be required to include a term that *requires* use of a performance method once U.S. EPA has formally approved such a method; KDAQ currently only acknowledges that it "may" require such testing later down the road, *see* Exhibit 28, November 2009 RTC at 15.
[164] Exhibit 1, Permit, Cond. 1, at 28..
[165] *See* Exhibit 39, September 2009 Supplement, at 14 (TC2 controlled for filterable particulates with PJFF and DESP; for acid gases by scrubber and WESP; for SO_2 by WFGD; and for NO_x by SCR), 16 (Table 4 listing control equipment for PM).

fabric filter material with the lowest $PM_{2.5}$ emissions, and other design/operational requirements that ensure the highest $PM_{2.5}$ control efficiency.

vi. The Permit Lacks Limits Equivalent to $PM_{2.5}$ BACT for Material Handling Operations.

The Administrator must object because the Permit includes limits for material handling that do not represent BACT for $PM_{2.5}$ from these sources. As described in detail below, LG&E asserts in its modeling analysis that certain high control efficiencies will be achieved from material handling sources. If these levels are indeed achievable as LG&E and thus KDAQ claim, they must be included as BACT limits for material handling. The Permit does not, however, contain terms and conditions sufficient to ensure these control efficiencies and accompanying emission rates over all operating conditions. To the extent that these efficiencies and rates can be achieved in practice, they must be included in the permit as enforceable BACT limits on $PM_{2.5}$ from material handling.[166]

f. PM_{10} Surrogacy Cannot Be Used For Air Quality Purposes and TC2 Will Cause or Contribute to Violations of the NAAQS.

The Administrator must object because PM_{10} surrogacy for the air quality assessment is contrary to the law and not justified or appropriate in this or any case, and TC2 is likely to cause or contribute to violations of the $PM_{2.5}$ air quality standards.[167] The air quality demonstration requirements of PSD apply directly to $PM_{2.5}$, *see* 70 Fed. Reg. 65,984, 66,043, a pollutant with distinct formation and impact characteristics relative to PM_{10}.[168] As set forth above, allowing

[166] KDAQ's responses to the material handling issues are taken up in the modeling section of the petition.
[167] Petitioners note that the HAP surrogacy case law relied on by the EPA in its order has little to no bearing on the appropriateness of modeling surrogacy here. The industry-wide HAP emission standards in those cases are solely *technology-based* standards resulting from the Congress' frustration with progress under a *risk-based* approach. *See Sierra Club v. EPA*, 353 F.3d at 979-980. The PSD program, in contrast, contains air quality modeling requirements where applicants and agencies must compare impacts of regulated NSR pollutants to already-determined, health/risk-based $PM_{2.5}$ NAAQS. Thus, the HAP courts' focus on the invariable presence of the pollutant in the surrogate and the control technologies used for each pollutant, *see, e.g., National Lime* at 639, is not relevant to the PSD air quality modeling requirements for $PM_{2.5}$. EPA acknowledges as much by omitting any possible approaches for PM_{10} modeling surrogacy. The irrelevance of this case law to modeling surrogacy is especially true given that PM_{10} and $PM_{2.5}$ have very different formation and dispersion characteristics, and thus warrant separate treatment.
[168] *See, e.g.*, Exhibit 51, Levy J., Greco S., and Spengler, J., "The Importance of Population Susceptibility for Air Pollution Risk Assessment: A Case Study of Power Plants Near Washington, DC," Environ Health Perspect 110:1253–1260 (2002) ("Levy Study"), at 1257, Figure 2.

KDAQ to use the 24-hour PM_{10} NAAQS as a surrogate for the annual and 24-hour $PM_{2.5}$ NAAQS is illegal on its face.

Alternatively, surrogacy for air quality purposes is unreasonable because KDAQ failed to show why it cannot require direct estimation of $PM_{2.5}$ emissions and a full modeling analysis comparing those emissions to $PM_{2.5}$ standards. Numerous other applicants and states have done and are moving forward with such analyses, and indeed LG&E itself did so here. KDAQ's proffered reasons for not requiring a full cumulative NAAQS analysis are legally insufficient, as well as factually inaccurate.

Finally, LG&E's preliminary $PM_{2.5}$ modeling does not provide any assurance that violations of $PM_{2.5}$ air quality standards will not occur. The modeling contains multiple errors and omissions. Correcting the flaws shows that TC2 will cause or contribute to a violation of the $PM_{2.5}$ air quality standards.

For these reasons, surrogacy is not appropriate, KDAQ and the applicant have failed to demonstrate protection of air quality from $PM_{2.5}$ pollution, and the Administrator must object. KDAQ must base its determination on a full cumulative $PM_{2.5}$ air quality analysis using project emissions reflecting worst-case levels allowed under the permit.

i. PSD Air Quality Monitoring and Modeling Requirements.

Under the PSD program, a permit may not issue to a project that threatens air quality standards, including NAAQS and PSD "increments." *See* 42 U.S.C. § 7475(a)(3). Protection of air quality, indeed, is at the heart of PSD: the purpose of the PSD provisions is to "ensure that the air quality in attainment areas or areas that are already 'clean' will not degrade." *Alaska Dep't of Envtl Conservation v. EPA*, 540 U.S. 461, 470 (2004). To this end, an applicant must conduct a preapplication analysis of air quality that includes preconstruction onsite monitoring, *see* 401 KAR 51:017 Section 11, as well as a modeling demonstration showing protection of ambient air quality standards after construction of the proposed source, *id.* at Section 9. Postconstruction monitoring can be necessary as well to ensure that no violations occur. *Id.* at Section 11(2).

Regarding the preapplication analysis, the CAA requires an applicant to "conduct such monitoring as may be necessary to determine the effect which emissions from any such facility may have, or is having, on air quality in any area which may be affected by emissions from such source." 42 U.S.C. § 7475(a)(7). More specifically, at a minimum, the full PSD review must

"be preceded by an analysis… by the State… or by the major emitting facility applying for such permit, of the ambient air quality at the proposed site and in areas which may be affected…" 42 U.S.C. § 7475(e)(1). This "preconstruction" analysis "*shall include* continuous air quality monitoring data *gathered for purposes of determining* whether emissions from such facility will exceed the [NAAQS or PSD increment]." 42 U.S.C. § 7475(e)(2) (emphasis added). The Act specifies that this data "shall be gathered over a period of one calendar year preceding the date of application for a permit under this part unless the State… determines that a complete and adequate analysis for such purposes may be accomplished in a shorter period." *Id.* Federal and state regulations similarly require the applicant to submit a pre-application analysis of ambient air quality in affected areas that includes at least one year of representative continuous air quality monitoring data. 40 C.F.R. § 51.166(m)(1)(iv), 401 KAR 51:107 Section 11.

Next, under Kentucky's PSD program, the applicant must conduct a "Source Impact Analysis" that

> demonstrate[s] that allowable emissions increases from the proposed source or modification, in conjunction with all other applicable emissions increases or reductions, including secondary emissions, shall not cause or contribute to air pollution in violation of:
>
> (1) A national ambient air quality standard in an air quality control region; or
> (2) An applicable maximum allowable increase over the baseline concentration in any area.

401 KAR 51:017 Section 9; 42 U.S.C. § 7475(a)(3). Compliance with the NAAQS "is based upon the total estimated air quality, which is the sum of the ambient estimates resulting from existing sources of air pollution (modeled source impacts plus measured background concentrations) and the modeled ambient impact caused by the applicant's proposed emissions increase… and associated growth."[169] Under the so-called "PSD increment" analysis, project emissions plus all other applicable emissions cannot exceed the amount of each pollutant that may be allowed in an attainment area. *See* 401 KAR 51:017 Section 9(2).

Finally, postconstruction monitoring is appropriate where necessary to determine the actual effect of the source's emissions on air quality. 401 KAR 51:107 Section 11(2). Such

[169] Exhibit 48, NSR Manual at C.3.

monitoring provides assurance where the NAAQS are threatened and/or there are significant uncertainties in emission calculations and modeling procedures.[170]

ii. KDAQ illegally relies solely on the PM_{10} NAAQS to show compliance with the $PM_{2.5}$ NAAQS.

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The Administrator must object because KDAQ cannot rely on compliance with the PM_{10} NAAQS to demonstrate compliance with the $PM_{2.5}$ NAAQS. As set forth above, PM_{10} and $PM_{2.5}$ are regulated under separate NAAQS due to their different physical, chemical, dispersion and health impact characteristics, and showing compliance with one set of air quality standards inherently does not ensure compliance with the other. KDAQ nevertheless refuses to make any formal inquiry into $PM_{2.5}$ emissions or impacts, stating:

> Although EPA proposed the significant impact levels (SILs) for $PM_{2.5}$ in the September 21, 2007 *Federal Register*, U.S. EPA has not yet finalized the proposed rule. A $PM_{2.5}$ emissions inventory and a regulatory dispersion modeling system are necessary to conduct a cumulative $PM_{2.5}$ NAAQS analysis. Without a regional $PM_{2.5}$ emissions inventory and regulatory dispersion model, conducting a cumulative $PM_{2.5}$ NAAQS analysis is not possible. Furthermore, a PSD baseline date has not been established for $PM_{2.5}$, thus a PSD increment analysis is not feasible as well. *Until these technical difficulties are resolved, the use of the Seitz Memorandum issued on October 23, 1997, is appropriate*.[171]

KDAQ similarly states in its RTC that

> *current law does not require the $PM_{2.5}$ modeling exercise*… To further explain, the commenters contend that the Division has not demonstrated "why they cannot estimate $PM_{2.5}$ emissions and conduct a full modeling analysis comparing those emissions to $PM_{2.5}$ standards." Without the existence of regional $PM_{2.5}$ inventories, a $PM_{2.5}$ NAAQS modeling analysis for PSD purposes is inappropriate and technically infeasible.[172]

Another statement of KDAQ's rationale for claiming a direct $PM_{2.5}$ air quality analysis is not required is as follows:

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[170] *See* Exhibit 52, U.S. EPA, Ambient Air Quality Monitoring Guidance for Prevention of Significant Deterioration, EPA-450/4-87-007 (May 1987) ("EPA PSD Monitoring Guidance"), at 4-5 (postconstruction monitoring justified as a permit condition where "factors such as complex terrain, fugitive emissions, and other sources of uncertainties in source or emission characteristics result in significant uncertainties about the projected impact of the source or modification"); *see also* Exhibit 48, NSR Manual at C.21.

[171] Exhibit 38, October 2009 SOB, at 13 (emphasis added); Exhibit 16, January 2010 SOB, at 14.

[172] Exhibit 28, November 2009 RTC, at 17 (emphasis added).

> An approved model for $PM_{2.5}$ does not currently exist in Appendix W of 40 C.F.R. 51…[In Appendix W, there] is only one reference that mentions "small particles" and that instance is in reference to PM_{10}.[173]

Other than these references to supposed regulatory barriers, KDAQ only cites its BACT surrogacy determination[174] and generally repeats ad nauseam that it "does not concur" with Petitioners comments, as "the Administrator ordered the Division to provide in the permit record 'an adequate rationale to support the use of PM_{10} as a surrogate for $PM_{2.5}$ under the circumstances for this specific permit,'"[175] or simply that the agency "does not concur."[176]

KDAQ's refusal to require any emission estimation and modeling of $PM_{2.5}$ leaves the agency solely reliant on the applicant's prior PM_{10} analysis as the basis for the required $PM_{2.5}$ determination. There, the applicant estimated and modeled PM_{10} and compared impact levels to the PM_{10} NAAQS.[177] KDAQ did not require or conduct even the most minimal adaptation of this analysis – either in the initial permitting or in the present response to U.S. EPA's objection – to make it relevant to $PM_{2.5}$ emissions and air quality impacts. For instance, KDAQ did not bother to make its determination based on an adjustment of the PM_{10} emissions to reflect the $PM_{2.5}$ fraction, comparing the modeled results to the $PM_{2.5}$ NAAQS. KDAQ in sum found that compliance with the PM_{10} NAAQS is compliance with the $PM_{2.5}$ NAAQS. This finding neither meets the requirements of laws and regulations governing the NAAQS and PSD, nor is reflective of the technical realities of the different impacts from PM_{10} versus $PM_{2.5}$.

Even if modeling surrogacy were not contrary to the law, the supposed justifications cited by KDAQ are insufficient to excuse omission of direct $PM_{2.5}$ emissions estimates and air quality modeling under the reasonableness prong. As set forth above, U.S. EPA has explicitly or implicitly found that the alleged barriers cited in the above passage by KDAQ – SILs[178],

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[173] *Id.*, at 22.
[174] KDAQ references its BACT surrogacy determination in one response to Petitioners' modeling comments on page 20 of the November 2009 RTC. This reference is entirely out of place and irrelevant to modeling surrogacy: the two inquiries are separate and distinct, as noted throughout these comments. The only relevance of the BACT determination to modeling is with respect to the emission rates. KDAQ has not asserted that it cannot estimate $PM_{2.5}$ emission rates, and the record demonstrates otherwise.
[175] *See id*., at 35-37.
[176] *Id*., at 38.
[177] Exhibit 49, 2005 SOB, at 34.
[178] Petitioners note that they do not agree that SILs are a legally permissible basis for allowing sources to avoid full air quality modeling demonstrations. *See* Exhibit 28, November 2009 RTC at 22-23 (laying out Petitioners' arguments on legality of the SILs). However, Petitioners are in agreement that the lack of a final SIL does not remove the underlying requirement to do a cumulative NAAQS analysis. A SIL is a means for seeking an exemption; that the means for an exemption has not been finalized does not eliminate the core requirement.

inventories, and models – do not justify using PM_{10} as an air quality surrogate for $PM_{2.5}$. Additionally, the lack of a $PM_{2.5}$ PSD baseline date and final increment does not in any way impact the ability to conduct a cumulative NAAQS analysis. The Michigan Department of Environmental Quality (now Michigan Department of Natural Resources and the Environment) has provided one permit applicant with inventory and permit information, which the applicant then used to assemble the $PM_{2.5}$ inventory and model combined impacts:

> For NAAQS sources (excluding the quarry), the MDEQ provided emission inventory and permit information along with the appropriate SCC for each process (*See* Appendix 5). FTC&H reviewed USEPA emission factors to determine if any $PM_{2.5}$ factors existed for the applicable SCCs. If factors were available for a particular process, the ratio of the $PM_{2.5}$ factor to the PM_{10} factor was multiplied by the PM_{10} emission rate provided by the MDEQ in the original emission inventory. For each source, the emission inventory data and the permit data were compared and the higher number was used. For SCCs which did not have applicable $PM_{2.5}$ emission factors, the PM_{10} emission rates were used as a conservative estimate. The emissions from these sources were modeled, along with WCEV sources, for a combined impact with receptors located within the applicable radius of significance for each averaging period.[179]

KDAQ similarly can provide the information necessary to construct the emissions inventory for Trimble. At least one prominent engineering firm has advertised its ability to develop $PM_{2.5}$ emission inventories for NSR permitting.[180] Modeling for the Wolverine proposed power plant in Michigan also demonstrates that the agency and applicant may determine $PM_{2.5}$ increment baseline dates to enable an increment analysis.[181] The proposed PSD increments can then be used, as they were in Michigan, for assessing whether the project will result in an increment violation.[182]

For these reasons, the Administrator must object because KDAQ fails to provide any legally cognizable reason for its determination that a direct $PM_{2.5}$ air quality analysis is not required or feasible.

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[179] Exhibit 46, Wolverine September 2008 $PM_{2.5}$ Modeling, at 2.
[180] Exhibit __, Barr Engineering Co., "PSD & NSR Implementation of $PM_{2.5}$ June 2008," at 4.
[181] *See* Exhibit 53, Letter and attachment from Jacquelyn F. Linck, Fishbeck, Thompson, Carr & Huber, to James Haywood, Michigan Department of Environmental Quality, Re: Request for $PM_{2.5}$ Increment Analysis, July 29, 2009. MDEQ used the PM_{10} baseline date for the $PM_{2.5}$ increment analysis.
[182] Because, as shown below, TC2 will cause or contribute to NAAQS violations from source impacts alone, it will presumptively violate any $PM_{2.5}$ increment as well.

iii. LG&E'S preliminary $PM_{2.5}$ analysis fails to ensure protection of air quality and TC2 will result in violations of the NAAQS and increments.

The Administrator must object because the applicant's $PM_{2.5}$ modeling analysis is flawed in numerous ways and KDAQ fails to address Petitioners comments on these flaws. Even without correcting the errors, LG&E's own preliminary assessment shows an exceedance of the 24-hour proposed SIL under option 3, with an impact of 1.5 $\mu g/m^3$ versus a SIL of 1.2 $\mu g/m^3$.[183] Correcting the errors shows that the additional pollution from TC2 will exceed the $PM_{2.5}$ SIL by an even greater margin, and is highly likely on its own and in combination with other sources to cause or contribute to violations of the remanded 2006 NAAQS and proposed $PM_{2.5}$ increments.

KDAQ tries to have it both ways by claiming that "technical" barriers exist to direct modeling, then citing the applicant's modeling as providing "reasonable assurance" that TC2 will not cause or contribute to a violation of the NAAQS.[184] This position is untenable. Either a modeling analysis is not technically feasible and thus the applicant's demonstration holds no weight, or modeling is technically feasible and the agency must fully and substantively evaluate the applicant's $PM_{2.5}$ modeling demonstration on the record, including addressing the comments raised by Petitioners. As KDAQ fails to do the latter, Petitioners reiterate their comments critiquing the applicant's $PM_{2.5}$ modeling below.

1. The preliminary analysis fails to use the required onsite $PM_{2.5}$ preconstruction monitoring data.

LG&E's analysis using background concentrations from a monitor located nearly 70 miles away may not be substituted for $PM_{2.5}$ data from on-site preconstruction monitoring. On-site preconstruction monitoring is the statutorily-required baseline. As described above, the Act makes clear that preconstruction monitoring: (i) is required; (ii) must precede the analysis under §7475(a); (iii) must be conducted at the proposed site and affected areas specifically for the purpose of PSD permitting; and (iv) must occur for at least 12 months unless, pursuant to the applicable regulations, a shorter period is allowed. *See* 42 U.S.C. § 7475(e)(2); s*ee also U.S. v. Louisiana-Pacific Corp*., 682 F.Supp. 1141, 1146 (D. Colo. 1988). The plain language does not allow monitoring data gathered for a different purpose (such as state air quality planning) to be

[183] Exhibit 39, September 2009 Supplement, at 24. As described below, the applicant then went back and impermissibly reduced the emissions from the auxiliary boiler based on restrictions that are not required by the Permit.

substituted. U.S. EPA guidance also specifically notes that, as with the other regulated pollutants, preconstruction monitoring is the required baseline for $PM_{2.5}$. 73 Fed. Reg. 28,321 at 28,337. To the extent that any deviation may be legally allowed from this baseline, it must be fully supported in the record. This bar is particularly high with respect to $PM_{2.5}$, a pollutant with significant local impacts. KDAQ and LG&E fail to meet this requirement.

It is undisputed that no pre-construction monitoring was done for purposes of assessing NAAQS or PSD increment impacts from TC2, either in terms of PM_{10} or $PM_{2.5}$. Rather, KDAQ granted LG&E an exemption from the preconstruction monitoring requirements for PM_{10}, stating as follows:

> if existing air quality data is available that is representative of the air quality area in question an exemption may be granted. Based on the information contained in the air permit application, the applicant requested a waiver from ambient monitoring. The Division reviewed the air permit application and associated air dispersion modeling, determined the location of the existing monitors, quality of the data, and the data's correctness all met the requirements listed in the NSR guidance manual. Therefore, the applicant is exempted from the pre-construction ambient monitoring data requirements.

LG&E then relied on an existing $PM_{2.5}$ air quality monitor in Covington, Kentucky that was installed for purposes other than permitting the Trimble boiler.[185] This reliance violates the plain requirements of 42 U.S.C. § 7475(e) and 40 C.F.R. § 51.166(m).

In addition to falling short of the Act's mandate regarding preconstruction monitoring[186], the applicant and KDAQ fail to meet even U.S. EPA's and KDAQ's requirements for a waiver of preconstruction monitoring. To receive approval to use data from a regional site, an applicant

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[184] Exhibit 28, November 2009 RTC, at 17 and 20-21.

[185] *See* Exhibit 39, September 2009 Supplement, at 20-21.Petitioners note that if KDAQ insists on looking back to 2007 for the $PM_{2.5}$ surrogacy review as suggested by LG&E, *see id.* at 20, then it must use the background average for 2004-2006 or 2005-2007 from the Covington monitor for the NAAQS analysis. These background concentrations are in excess of the 2006 NAAQS – for example, 36.4 $\mu g/m^3$ for 2005-2007 (Exhibit 54, KDAQ, Ambient Air Monitoring Annual Report FY 2007, "$PM_{2.5}$ Criteria Pollutant Multi-Year Summary Report – 2007 24-hour 98th Percentile, 3 Year Average") – and so the permit should not have issued because the background in combination with the modeled impacts (which were feasible to determine back in 2007, as indicated by other states' policies requiring $PM_{2.5}$ NAAQS modeling described elsewhere in these comments) will cause or contribute to NAAQS violations.

[186] Petitioners do not concede that EPA has authority to waive site-specific monitoring, in light of the plain language of the Clean Air Act and 40 C.F.R. § 52.21(m), which require monitoring. However, even assuming that U.S. EPA can waive monitoring in specific, limited instances, it only does so to the extent that existing monitoring meets U.S. EPA's express minimum criteria. 40 CFR § 51.166 (m).

typically files a waiver request. A waiver request may only be granted if the applicant shows that valid, sufficient, and representative ambient air quality data already exist from regional monitoring stations.[187] This is a difficult showing to make, and would only be possible in very limited circumstances.[188]

U.S. EPA regulations make clear that "air quality data collected in the vicinity of the source" is to be used in the first instance to determine the background concentration for modeling purposes. 40 C.F.R. Part 51 Appendix W at 8.2.2(b). The modeling analysis "may" use data from a "regional site" only if there are no monitors in the vicinity of the source and the regional site is located in an area "impacted by similar natural and distant manmade sources." *Id.* at 8.2.2(c). Similarly, under U.S. EPA guidance, existing monitoring data from regional sites is only sufficient to supplant the need for site-specific monitoring when specific determinations are made as to the data's adequacy. These determinations include:

> (1) monitor location;
> (2) quality of the data; and
> (3) "currentness" of the data.[189]

See Hibbing Taconite, Slip Op. at 20 ("EPA allows substitution of existing representative data in lieu of having the source generate its own preconstruction monitoring data, *provided* these data meet the criteria in the 'Ambient Monitoring Guidelines for the Prevention of Significant Deterioration' (July, 1980)" (emphasis added)). If existing data are not "representative" based on these criteria, "the applicant *must* proceed to establish a site-specific monitoring network."[190] *See Louisiana Pacific*, 682 F.Supp. at 1153 (EPA refused to waive pre-construction monitoring required by 40 C.F.R. § 52.21(m)).

There is no determination by KDAQ in the record that the existing Covington monitor meets the "location" criteria and, indeed, it does not.[191] Pursuant to the applicable minimum

[187] Exhibit 48, NSR Manual, at C.18-19.
[188] *Id*.
[189] *Id.*,, at C.19, citing Exhibit 52. U.S. EPA, Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD), EPA-450/4-87-007 (May 1987) ("EPA PSD Monitoring Guidelines"). The Guidelines are incorporated into 40 C.F.R. Pt. 51 Appx W.
[190] *Id*.
[191] Petitioners note that the LG&E submission makes a short reference to conversations between Gary Revlett of E.ON U.S. and Sean Alteri of KDAQ during September 2009. Exhibit 39, September 2009 Supplement at 21, fnt. 25. These conversations are not in the record, and do not constitute the required waiver request determination.

standards for using monitoring data from existing ambient air quality monitors to determine baseline air quality for PSD permitting, the data must be representative of three specific areas:

> (1) the location(s) of maximum concentration increase from the proposed source or modification,
> (2) the location(s) of the maximum air pollutant concentration from existing sources, and
> (3) the location(s) of the maximum impact area, i.e., where the maximum pollutant concentration would hypothetically occur based on the combined effect of existing sources and the proposed new source or modification.[192]

The Covington monitoring data does not meet these requirements. $PM_{2.5}$ has a significant local component. Thus, some locations of maximum impact for TC2 will be relatively near to the source. LG&E and KDAQ do not explain why a monitor located in a far away urban area with no similarly large point sources of $PM_{2.5}$ is representative of air quality at a location where other major sources of $PM_{2.5}$ pollution currently operate at the same site. Nor do they explain how the maximum impact location from the source and other existing sources may be affected by the dual-ring nature of $PM_{2.5}$ impacts (i.e., existence of different maximums based on primary and secondary $PM_{2.5}$).

In addition, even if existing air quality monitors could be used to determine ambient air quality for permitting the Proposed Coal Plant under limited circumstances, the data must meet the same quality standards that on-site monitoring must meet. At a minimum, this includes:

> 1) continuous instrumentation monitoring
> 2) documented quality control, including calibration, zero and span checks, and control checks;
> 3) calibration and span gases should be working standards certified by comparison to Nation Bureau of Standards gaseous Standards Reference Material;
> 4) minimum 80% data recovery.

The record is silent on the quality of $PM_{2.5}$ data from the Covington monitor, other than a conclusory KDAQ statement as noted below.

The use of regional data from the existing $PM_{2.5}$ monitoring network is particularly inappropriate in general, and the record here contains insufficient justification addressing

[192] Exhibit 52, EPA PSD Monitoring Guidelines, at § 2.4.1; *see also Hibbing Taconite*, 2 E.A.D. at 850.

problems with the existing network. Inadequacies in the existing $PM_{2.5}$ network include the following:

> The $PM_{2.5}$ monitoring data record requires spatial interpolation between monitors for the determination of appropriate concentrations at the project's location.
>
> Use of existing monitored data will not increase the $PM_{2.5}$ monitoring data record to confirm or contradict conventional perceptions.
>
> The $PM_{2.5}$ monitoring data record assumes that local hot spots of high $PM_{2.5}$ concentrations do not exist or are already being monitored, which may not be true in all cases.
>
> When used with the impact modeling, separate concentrations of direct and precursor-formed PM are needed.

73 Fed. Reg. 28,321 at 28,337. Regional source data may only be allowed if the permitting authority makes a determination that the regional source data is representative, in light of these significant inadequacies in the existing $PM_{2.5}$ monitoring network. *See id*. Thus, in order to allow use of regional site data under U.S. EPA guidelines, KDAQ must make a case-by-case determination of the data's appropriateness that addresses these $PM_{2.5}$-specific issues. It did not so do here. LG&E and KDAQ did not conduct any spatial interpolation, account for potential hot spots (from, e.g., the existing facility), or assess precursor-formed $PM_{2.5}$ in addition to direct PM. Thus, reliance on data from a far away monitor is unsupported.

In response to Petitioners' comment on preconstruction monitoring, KDAQ cites Appendix W Section 8.2.2(c) and states only that "the ambient air monitoring data collected by the Division at the Covington station meets the quality assurance requirements for PSD air monitoring."[193] This statement is wholly unresponsive to Petitioners' comments and so the Administrator must object. KDAQ only concludes, without support, that the data meet the "quality assurance requirements for PSD." Even if this statement by itself were an adequate record establishing that the data were of the proper quality (which it is not, as KDAQ cites to no quality assurance information in the record), it does not address the specific issues with location and the inadequate $PM_{2.5}$ monitoring network raised by Petitioners. For example, KDAQ did not, as noted by Petitioners, perform the required special interpolation, accounting for hot spots, or assessment of precursor-formed PM.

The means exist now to monitor for $PM_{2.5}$, as demonstrated by existing monitoring technology and networks.[194] The Applicant's failure to monitor for $PM_{2.5}$ is an independent ground for invalidating the air quality analysis and thus objecting to the Permit. The likelihood of violating $PM_{2.5}$ standards had proper $PM_{2.5}$ monitoring been done further emphasizes that the Administrator must object due to air quality impacts. The Clean Air Act's dual requirements for preconstruction monitoring and analysis of $PM_{2.5}$ mandate the collection of on-site $PM_{2.5}$ monitoring data for the purposes of assessing the Proposed Coal Plant under these circumstances. No such monitoring was conducted, even though monitoring for $PM_{2.5}$ at the site was and is feasible.[195]

2. The preliminary modeling is based on artificially low $PM_{2.5}$ emissions for numerous non-boiler sources that are both unrealistic and not required by the Permit.

Rather than model worst-case – a.k.a. "maximum allowable" – emissions to ensure protection of air quality, LG&E modeled extremely low and unrealistic $PM_{2.5}$ emission levels for non-boiler sources. Emissions are not restricted to these levels by any limits or conditions in the proposed permit. Had LG&E properly modeled emission rates from non-boiler sources, the modeling would have shown violations of the $PM_{2.5}$ SILs, as only a 10 percent increase in the estimated emissions is necessary to demonstrate that modeled impacts are greater than the proposed 24-hour average SIL of 1.2 $\mu g/m^3$. In fact, properly modeled emissions from several non-boiler sources could themselves cause or contribute to exceedances of the NAAQS and increments. Only a factor of ten increase in the estimated emissions is necessary to demonstrate that modeled impacts are greater than the proposed PSD increment of 9 $\mu g/m^3$ and NAAQS of

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[193] Exhibit 28, November 2009 RTC, at 28.

[194] *See, e.g.*, Exhibit 54, KDAQ, Ambient Air Monitoring Final Report, FY 2007, at 18-19 (describing $PM_{2.5}$ monitoring).

[195] LG&E has not provided any technical reasons why onsite monitoring is infeasible at the Trimble County Station, and Petitioners were not able to identify any such reasons. LG&E also claims that it should be allowed to take into account the "expected impact of CAIR Program on Ambient $PM_{2.5}$ Levels." Exhibit 39, September 2009 Supplement, at 21. This assertion is highly improper, as it is not supported by any regulations or guidance regarding the required modeling demonstration. Moreover, the factual premises for claiming the benefit of $PM_{2.5}$ reductions from CAIR are faulty. LG&E cites 2005 modeling done by EPA to support the prior and rejected CAIR rule. However, more updated modeling done by EPA in conjunction with the NO_x Budget Trading Program shows that Kentucky will not see additional benefits from CAIR. *See* Exhibit , U.S. EPA, "NO_x Budget Trading Program: 2008 Highlights," at 4, Figure 4 (showing equivalent NO_x levels for 2008 and projected for 2010 based on implementation of CAIR).

35 ug/m^3, and as demonstrated below the maximum allowable emissions for several non-boiler sources alone would provide this increase. For these reasons, the Administrator must object.

An applicant must model worst-case emissions under enforceable permit conditions in order to demonstrate protection of air quality. In other words,

> For both NAAQS and PSD increment compliance demonstrations, the ***emissions rate*** for the proposed new source or modification must reflect the maximum allowable operating conditions as expressed by the federally enforceable ***emissions limit***, ***operating level***, and ***operating factor*** for each applicable pollutant and averaging time.[196]

Modeling the maximum allowable operating conditions is not merely a recommendation: without doing so, the applicant has failed to demonstrate that "allowable" emissions will not cause or contribute to an increment or NAAQS violation. *See* 401 KAR 51:017 Section 9. In order to confirm the emission rates used, "It is important that the applicant demonstrate that all modeled emission rates are consistent with the applicable permit conditions."[197] The requirement to model emissions under the maximum allowable operating conditions applies equally to all portions of the source or modification, e.g., to material handling and haul roads as well as to boilers.

Whether the modeled rates match the applicable permit conditions depends in large part on the enforceability of the terms and conditions. "Enforceable as a practical matter" is defined by Kentucky regulations as requiring inclusion of:

> (a) Technically accurate emission standards and the portions of the source that are subject to the standards;
> (b) A time period adequate to demonstrate compliance with the standards; and
> (c) The method the source will use to achieve and demonstrate compliance with the standards, including appropriate monitoring, recordkeeping, and reporting.

401 KAR 52:001 Sec. 1(31). Enforceable conditions must leave no doubt as to exactly what the source must do to comply.[198] The U.S. EPA has made it clear that permits contain vague and ambiguous terms are not enforceable.

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[196] Exhibit 48, NSR Manual, at C.45 (emphasis original).
[197] *See id.* .
[198] Exhibit 55, U.S. EPA Region 9, "Title V Permit Review Guidelines: Practical Enforceability," September 9, 1999 ("Region 9 Guidelines"), at III-55.

> Many Title V permits contain ambiguous phrases, such as "if necessary." For example: "If necessary, the permittee shall maintain monthly records…" The phrase "if necessary" should be removed altogether; the permit should specify exactly what is necessary. In this example, the permit should either precisely explain the situation that would necessitate monthly records, or simply require monthly records at all times. Ambiguous language hampers the source in its duty to independently assure compliance, and leaves legal requirements open to interpretation.[199]

In the words of U.S. EPA Region 9, "It is also important that permit conditions be unambiguous and do not contain language which may intentionally or unintentionally prevent enforcement."[200] Under these standards, numerous material handling terms and conditions in the Permit are unenforceable, and thus fail to be reflected in the modeling. Petitioners emphasize that to object, the Administrator need not herself determine what specific rate the modeling should have used for each source, but only that the modeling did not use rates that reflect the Permit conditions. As Petitioners show below, numerous of the key modeled rates are magnitudes of difference away from what would be expected under the Permit terms. Petitioners also show that correcting the rates based on the best estimate of the required controls would result in violations of air quality standards.

According to LG&E's preliminary analysis, non-boiler sources are the primary contributor to maximum $PM_{2.5}$ impacts from the proposed coal plant. The preliminary analysis identified the maximum predicted $PM_{2.5}$ 24-hour average concentration of 1.13 ug/m^3 at a location approximately 5 kilometers east of the Trimble Generating Station. The remainder of the operating scenarios had similarly high concentrations but these occurred at the facility boundary. Petitioners analyzed the relative contribution of sources to this maximum impact. While the two facility coal-fired boilers (TC1 and TC2) contributed 22% of the concentration, the remainder, 78%, was contributed by the materials handling and auxiliary support equipment including:

- Coal Pile A & B
- Coal Conveyors
- Sample House

[199] Exhibit 56, Letter from Bharat Mathur, EPA Region 5, to Robert F. Hodanbosi, Ohio EPA, Attachment, November 21, 2001.
[200] Exhibit 55, Region 9 Guidelines, at III-55; *see also id*. at 61 (listing language indicating enforceability problems and instructing use of specific language)

- North Haul Road
- Emergency Diesel Generator
- 12-Cell Mechanical Cooling Tower
- Natural Draft Cooling Tower
- Coal Barge Conveyors
- Coal Handling Collectors
- Auxiliary Boiler

The estimated and modeled $PM_{2.5}$ emissions from all of these non-boiler sources were extremely low. Furthermore, the levels for numerous non-boiler sources are not reflected in enforceable permit terms and conditions.

Petitioners conducted an analysis of the relative contribution of these sources to maximum modeled impacts by re-modeling the day with a total concentration of 1.12 $\mu g/m^3$ on the western facility boundary:

Table 2. $PM_{2.5}$ Contribution from Sources at Trimble Generating Station

Source Group	Concentration	Contribution*	Source Type	Description
PC90100	1.11829	100.00%		All Sources (PC)
CPNAB	0.49659	44.41%	Area	Coal Pile A & B
BOILER	0.25381	22.70%	Point	Coal Fired Boilers (2)
MHCC	0.23106	20.66%	Area	Coal Conveyors (37)
CV02	0.05522	4.94%	Point	Sample House
HRN1	0.05489	4.91%	Area	North Haul Road (40)
GEN	0.02714	2.43%	Point	Generator
LMCT	0.00767	0.69%	Point	12-Cell Mechanical Cooling Tower (12)
NDCT	0.00672	0.60%	Point	Natural Draft Cooling Tower
C12F	0.00666	0.60%	Volume	Coal Barge Conveyors (2)
CDC0234	0.00439	0.39%	Point	Coal Handling Collectors
AUX	0.00056	0.05%	Point	Auxiliary Boiler
FDC	0.00005	0.00%	Point	Fly Ash Collector, Bin Filter & Unloading
LD	0.00005	0.00%	Volume	Limestone Barge Unloading (3)
LV	0.00003	0.00%	Point	Limestone Transfer House & Prep Building (2)
WBV	0.00003	0.00%	Point	Waste Silo Bin Vent Filter
WDC	0.00002	0.00%	Point	Waste Silo Dust Collector
HLME01	0.00001	0.00%	Point	Hydrated Lime Bin Vent
LMVE	0.00001	0.00%	Point	Limestone Active Pile Enclosure (7)
PAC	0.00001	0.00%	Point	PAC Silo Bin Vent Filter

* Sum of individual percentages exceeds 100% due to rounding.

Table 2 shows that LG&E's modeling significantly underestimate emissions from multiple sources, which, if properly accounted for, would have contributed substantially larger impacts. These underestimated sources are shown above and discussed in the remainder of these comments. If LG&E had modeled the maximum allowable emissions from these sources as it is required to do, the impacts from the source alone would have justified a full NAAQS and increment analysis, and in some instances themselves would result in a violation of the NAAQS and increments.

KDAQ gives no response to any of Petitioners' comments on the flaws in these calculations and unenforceability of the assumed control efficiencies. Instead, as noted above, KDAQ merely repeats several times that it does not concur.[201] The Administrator must object because KDAQ failed to respond to Petitioners' comments, the record is otherwise inadequate to support KDAQ's determination, and Petitioners have demonstrated that TC2 will cause or contribute to air quality violations.

In response to a related comment on the inadequacy of the $PM_{2.5}$ BACT determination for material handling, KDAQ cites the Administrator's August 2009 Order and the Secretary's September 2007 Final Order as resolving Petitioners' material handling claims.[202] This citation is in error for several reasons. First, the Administrator's August 2009 Order on Petitioners' objections to the PM_{10} BACT analysis does not address material handling at all. The PM_{10} BACT issues in that Order related to the distinction between PM and PM_{10}, the main boiler, the cooling tower, installation of a DESP, and increases in PM/PM10 from decreases in NO_x and SO_2 at Unit 1.[203]

Second, the Secretary's Order similarly does not go to the question at hand and was decided under a significantly different procedural posture. The Hearing Officer's order which

[201] Exhibit 28, November 2009 RTC, at 35-37.
[202] *Id*., at 16.
[203] Exhibit 8, August 2009 Order, at 32-41. To the extent that Petitioners may be viewed as having raised PM/PM10 issues related to "support operations" including material handling in their March 2006 petition, *see* August Order at 31-32, the Administrator's decision in her August 2009 Order should not be applied as barring the distinct $PM_{2.5}$ modeling and material handling issues raised here. First, $PM_{2.5}$ surrogacy was not directly at issue in that claim. Second, as set forth elsewhere in this petition, subsequent case law and orders have clarified the requirements with regards to both surrogacy and enforceability. Third, the petition here includes significant new factual information and analysis not included in the previous petition. Petitioners submitted this information in comments to KDAQ within the required public comment period on $PM_{2.5}$, giving the agency sufficient opportunity to respond to Petitioners' comments. Thus, the current petition provides significantly stronger bases both procedurally and substantively for deciding this new issue in Petitioners' favor.

was the underlying basis for the Secretary's Order addressed material handling emissions as they related to compliance with the PM_{10} SILs and NAAQS. There, the Hearing Officer concluded that while Petitioners' specific allegations had merit in that they showed the applicant had used questionable modeling assumptions, the impact on the PM_{10} SIL and NAAQS did not change the ultimate conclusion with respect to PM_{10} SILs and PM_{10} NAAQS compliance.[204] The Hearing Officer thus ultimately found that Petitioners had not met their burden on summary judgment. This decision therefore has little import for deciding the current issue, which is whether Petitioners have demonstrated that the preliminary modeling exercise fails to adequately show protection of the $PM_{2.5}$ NAAQS and increment. As the $PM_{2.5}$ NAAQS is significantly lower than the PM_{10} NAAQS, any changes in modeling assumptions will have relatively greater impact on the outcome. Petitioners' demonstration here, in contrast to the PM_{10} issue in the administrative proceeding, has shown that correcting the inappropriate assumptions to match what is actually required by the Permit would result in exceedances of the $PM_{2.5}$ SILs and $PM_{2.5}$ NAAQS (and so increment) violations.

Setting aside these clear differences in the issues previously decided from those posed here, and with respect to whether the issue has already been decided in a manner that bars consideration in this petition, the D.C. Circuit in August 2008 issued its opinion in *Sierra Club v. EPA*. 536 F.3d 673. This decision clarified that Title V requires an operating permit to include testing, monitoring and reporting requirements sufficient to ensure continuous compliance with permit limits. *Id.* at 678 ("Title V requires that '[e]very one' of the permits issued by permitting authorities include adequate monitoring requirements"). Where the existing requirements are inadequate to do so, the state must supplement these requirements. *See id.* at 678-680. The Title V petitions that were the basis for the Administrator's August 2009 Order were required to be submitted by April 2008, prior to the court's decision in *Sierra Club*. Petitioners now are submitting a more detailed petition based on this clarification of the law on enforceability and compliance measures, as well as the Administrator's Order on PM surrogacy, reflecting their

[204] *See* Exhibit 57, Excerpt, EPPC, Hearing Officer's Report and Recommended Secretary's Order, June 13, 2007, at 158-160 ("what the Petitioners did not point out is that while the numbers and assumptions made by the retained experts were different and in some cases much higher, the overall conclusion they uniformly reached was that the adjusted numbers for the PM emissions would not exceed the SIL or have any substantive impact on the modeling results. *See* Campbell Vol. 1 at 62. The revised number, if you will, was higher (arguably more conservative) than the numbers calculated by BV, but even this number reflected the fact that the *overall integrity (credibility) of the Permit with respect to its impact on the SIL of the permit was not in jeopardy with regard to this issue*." (emphasis added)).

timely comments to KDAQ over $PM_{2.5}$ modeling and material handling. The present petition identifies the ways in which insufficient material handling permit terms and conditions fail to ensure compliance with the allowed emissions assumed in air quality modeling, and thus to ensure protection of the $PM_{2.5}$ NAAQS.

If the applicant claims that the Permit requires the low assumed control efficiencies, *Sierra Club* means that the actual terms and conditions in the Permit must be enforceable and otherwise adequate to ensure such levels of control. They are not. The applicant therefore must model $PM_{2.5}$ emissions based on what the Permit as written allows. It has not.[205] If it did model the allowed emissions, the analysis would show violations of the $PM_{2.5}$ NAAQS and increments. KDAQ failed entirely to respond to Petitioners comments on these shortcomings. For these reasons, the Administrator must object.

a. Emissions from coal piles are significantly underestimated.

Emissions for the coal piles used in the modeling fail to reflect maximum allowable emissions under the Permit and thus to protect short-term air quality. LG&E provided no new emission calculations in 2009. A review of the 2004 coal pile emission calculations shows that annual emissions are calculated for wind erosion and then averaged over the entire year. This use of annual average emissions fails to reflect maximum allowable emissions during higher wind conditions. The 2004 wind erosion calculations include maximum daily emissions of 188.01 lbs/day or 7.83 lbs/hr. This figure is 113 times the annual average rate of 0.069 lbs/hr used in the $PM_{2.5}$ demonstration, and must be used to assess the 24-hour $PM_{2.5}$ impact. The predicted impact from coal piles alone on this day of maximum wind erosion emissions would increase from 0.49 $\mu g/m^3$ to **56 $\mu g/m^3$**. This figure is well above the $PM_{2.5}$ SIL, PSD increment, and NAAQS.

In addition, the Permit lacks terms and conditions that will limit the short-term maximum allowable emissions to the assumed low level. The operating limitations for the coal piles include only the vague requirement that "reasonable precautions shall be taken to prevent

[205] The modeling issues included in this Petition are based on the following documents and files: Exhibit 40, full copy of 2004 Application Appendix E, "Performance Data and Emissions Calculations"; and Exhibits 58a to 58c, files entitled "TC2 AERMET" and "TC2 AERMET Files"; and Exhibits 59a to 59c, files entitled "TC2 AERMOD" and "TC2 AERMOD Files."

particulate matter from becoming airborne."[206] The term "reasonable" is unenforceably vague. The condition goes on to list several methods that only are required "when applicable," without any guide for determining how applicability is to be determined.[207] Other operating conditions include a prohibition on discharge of visible fugitive dust emissions beyond the property line and application of compaction and water suppression control methods.[208] No numeric emission limit is established.[209] In terms of testing and monitoring, Method 22 is required only "to determine opacity *upon request by the Division*" (emphasis added), and LG&E is required only to "perform qualitative visual observations on a weekly basis."[210] None of these vague terms ensures continuous compliance with the assumed extremely low level of emissions from coal piles, and indeed KDAQ and LG&E have made no attempt to show that they do.

b. Emissions from coal handling dust collectors are underestimated by several degrees of magnitude.

LG&E substantially underestimates maximum allowable emissions from the coal handling dust collectors by using unrealistic and infeasible emission rates. The coal handling dust collectors (modeled sources CDC02, 03 and 04) include the Active Coal Vent Dust Collector, Coal Crusher House Rotoclone, and Coal Plant Convey Room. LG&E models these sources as point sources with an actual exhaust flow rate. The flow and emission rates were combined to calculate the modeled outlet concentrations ranging from 0.002 to 0.0000002 grains per cubic foot. These rates are difficult to achieve or are infeasible for dust collectors.

A review of the last 3 years of BACT determinations in the RACT/BACT Clearinghouse shows that baghouses used to control dust from coal handling operations (i.e. Process Code - 90.011 - Coal Handling / Processing / Preparation / Cleaning) have PM emission limits ranging from 0.0009 to 0.01 gr/dscf with most at 0.005 gr/dscf. The table below shows the $PM_{2.5}$ emissions estimated using an 0.005 gr/acf as an achievable outlet $PM_{2.5}$ concentration for the three coal handling baghouses shown in Table A-4 of the October 2009 Supplement.[211] The

[206] Exhibit 1, Permit, Con. 1(a), at 45.
[207] *See id*.
[208] *Id*. at Cond. 1(b) and 1(d).
[209] *Id.*, at 45.
[210] *Id.*, Cond. 3 and 4, at 46.
[211] Exhibit 17, Letter and attachments from Gary Revlett, Air Manager, Environmental Affairs Dept., LG&E, to Sean Alteri, Assistant Director, KDAQ, Re: Supplemental Submission in Support of PM10 as a PM2.5 Surrogate for Trimble County Unit 2 Project, October 12, 2009 ("October 2009 Supplement"), Attachment A, at 5.

ratio between an achievable rate based on 0.005 gr/acf and the modeled rates is 148 to 177,719 times.

Table 3. Modeled vs. Achievable $PM_{2.5}$ Emission Rates From Dust Collectors.

Model ID From Table A-4	Model Description	Modeled $PM_{2.5}$ Rate (g/sec)	Achievable $PM_{2.5}$ Rate at 0.005 gr/acf (g/sec)	Ratio of Achievable to Modeled Rate
CDC02	Active Coal U/G Dust Collector	1.83E-06	0.107	58700
CDC03	Coal Crusher House Rotoclone	0.001216	0.180	148
CDC04	Coal Plant Conveyor Room	9.16E-07	0.163	177719

Increasing the outlet emissions to a more reasonable outlet concentration (i.e. 0.005 gr/acf) would increase the emissions and modeled impacts by several degrees of magnitude. This more reasonable and achievable outlet concentration would increase the impacts from these operations alone so that the modeling is likely to show exceedances of the SIL, PSD increment, and NAAQS for $PM_{2.5}$.

Again, the modeled emission rates for the dust collectors do not reflect the maximum allowable emissions under the terms of the Permit. The Permit includes a 20 percent opacity limit on any "coal processing and conveying equipment, coal storage system, or transfer and loading system processing coal,"[212] measured only through weekly visual observations and Method 9 at the request of the Division,[213] and a requirement that the dust collectors "exhibit a particulate design control efficiency of at least 99%."[214] None of these terms is sufficient to ensure continuous compliance with the extremely low modeled emission rates. 20 percent opacity, and the visible emissions it represents, are significantly higher than the modeled emission rates. In addition, the lax testing and monitoring requirements neither ensure compliance with short-term air quality requirements (weekly observations cannot account for possible daily exceedances), nor enable the public to determine compliance (because only the Division can request Method 9 testing). A 99 percent design control efficiency is doubtful given the experience with other dust collectors reported in the RACT/BACT Clearinghouse. In

[212] Exhibit 1, Permit, Cond. 2(a), at 50.
[213] *Id.* at Cond. 3 and 4.
[214] *Id*. at Cond. 2(b).

addition, the proposed revised permit lacks any testing and monitoring sufficient to ensure that the dust collectors actually achieve this control efficiency.

c. Emissions from coal conveyors rely on an unsupported emission factor and an exceedingly high control efficiency that is not required by the Permit.

LG&E models 37 separate coal conveyor sources (Model Source MHCC) with an emission rate ranging from 7.4743 x 10-7 to 4.0455 x 10-6 g/s/m^2. Supporting emission calculations were not provided with the $PM_{2.5}$ modeling analysis. Based on the supporting calculations in Appendix E of the 2004 permit application, these coal conveyor emission estimates are based on a Texas Natural Resource Conservation Commission (now Texas on Environmental Quality) factor for stone crushing plants of 0.0002 lbs/ton per 300 ft of conveyor, and a control efficiency of 90% due to dust suppression. The record does not explain the basis for the use of the Texas emission factor rather than EPA emission factors. KDAQ and LG&E must justify using an emission factor developed for sources of types other than the one under consideration (here, stone crushing instead of coal).[215] Nor is the basis for the high 90% control explained. If the source of emissions from the conveyors is wind erosion, then the EPA method for wind erosion should be used. Just like coal pile wind erosion (and regardless of source of the wind erosion emission factor), days of conveyor emissions due to high wind speeds should be taken into account.

Moreover, the Permit does not incorporate limits that ensure a 90 percent control efficiency for conveyors. While the proposed revised permit mentions "enclosures, water suppression, low drops, and baghouse filters, hoods" under "Control Equipment" for the conveyors, this language is under the heading "Description" and thus is not an enforceable permit limit or condition. Outside of this description, the proposed revised permit only appears to incorporate a 20 percent opacity limit on the coal conveyors.[216] Testing for compliance with this limit is only "upon request by the Division."[217] This limit does not constitute an enforceable limit ensuring continuous compliance with 90 percent control of PM. As noted above, the

[215] *See* Exhibit 19, BP Title V Order, at 11 (granting petition where agency failed to address why emission factors developed based on one type of crude were appropriate for estimating emissions from processing another type of crude).
[216] *See* Exhibit 1, Permit, Cond. 2(a), at 50.

proposed revised permit includes operating limits requiring dust collectors on the U/R Reclaim Vault and Boiler unit 2 Coal Silo that must meet a design control efficiency of at least 99%.[218] However, these operating and emission limitations only appear at most to affect the drop to Conveyor E2, as well as Conveyors F1&2.[219] Thus, the Permit leaves numerous conveyors without terms and conditions necessary to ensure the high assumed control efficiency.

d. Emissions from the sample houses are unusually low and not ensured by the Permit.

LG&E models 6 sample houses (Model Source CV and CRC) as point sources with a 1 meter diameter stack and negligible exit velocity (similar to how one would model a stack with a rainhat obstruction). The emission rates varied from 4.58 x 10-4 to 9.162 x 10-4 gm/sec, or 0.0036 to 0.0073 lbs/hr. Supporting emission calculations were not provided with $PM_{2.5}$ modeling analysis. These do not appear to be typical stack exhausted operations using a fan-assisted exhaust, but were simply modeled as point sources. These are extremely low emission rates. This is shown by the November 30, 2004 emission calculations that estimate the emissions from Conveyor Transfer to be 0.057 lbs/hr. The basis for the estimate is not clear. LG&E and KDAQ fail to provide an explanation of these exceptionally low emission rates. In addition, Petitioners were unable to identify any terms and conditions in the Permit that apply to the sample houses. The preliminary modeling analysis therefore fails to include maximum allowable emissions from the sample houses.

e. Emissions are based on unjustifiably low silt and high moisture values.

The November 30, 2004 emission calculations show that Coal Pile A and B emissions include emissions from bulldozer activity, a conveyor drop, and wind erosion. Emissions from bulldozer activity are underestimated and unsupported based on the use of a low mean silt content from AP-42. In estimating these emissions, the bulldozer activity emission factor considers silt content and moisture content. LG&E used 2.2% silt content from AP-42 Table 13.2.4-1 for Typical Silt and Moisture Content of Materials at Various Industries. This figure is

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[217] *Id.* at Cond. 3.
[218] *Id*.., Cond. 1(a) and (b), and Cond. 2(b), at 49-50.
[219] *Id.* at 47 ("Control Equipment.")

the mean for Coal Fired Power Plants, with a range from 0.6% to 4.8%.[220] The emission factor for the bulldozer activity itself was taken from the Western Coal Mining AP-42 Section 11.9, where the recommended silt content range for this factor is 6.0% to 11.3%, with an average of 8.6%. Nowhere in the record does LG&E justify using the low silt value of 2.2%. Moreover, LG&E's calculation does not account for fly ash, which has a significantly higher silt content than does coal: a mean of 80% instead of 2.2%.[221] As Trimble is an existing facility, LG&E should have collected site-specific silt information in keeping with AP-42 recommended procedure, as described below. The bulldozer activity emissions must account for activity at each type of storage pile, which includes fly ash. Similarly unsupported inputs were used for moisture content. LG&E must recalculate these emissions using onsite silt and moisture values collected from the existing facility.

The emissions estimates for haul roads also are underestimated due to use of an exceedingly low and unjustified silt value. Trucks will be used to export fly ash and bottom ash. Trucks suspend dust on the haul road surface and shoulders of the road, creating fugitive $PM_{2.5}$ emissions. These fugitive $PM_{2.5}$ emissions contribute significantly to modeled $PM_{2.5}$ impacts.

Dust emissions from paved roads vary with the amount of silt on the road surface, referred to as "silt loading." The haul road PM_{10} emissions assume a background silt loading value for limited access urban roadways of 0.015 g/m^2, taken from AP-42, Table 13.2.1-3.[222] However, the paved roads of interest here are within the boundary of an existing industrial site and are heavily traveled. Thus, they are industrial roadways. Silt loading values of industrial roads are much higher, vary greatly, and are reported elsewhere in the same chapter of AP-42.

AP-42 specifically states that the use of a tabulated default value for silt loading results in only an order-of-magnitude estimate of the emission factor for fugitive dust from truck traffic on paved roads, and, therefore, highly recommends the collection and use of site-specific silt loading data. KDAQ thus should have required that LG&E collect site-specific silt data from its existing facility. Where a source cannot obtain site-specific data, AP-42 recommends the selection of an appropriate mean value from a table listing silt loadings that were experimentally determined for a variety of industrial roads but cautions that the quality rating of the equation

[220] *See* Exhibit 60, AP-42 Section 13.2.4, "Aggregate Handling & Storage Piles."
[221] *See id*. at Table 13.2.4-1.
[222] *See* Exhibit 61, AP-42 Section 13.2.1, "Paved Roads."

decreases by 2 levels. The industrial roadway table provides a range of mean silt loading values from 7.4 to 292 g/m^2.[223]

The modeled haul road $PM_{2.5}$ emissions are based on a silt loading of 0.015 g/m^2, thereby considerably underestimating $PM_{2.5}$ emissions from paved roads within the facility. If the lower end of the AP-42 industrial roadway range is assumed, the $PM_{2.5}$ emissions from paved roads increases by over a factor of 50. If the upper end of the industrial road range of 292 g/m^2 is used, the $PM_{2.5}$ emissions increase by over a factor of 600. Thus, fugitive haul road $PM_{2.5}$ emissions included in the $PM_{2.5}$ air quality modeling are severely underestimated.

3. In order to rely on modeling the exceedingly low and unsupported emission rates for material handling and other fugitive emissions, the Permit must include enforceable terms and conditions ensuring these control efficiencies.

With regards to material handling and fugitive emissions, terms and conditions in the proposed revised permit currently consist of a mishmash of unenforceable descriptive information, inadequate emission limits that do not match assumed control efficiencies, and other vague quasi-requirements. Proposed visible emission limits such as 20% opacity for the coal handling operations or the "no visible emissions at the property line" for the coal storage piles will not assure the estimated and modeled emission rates are achieved.

The Permit thus must include significant additional terms and conditions. First, each material handling and fugitive source must be clearly identified in the Permit. Corresponding emission limits, control requirements (including equipment, design, operation, and work practice standards) and compliance demonstration methods for the non-boiler emission sources must be established in the permit to limit actual emissions to the predicted and modeled low emission rates. Specific examples are as follows:

- *Sample houses*. Include design and operational limits, as well as incorporate compliance demonstration methods for these houses, including potential compliance tests or daily visible emission readings.
- *Coal handling dust collectors*. Include emission limitations (in lbs/hour) and compliance stack test requirements for each of these operations.

[223] *Id*. at Table 13.2.1-4.

- *Conveyors*. Include descriptive control measures as enforceable design limits, and include emission limits from each piece of equipment with accompanying compliance testing.
- *Sources modeled as point sources exhausting through stacks*. Include the modeled emissions as an express emission limit. Compliance with these limits should be demonstrated using EPA stack test procedures. These include the 25 operations summarized in Table A-4 of the October 2009 statement.
- *Sources estimated using silt values*. Collection of on-site silt data and recalculation of emissions to verify the modeled emission rates.
- *All fugitive sources*. Similar to the limit already proposed for "any building enclosing any transfer point on a conveyor belt", a 0% opacity limit should be established for all fugitive sources. Compliance with this visible emission limitation should be demonstrated on a daily basis using Method 22. As already proposed for stacks associated with fossil fuel handling operations, if visible emissions are seen, the opacity of emissions shall be determined using Method 9.

Without the required enforceable limits ensuring the modeled low emission rates, the Permit does not ensure protection of the $PM_{2.5}$ NAAQS and increments, and so the Administrator must object.

4. The modeling of short-term emissions is based on limited use of the auxiliary boiler, although the Permit lacks such a constraint.

Rather than model short-term emissions from the auxiliary boiler based on operating conditions included in the Permit, LG&E used a limited operating scenario based on assertions about expected operations. This assumption does not comply with the requirement to model maximum allowable emissions under enforceable permit limits.

The Permit includes two operating limitations on the auxiliary boiler. First, the auxiliary boiler "shall only operate during periods when Emission Unit 1 or Emission Unit 31 are operating at less than 50 percent load."[224] Second, the auxiliary boiler is limited to 2,000 hours of operation per year.[225] The permit defines a "shutdown event" as "the cessation of operation of the PC boiler, beginning with the generator going below 375 MW…,"[226] i.e., as including operation below 50 percent load. Thus, by their terms, the auxiliary boiler limits do not impose any restriction on auxiliary boiler operations during shutdown or malfunction of TC2 beyond the 2,000 hour yearly restriction.

[224] Exhibit 1, Permit, Operating Limitations, at 39.
[225] *Id.*

However, LG&E reduced the emissions from the auxiliary boiler from its original estimate in its subsequent October 2009 $PM_{2.5}$ modeling submission to KDAQ. LG&E ostensibly did so to reduce its preliminary modeled impact because, as noted above, the original September 2009 modeling showed an exceedance of the option three $PM_{2.5}$ significant impact level and would have justified a full NAAQS analysis.[227] In its October supplement, LG&E modeled emissions based on an operating rate of 4 hours instead of the previously modeled 24 hours, a reduction of over 80 percent.[228] LG&E made this change to "reflect the anticipated situation where in the Auxiliary Boiler would only be used to satisfy the initial steam requirements during a startup of Unit 2" and because "[t]he Auxiliary Boiler is not expected to be used during a shutdown or emergencies/malfunctions."[229]

Anticipated situations and expectations are not appropriate bases for limiting modeled emissions from a unit. Auxiliary boiler operating limitations used in modeling must be included as enforceable permit limits. Without these limits, LG&E must retain the assumption of 24 hour operation of the auxiliary boiler in its modeling of short-term impacts. Because it did not, KDAQ and LG&E fail to show protection of $PM_{2.5}$ air quality.

5. The demonstration omits secondary $PM_{2.5}$ impacts.

LG&E erroneously concludes that it can essentially ignore the contribution of precursors to $PM_{2.5}$ impacts from the source because there are complications with modeling secondary atmospheric reactions.[230] Regardless of whether it is possible to accurately model these impacts at the current time (LG&E has not adequately established that it is not, due to the existence and development of models like CAMx and CMAQ[231]), secondary $PM_{2.5}$ can only add to the impacts

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[226] *Id*., Cond. 2(r), at 31.
[227] *See* Exhibit 39, September 2009 Supplement, at 24.
[228] *See* Exhibit 17, October 2009 Supplement, at 4.
[229] *Id.*
[230] *See* Exhibit 39, September 2009 Supplement, at 25.
[231] *See, e.g.*, Exhibit 62, Kim, B.U. et al., Georgia Environmental Protection Division – Air Protection Branch, "PSD Permit Modeling with AERMOD and CAMx," 2009 Region 4 Modelers Workshop, March 18, 2009 ("CAMx Modeling") and Exhibit 63, Baker, K. and Timin, B., U.S. EPA, "$PM_{2.5}$ Apportionment Comparison of CMAQ and CAMx," Presented at the 7th Annual Community Modeling & Analysis System (CMAS) Conference. Petitioners also note that NESCAUM, a nonprofit association of air quality agencies in the Northeast whose board is composed of the air directors for the six New England states, New Jersey and New York, has recommended the use of CALPUFF as a screening tool for sulfate and nitrate formation in Class I and Class II increment analyses, SILs, and NAAQS analyses for $PM_{2.5}$. *See* Exhibit 64, Letter from Arthur N. Marin, Executive Director, NESCAUM, to Air and Radiation Docket and Information Center, Docket ID No. EPA-HQ-OAR-2006-0605, "NESCAUM Comments

from TC2. First, TC2 will result in net increases in NO_x and SO_2, albeit relatively small ones.[232] Second, secondary $PM_{2.5}$ is expected to overlap with primary $PM_{2.5}$ impacts[233], and secondary $PM_{2.5}$ accounts for significant portions of both annual and daily $PM_{2.5}$ impacts[234]. This additive effect further emphasizes the need for both a full cumulative impact assessment based on onsite preconstruction monitoring and postconstruction monitoring to ensure protection of the NAAQS.

v. KDAQ Fails to Explain Why Postconstruction Monitoring is Not Necessary to Ensure Protection of the NAAQS.

The Administrator must object because KDAQ failed to respond to Petitioners' comments raising the need for postconstruction monitoring to ensure protection of the NAAQS. Petitioners in their comments noted that KDAQ must require postconstruction $PM_{2.5}$ monitoring as a condition of the Permit due to the current ability to monitor for $PM_{2.5}$, the need for assessment of local hot spots, and the likelihood of the $PM_{2.5}$ NAAQS being revised downwards. *See* 401 KAR 51:107 Section 11(2).[235] Petitioners also raised that postconstruction monitoring is at minimum needed to address the significant uncertainties in LG&E's emissions figures and modeling procedures given the impacts under corrected modeling, which are described above.[236]

$PM_{2.5}$ on-site monitoring is possible now, as exhibited by Kentucky's network of monitoring stations. Also as set forth elsewhere in these comments, $PM_{2.5}$ is a pollutant with significant local impacts, such that hot spots may arise where air quality is at harmful levels. Such monitoring is especially important where, as here, the new unit will be located at a facility consisting of large existing units with similar maximum impact dispersion profiles for $PM_{2.5}$. It would also increase the state's databank of $PM_{2.5}$ information.

Perhaps most importantly, postconstruction monitoring is especially key for $PM_{2.5}$, as the 2006 annual NAAQS was recently remanded to U.S. EPA for reevaluation in a process that is likely to reduce the annual NAAQS and may reduce the 24-hour NAAQS as well. *See American*

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on EPA's Proposed Rule: Prevention of Significant Deterioration (PSD) for Particulate Matter Less Than 2.5 Micrometers ($PM_{2.5}$)–Increments, Significant Impact Levels (SILs) and Significant Monitoring Concentration (SMC). 72 Federal Register 54111, September 21, 2007," December 13, 2007, at 3.

[232] Exhibit 39, September 2009 Supplement, at 25.

[233] *See, e.g.*, Exhibit 51, Levy Study, at Figures A-C.

[234] *See* Exhibit 62, CAMx Modeling, at slides 22-23.

[235] *See also* Exhibit 52, EPA PSD Monitoring Guidelines, at 4-5. .

[236] For example, it can act as a backstop for the extremely low and unsupported, non-site-specific silt values used by LG&E.

Farm Bureau, 559 F.3d at 519-526 and 528. The applicant should not unduly benefit from U.S. EPA's failure to pass a sufficiently protective standard. Under these circumstances where the air quality standard has been remanded and is likely to be made more stringent, postconstruction monitoring is necessary to enable the state to determine whether the source is in fact causing or contributing to a violation of health-protective air quality standards upon operation.

Further grounds for requiring postconstruction monitoring are provided by LG&E's failure to adjust background levels for factors associated with $PM_{2.5}$'s local impacts, as well as the significant uncertainties and errors in LG&E's assumptions used in the preliminary modeling assessment. LG&E and KDAQ made no attempt to adjust background levels taken from distant monitors for important local considerations, including but not limited to specific sources and secondary impacts, in violation of EPA guidance. *See* 73 Fed. Reg. 28,321 at 28,337 (inadequacies in the existing $PM_{2.5}$ monitoring network require consideration of and adjustment for the inadequacies). Other errors and uncertainties in the preliminary analysis include, but are not limited to:

- Improper lowballing of maximum allowable fugitive emissions based on unsupported/inappropriate emission factors and assumed control efficiencies that are not required by the permit;
- Failure to estimate accurately maximum allowable emissions for non-boiler point sources.

LG&E used the preliminary analysis to avoid a full impact analysis, i.e., to avoid assessing the impact of the new unit in combination with the existing 514 MW unit and other significant onsite and nearby sources of $PM_{2.5}$. This attempt at bypassing a full air quality modeling analysis is improper without at minimum requiring postconstruction monitoring. To the extent that KDAQ on remand relies on LG&E's faulty preliminary modeling analysis, the agency must at minimum mandate postconstruction monitoring as a necessary measure to ensure protection of air quality.

In attempting to respond to these comments, KDAQ provides only a conclusory statement without addressing the substance of Petitioners' comments about the need for postconstruction monitoring given the circumstances of this case. Rather than actually responding, KDAQ acknowledges its authority to require postconstruction monitoring, cited U.S. EPA's Ambient Monitoring Guidance for PSD, and provides a conclusory statement that "[a]fter reviewing all submitted information, the Division determines that the projects [sic] emissions'

impact will not cause or contribute to a violation of the $PM_{2.5}$ NAAQS."[237] This statement is non-responsive for several reasons.

First, KDAQ takes the Guidance statement out of context. KDAQ's response ignores that following the quoted statement that "EPA… in general will not require postconstruction monitoring," the guidance goes on to describe circumstances in which postconstruction monitoring *is* warranted. These circumstances include, as explained by Petitioners, scenarios where the predicted impact is very close to the NAAQS and/or where "uncertainties in source or emission characteristics result in significant uncertainties about the projected impact of the source or modification."[238] If KDAQ asserts, as it does to avoid a direct $PM_{2.5}$ modeling requirement, that there are uncertainties in the emissions and modeling capabilities for $PM_{2.5}$, it should require postconstruction monitoring. KDAQ must explain why it did not on the record. Second, KDAQ's statement that it reviewed "all submitted information" and found no threats to the $PM_{2.5}$ NAAQS is a conclusion and not an analysis. Petitioners have shown why there is good reason to be concerned with threats to air quality from $PM_{2.5}$ in this case, in terms of the specific uncertainties and errors involved in LG&E's preliminary modeling analysis, special characteristics of $PM_{2.5}$ and the monitoring network, and the likelihood of lower $PM_{2.5}$ NAAQS. KDAQ must provide a reasoned explanation why the submitted information adequately ensures protection of NAAQS in the face of this evidence. It has not. For these reasons, the Administrator must object.

VI. CONCLUSION

For the above reasons, the Permit fails to comply with all applicable requirements, and the Administrator must object. Petitioners have demonstrated that TC2 was issued pursuant to a faulty notice, continues to fail to meet MACT requirements, does not include the required $PM_{2.5}$ BACT limits, and will cause or contribute to violations of the $PM_{2.5}$ NAAQS. As KDAQ has had its chance and has shown that it cannot support its determinations through developing the record, the Administrator must direct the agency to correct its errors by revising or revoking the Permit.

To this end, the Administrator must include in her order specific terms and conditions necessary to remedy the inadequacies described in this petition. *See* 40 C.F.R. § 70.8(c)(2) ("Any

[237] Exhibit 28, November 2009 RTC, at 25.
[238] Exhibit 52, EPA PSD Monitoring Guidelines at 4-5.

EPA objection under paragraph (c)(1) of this section *shall* include… a description of the *terms and conditions that the permit must include* to respond to the objections" (emphasis added)). Petitioners urge the Administrator to require KDAQ to include the following terms and conditions, as well as any others that she deems necessary and appropriate to ensure compliance with all applicable requirements:

(1) Case-by-case MACT limits supported by monitoring, recordkeeping and reporting requirements adequate to ensure continuous compliance, or in the alternative enforceable limits on HAPs PTE, supported by proper and complete PTE calculations, sufficient to actually hold the source below the minor source threshold, in keeping with the Big Stone objection;
(2) $PM_{2.5}$-specific emission limits, operating/work practice standards and compliance measures sufficient to meet $PM_{2.5}$ BACT requirements, including full use of PM2.5-specific control options including, but not limited to, clean fuels, a DESP, stringent limits on precursors; and
(3) $PM_{2.5}$-specific emission limits, operating/work practice standards and compliance measures, as well as preconstruction and postconstruction onsite monitoring, sufficient to protect the $PM_{2.5}$ NAAQS and increment (especially with respect to material handling operations) based on a complete air quality modeling analysis for $PM_{2.5}$.

In conjunction with her order, the Administrator should reopen the Permit, as Petitioners have demonstrated that the Permit contains material mistakes (omission of required terms and conditions, as well as erroneous surrogacy and HAPs minor source determinations, based on faulty analyses); inaccurate statements were made in setting the limits, terms and conditions (same); and revision or revocation is necessary to assure compliance with applicable requirements. *See* 40 C.F.R. § 70.7(f) and (g).

Respectfully submitted,

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On behalf of:
SAVE THE VALLEY
SIERRA CLUB
VALLEY WATCH

DATED: March 19, 2010

BEFORE THE ADMINISTRATOR
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

In the Matter of the Final Operating Permit for:

LOUISVILLE GAS & ELECTRIC to operate
the proposed source located at 487 Com Creek,
Bedford, Trimble County, Kentucky

Permit No. V-08-001 (R2)
Source J.D. No. 21-223-00002

Proposed by the Commonwealth of Kentucky,
Environmental and Public Protection Cabinet

CERTIFICATE OF SERVICE

I make this statement under oath and based on personal knowledge. On this day, March 19th, 2010, I caused to be served upon the following persons a copy of ELPC's Petition to the United States Environmental Protection Agency In the Matter Of The Final Revised Title V Operating Permit For The Louisville Gas & Electric Generating Station Located at 487 Com Creek, Bedford, Trimble County, Kentucky, via electronic mail and U.S. Post.

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Meleah Geertsma
Environmental Law and Policy Center

Signed and sworn to before me
This 19th day of March, 2010

Fidelia Gaines-Mitchell
Notary Public, State of Illinois

OFFICIAL SEAL
FIDELIA GAINES-MITCHELL
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:08/28/13