

BEFORE THE ADMINISTRATOR  
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

|                                 |   |                        |
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| IN THE MATTER OF                | ) |                        |
|                                 | ) |                        |
| KENTUCKY SYNGAS, LLC            | ) |                        |
|                                 | ) | PETITION NO. IV-2010-9 |
| MUHLENBERG COUNTY, KENTUCKY     | ) |                        |
| TITLE V/PSD AIR QUALITY PERMIT  | ) |                        |
| No. V-09-001                    | ) |                        |
|                                 | ) |                        |
| ISSUED BY THE KENTUCKY DIVISION | ) |                        |
| FOR AIR QUALITY                 | ) |                        |
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|                                 | ) |                        |

**ORDER GRANTING IN PART AND DENYING IN PART PETITION FOR  
OBJECTION TO PERMIT**

On October 27, 2010, the United States Environmental Protection Agency (EPA) received a Petition from the Environmental Law & Policy Center on behalf of Sierra Club and Valley Watch (Petitioners) pursuant to Section 505(b)(2) of the Clean Air Act (“CAA” or “Act”), 42 United States Code (U.S.C.) § 7661d(b)(2). The Petition requests that the EPA object to Permit No. V-09-001 issued by the Kentucky Division for Air Quality (KDAQ) on September 24, 2010, to Kentucky Syngas, LLC (KSG) for a proposed substitute natural gas production facility, Source ID 21-177-00089. Permit No. V-09-001 is a merged CAA Prevention of Significant Deterioration (PSD) construction permit and CAA title V operating permit issued pursuant to Kentucky’s Administrative Regulations (KAR) at 401 KAR 52:020 (title V regulations) and 51:017 (PSD regulations). The permit is for a substitute natural gas production facility to be located on a 2,400 acre tract of land northeast of Central City, Kentucky in Muhlenberg County.

This Order contains EPA’s response to the Petitioners’ October 27, 2010 request that EPA object to the KSG permit on the basis that: (1) KDAQ failed to provide an opportunity for meaningful public participation; (2) KDAQ failed to consider and respond to comments on alternatives; (3) KDAQ’s decision to permit the KSG facility and the Thoroughbred Mine separately was arbitrary and capricious; (4) the best available control technology (BACT) analyses omitted consideration of clean fuels and processes; (5) emissions estimates from the flare and BACT for the flare are in error; (6) the permit fails to meet certain requirements for hazardous air pollutants; (7) KDAQ failed to accurately account for all emissions of volatile organic compounds (VOCs) in the potential-to-emit calculation; (8) the permit’s monitoring requirements for a variety of different units and pollutants are inadequate; (9) KDAQ failed to accurately estimate, sufficiently control and adequately model particulate matter; (10) KDAQ failed to demonstrate that the proposed facility will not cause or contribute to violations of the ozone national

ambient air quality standard (NAAQS); and (11) the permit lacks the necessary fine particulate matter (PM<sub>2.5</sub>) limit.

Based on a review of the Petition, other relevant materials, including the KSG permit and permit record, and relevant statutory and regulatory authorities, and as explained more fully below, I grant in part and deny in part the Petition requesting that EPA object to the KSG permit. Specifically, I grant in part on issues (1), (5), (6), and (7) described above.

## I. STATUTORY AND REGULATORY FRAMEWORK

Section 502(d)(1) of the CAA, 42 U.S.C. § 7661a(d)(1), calls upon each state to develop and submit to EPA an operating permit program intended to meet the requirements of title V of the CAA. The Commonwealth of Kentucky<sup>1</sup> originally submitted its title V program governing the issuance of operating permits in 1993, and EPA granted full approval on October 31, 2001. 66 *Fed. Reg.* 54953. The program is now incorporated into Kentucky's Administrative Regulations at 401 KAR 52:020. All major stationary sources of air pollution and certain other sources are required to apply for title V operating permits that include emission limitations and other conditions as necessary to assure compliance with applicable requirements of the CAA, including the requirements of the applicable State Implementation Plan (SIP). CAA §§ 502(a) and 504(a), 42 U.S.C. §§ 7661a(a) and 7661c(a).

The title V operating permit program does not generally impose new substantive air quality control requirements (referred to as “applicable requirements”), but does require permits to contain monitoring, recordkeeping, reporting and other conditions to assure sources' compliance with applicable requirements. 57 *Fed. Reg.* 32250, 32251 (July 21, 1992). One purpose of the title V program is to “enable the source, States, EPA, and the public to understand better the requirements to which the source is subject, and whether the source is meeting those requirements.” *Id.* Thus, the title V operating permit program is a vehicle for ensuring that air quality control requirements are appropriately applied to facility emission units and for assuring compliance with such requirements.

Applicable requirements for a new major stationary source<sup>2</sup> include the requirement to obtain a preconstruction permit that complies with applicable new source review requirements. Part C of the CAA establishes the PSD program, which is the preconstruction review program that applies to areas of the country, such as Muhlenberg County, that are designated as attainment or unclassifiable for the NAAQS. *See* CAA §§ 160-169, 42 U.S.C. §§ 7470-7479. New Source Review, or “NSR,” is the term used to describe both the PSD program as well as the nonattainment NSR program (applicable to areas that are designated as nonattainment with the NAAQS). In attainment areas (such as Muhlenberg County), a major stationary source may not begin construction or undertake a modification without first obtaining a PSD permit. CAA § 165(a)(1), 42 U.S.C. § 7475(a)(1). The PSD program analysis must address two primary and fundamental elements (among other requirements) before the permitting authority may issue a permit: (1) an evaluation of the impact of the proposed new or modified major stationary source on ambient air quality in the area, and (2) an analysis ensuring that the proposed

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

<sup>2</sup> The proposed KSG facility is a “major stationary source” consistent with the definition of that term in 401 KAR 51:001 § 1(118).

facility is subject to BACT for each pollutant subject to regulation under the PSD program. CAA § 165(a)(3), (4), 42 U.S.C. § 7475(a)(3), (4); *see also* 401 KAR 51:017 (Kentucky's PSD program).

EPA has promulgated two largely identical sets of regulations to implement the PSD program. One set, found at 40 Code of Federal Regulations (C.F.R.) § 52.21, contains EPA's own federal PSD program, which applies in areas without a SIP-approved PSD program. The other set of regulations, found at 40 C.F.R. § 51.166, contains requirements that state PSD programs must meet to be approved as part of a SIP. Kentucky administers a SIP-approved PSD program, which is governed by its PSD rules at 401 KAR 51:017. *See* 40 C.F.R. § 52.920.<sup>3</sup> Thus, the applicable requirements of the Act for new major sources, such as KSG, include the requirement to comply with PSD requirements under the Kentucky SIP. *See, e.g.*, 40 C.F.R. § 70.2.<sup>4</sup> In the case of KSG, the PSD and title V permits were merged into one permit. 401 KAR 51:017 § 1(3).

Under CAA section 505(a), 42 U.S.C. § 7661d(a), and the implementing regulations at 40 C.F.R. § 70.8(a), states are required to submit each proposed title V permit to EPA for review. Upon receipt of a proposed permit, EPA has 45 days to object to final issuance of the permit if it is determined not to be in compliance with applicable requirements or the requirements of Part 70. 40 C.F.R. § 70.8(c). If EPA does not object to a permit on its own initiative, section 505(b)(2) of the Act and 40 C.F.R. § 70.8(d) provide that any person may petition the Administrator, within 60 days of the expiration of EPA's 45-day review period, to object to the permit. The petition shall be based only on objections to the permit that were raised with reasonable specificity during the public comment period provided by the permitting agency (unless the petitioner demonstrates in the petition to the Administrator that it was impracticable to raise such objections within such period or unless the grounds for such objection arose after such period). 42 U.S.C. § 7661d(b)(2); 40 C.F.R. § 70.8(d). In response to such a petition, the Act requires the Administrator to issue an objection if a petitioner demonstrates that a permit is not in compliance with the requirements of the Act. 42 U.S.C. § 7661d(b)(2); 40 C.F.R. § 70.8(c)(1); *see also New York Public Interest Research Group, Inc. (NYPIRG) v. Whitman*, 321 F.3d 316, 333 n.11 (2d Cir. 2003). Under section 505(b)(2) of the Act, the burden is on the petitioner to make the required demonstration to EPA. *MacClarence v. EPA*, 596 F.3d 1123, 1130-33 (9th Cir. 2010); *Sierra Club v. Johnson*, 541 F.3d 1257, 1266-1267 (11th Cir. 2008); *Citizens Against Ruining the Environment v. EPA*, 535 F.3d 670, 677-78 (7th Cir. 2008); *Sierra Club v. EPA*, 557 F.3d 401, 406 (6th Cir. 2009) (discussing the burden of proof in title V petitions); *see also NYPIRG*, 321 F.3d at 333 n.11. If, in responding to a petition, EPA objects to a permit that has already been issued, EPA or the permitting authority will modify, terminate, or revoke and reissue the permit consistent with the procedures set forth in 40 C.F.R. §§ 70.7(g)(4) and (5)(i) - (ii), and 40 C.F.R. § 70.8(d).

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<sup>3</sup> Revisions to 401 KAR 51:017 are incorporated into the SIP only if they are submitted to and approved by EPA. Prior to approving a SIP revision submitted to EPA by a state, EPA offers an opportunity for public comment. EPA then publishes a *Federal Register* notice announcing its final action on the SIP submission. A list of Kentucky regulations incorporated into Kentucky's SIP is provided at 40 C.F.R. § 52.920. Further information regarding rules incorporated into Kentucky's SIP is available at <http://www.epa.gov/region4/air/sips/ky/kytoc.htm>. Citations to Kentucky regulations in this Order are to the SIP-approved version of these regulations.

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

Where a petitioner's request that the Administrator object to the issuance of a title V permit is based in whole, or in part, on a permitting authority's alleged failure to comply with the requirements of its approved PSD program (as with other allegations of inconsistency with the Act), the burden is on the petitioner to demonstrate that the permitting decision was not in compliance with the requirements of the Act, including the requirements of the SIP. Such requirements, as EPA has explained in describing its authority to oversee the implementation of the PSD program in states with approved programs, include the requirements that the permitting authority: (1) follow the required procedures in the SIP; (2) make PSD determinations on reasonable grounds properly supported on the record; and (3) describe the determinations in enforceable terms. *See, e.g.*, 68 *Fed. Reg.* 9892, 9894-95 (Mar. 3, 2003); 63 *Fed. Reg.* 13795, 13796-97 (Mar. 23, 1998).

As the permitting authority for the Commonwealth of Kentucky's SIP-approved PSD program, KDAQ has substantial discretion in issuing PSD permits. Given this discretion, in reviewing a PSD permitting decision, EPA will not substitute its own judgment for that of Kentucky. Rather, consistent with the decision in *Alaska Dep't of Env't'l Conservation v. EPA*, 540 U.S. 461 (2004), in reviewing a petition to object to a title V permit raising concerns regarding a state's PSD permitting decision, EPA generally will look to see whether the petitioner has shown that the state did not comply with its SIP-approved regulations governing PSD permitting or whether the state's exercise of discretion under such regulations was unreasonable or arbitrary.<sup>5</sup> *See, e.g.*, *In re Louisville Gas and Electric Company*, Petition No. IV-2008-3 (Order on Petition) (Aug. 12, 2009); *In re East Kentucky Power Cooperative, Inc. Hugh L. Spurlock Generating Station*, Petition No. IV-2006-4 (Order on Petition) (Aug. 30, 2007); *In re Pacific Coast Building Products, Inc.* (Order on Petition) (Dec. 10, 1999); *In re Roosevelt Regional Landfill Regional Disposal Company* (Order on Petition) (May 4, 1999).

## II. BACKGROUND

### Facility

A more complete description of the project is included in the KDAQ Permit Statement of Basis (SOB) (Revised-Proposed) dated July 12, 2010 at 3-4 (hereafter referred to as "KDAQ SOB"). What follows is a brief summary. The proposed KSG facility will generate approximately 216 million standard cubic feet per day of substitute natural gas (SNG) through gasification of coal and petroleum coke (petcoke). The SNG produced at the facility will be delivered to one of the three interstate natural gas pipelines

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<sup>5</sup> As EPA has previously explained, in reviewing PSD permit determinations in the context of a petition to object to a title V permit, the standard of review applied by the Environmental Appeals Board (EAB) in reviewing the appeals of federal PSD permits provides a useful analogy. *In re Louisville Gas and Electric Company*, Petition No. IV-2008-3 (Order on Petition) (Aug. 12, 2009) at 5 n.6; *see also In re East Kentucky Power Cooperative, Inc. Hugh L. Spurlock Generating Station*, Petition No. IV-2006-4 (Order on Petition) (Aug. 30, 2007) at 5. The standard of review applied by the EAB in its review of federal PSD permits is discussed in numerous EAB orders as the "clearly erroneous" standard. *See, e.g.*, *In re Prairie State Generation Company*, 13 E.A.D. 1, 10. (EAB 2006); *In re Kawaihae Cogeneration*, 7 E.A.D. 107, 114 (EAB 1997). In short, in such appeals, the EAB explained that the burden is on a petitioner to demonstrate that review is warranted. Ordinarily, a PSD permit will not be reviewed by the EAB unless the decision of the permitting authority was based on either a clearly erroneous finding of fact or conclusion of law, or involves an important matter of policy or exercise of discretion that warrants review.

located in close proximity to the facility. The gasification process will utilize a trademarked process, “ConocoPhillips E-Gas” technology, to produce raw synthetic gas (syngas). See Final Permit Executive Summary dated September 24, 2010 at 3-6. The raw materials introduced into the process are coal, petcoke, air, and water. The final products will be SNG, argon, ammonium thiosulfate (ATS), elemental sulfur and slag. The facility will include four gasifiers and an associated emission point – emission unit 1 – the flare. In addition, the facility will include the following primary ‘subsystems’: feedstock storage and preparation, slurry preparation and storage, air separation, gasification, high temperature heat recovery (HTHR), char removal, chloride removal, gas shift reaction, low temperature heat recovery (LTHR), acid gas removal (AGR), carbon dioxide (CO<sub>2</sub>) removal, sulfur recovery (sulfur recovery unit (SRU) and ATS unit), methanation, SNG product dehydration and compression, and by-product handling. Other ancillary process units will include on-site power generating units, an auxiliary boiler, cooling towers, water treatment units, firewater pumps, miscellaneous storage tanks, and process heaters.

The facility underwent major PSD analyses for carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), and particulate matter of a diameter of less than 10 micrometers (PM<sub>10</sub>). The facility has a sourcewide synthetic minor hazardous air pollutant (HAP) emission limit for methanol and sourcewide PSD avoidance limits for VOCs and hydrogen sulfide (H<sub>2</sub>S)/total reduced sulfur (TRS). With regard to PM, KSG examined both PM<sub>10</sub> and PM<sub>2.5</sub>, and performed a surrogacy analysis to satisfy some of the PSD requirements for PM<sub>2.5</sub>.<sup>6</sup>

### **Permit History**

KSG first submitted its application for a merged PSD/title V permit to KDAQ on or about December 15, 2008. Additional supplemental permitting materials specifically relevant to the Petitioners’ claims were submitted by KSG on March 13, 2009 (response to KDAQ’s first notice of deficiency); September 4, 2009 (follow-up ozone impact analyses); and July 2010 (Attachment D – revised fine particulate matter (PM<sub>2.5</sub>) air dispersion modeling analysis). In addition, EPA provided written comments to KDAQ on February 19, 2009 and January 21, 2010, and the Petitioners provided written comments on January 19, 2010. On May 24, 2010, EPA issued an objection letter pursuant to Section 505(b) of the CAA and implementing regulations found at 40 C.F.R. § 70.8(c). EPA’s objection explained that “[w]e agree that Kentucky Syngas has established a statistical relationship between PM<sub>10</sub> and PM<sub>2.5</sub> emissions from the units in question and that KDAQ has reached a reasonable decision concerning the best available control technology determination. Kentucky Syngas submittals have not, however, demonstrated that project PM<sub>2.5</sub> emissions would not cause or contribute to a PM<sub>2.5</sub> NAAQS violation.” Following EPA’s objection, KSG submitted Attachment D to the application dated July 2010 and changes were made to the permit. KDAQ reissued the merged PSD/title V permit on November 17, 2011 as Permit No. V-09-001-R1, which included changes made following EPA’s objection as well as changes resulting from an administrative appeal by the Petitioners to the Office of Administrative Hearings. The Petition was dated October 27, 2010 and regards Permit No. V-09-001.

### **Background on PSD and BACT**

The CAA and corresponding PSD regulations require that new major stationary sources employ BACT to minimize emissions of regulated pollutants emitted from the facility in significant amounts. CAA §

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<sup>6</sup> See also note 26, *infra*, for additional specification regarding the Kentucky definitions for particulate matter.

165(a)(4), 42 U.S.C. § 7475(a)(4); 40 C.F.R. §§ 51.166(j)(2) and 52.21(j)(2); 401 KAR 51:017 § 8(2), (3). BACT is defined to mean:

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

CAA § 169(3), 42 U.S.C. § 7479(3); *see also* 401 KAR 51:001§ 1(25).

EPA has developed a “top-down” process that permitting authorities can use to ensure that a BACT analysis satisfies the applicable legal criteria. The top-down BACT analysis consists of a five-step process, which provides that all available control technologies be ranked in descending order of control effectiveness, beginning with the most stringent. *See In re Prairie State Generation Company*, 13 E.A.D. 1, 13-14 (EAB 2006). Under the top-down process, the most stringent control technology is deemed the control necessary to achieve BACT-level emission limits unless the applicant demonstrates, and the permitting authority determines, that technical considerations, or energy, environmental, or economic impacts justify a conclusion that the most stringent technology is not achievable in that case. As EPA previously explained, an incomplete BACT analysis, including failure to consider all potentially applicable control alternatives, constitutes a clear error. *See, e.g., In re Cash Creek Generation, LLC*, Petition Nos. IV-2008-1 & IV-2008-2 (Order on Petition) (Dec. 15, 2009) at 6 (referred to hereafter as “Cash Creek Generation 2009”); *see also Prairie State*, 13 E.A.D. at 15; *In re Knauf Fiber Glass*, 8 E.A.D. 121, 142 (EAB 1999); *In re Masonite Corp.* 5 E.A.D. 551, 568-569 (EAB 1994). KSG followed this top-down BACT methodology when it submitted its application for the KSG facility, and KDAQ applied this methodology in evaluating the application and issuing its permitting decision. *See* July 2010 SOB at 53-56.

### III. EPA DETERMINATIONS

#### A. Petitioners’ Claims Regarding Public Participation

The Petitioners contend that EPA must object to the permit because KDAQ did not provide a meaningful opportunity for public participation during the permitting process. Petition at 5-11. Specifically, the Petitioners assert that: (1) the public notice for the comment period failed to include a calendar “end date”; (2) the permit record available during the public comment period omitted certain information; and (3) KDAQ erred in not providing public notice on Permit No. V-09-001-R1.

##### 1. Petitioners’ contention that KDAQ failed to specify a calendar “end date” in the public notice

***Petitioners’ Claim:*** The Petitioners contend that the public comment period for the Permit was deficient because the public notice for the comment period failed to specify the “end date” of the public comment period. For support, the Petitioners cite to 401 KAR 52:100 § 5(6). Petition at 5. The Petitioners explain that the notice instead instructed that written comments “must be postmarked within 30 days following the date of publication of this notice.” Petition at 5. According to the Petitioners, the term “date” means a particular day, month and year. The Petitioners state that KDAQ’s failure to specify the day, month

and year on which public comment ended resulted in confusion because it was unclear whether the day that the notice was published counted toward the 30-day comment period. Petition at 5. The Petitioners acknowledge that KDAQ clarified its position on the end date at least one time prior to the end of the public comment period. Petition at 6. In addition, the Petitioners note that KDAQ accepted additional public comment during the hearing, which post-dated the 30-day comment period. The Petitioners request that KDAQ re-notice the permit with an end date included in the notice. At a minimum, Petitioners ask that EPA require end-dates in future permit proceedings. Petition at 6.

**EPA's Response:** For the reasons provided below, EPA denies the Petition with respect to this issue. Pursuant to CAA § 505(b)(2), a petition "shall be based only on objections to the permit that were raised with reasonable specificity during the public comment period provided by the permitting agency (unless the petitioner demonstrates in the petition to the Administrator that it was impracticable to raise such objections within such period or unless the grounds for such objection arose after such period)." 42 U.S.C. § 7661d(b)(2). None of the comments submitted to KDAQ raised any issues regarding KDAQ's alleged failure to identify a public comment period "end date" in its public notices. Nor did Petitioners demonstrate in their Petition that it was impractical to raise such objection within the public comment period, and there is no indication that the grounds for the objection arose after the public comment period. Furthermore, regarding the substance of Petitioners' claim, the term "end date" is not defined in Kentucky's SIP. While the Petitioners may prefer that the term "date" be interpreted as "[t]ime stated in terms of the day, month, and year," KDAQ is not obligated to adopt the Petitioners' preferred interpretation. Other possible interpretations of "date" include "the time at which an event occurs,"<sup>7</sup> or "[a] particular point or period of time at which something happened or existed, or is expected to happen."<sup>8</sup> Under these latter definitions, the Petitioners have not demonstrated that the language in KDAQ's public notices providing that public comments are due "30 days following the date of publication of this notice" is inconsistent with the requirements under the Act. Further, EPA understands that KDAQ counted the 30 days such that any ambiguity identified by the Petitioners was resolved in favor of a longer comment period. See Petition Exhibit 8. Therefore, EPA denies the Petition with respect to this issue on both procedural and substantive grounds.<sup>9</sup>

**2. Petitioners' contention that key information was unavailable during the public comment period.**

The issues raised in the Petition are discussed below; however, as a preliminary matter, EPA begins with an overview of the applicable legal framework for these types of public participation claims.

***Overview of Applicable Legal Framework for Certain Public Participation Claims***

EPA's regulations at 40 C.F.R. § 70.7(a)(1) provide that a permit may be issued only if, among other things, the permitting authority "has received a complete application" and "has complied with the requirements for public participation under paragraph (h) of this section." With regard to a permit application, EPA's regulations provide: "An application may not omit information needed to determine the applicability of, or to impose, any applicable requirement . . ." 40 C.F.R. § 70.5(c); see also 40 C.F.R. § 70.5(a)(2) (stating, among other things, that "[i]nformation required under paragraph (c) of this

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<sup>7</sup> Merriam-Webster Dictionary, [mw2.Merriam-Webster.com/dictionary/date](http://mw2.Merriam-Webster.com/dictionary/date) (last visited Mar. 5, 2012).

<sup>8</sup> American Heritage Dictionary of the English Language, (4th ed. 2009).

<sup>9</sup> EPA notes that Petitioners submitted comments by the deadline and KDAQ considered them in reaching its permitting decision.

section must be sufficient to evaluate the subject source and its application and to determine all applicable requirements”). The regulations require each title V permit to include, among other things, “[e]mission limits and standards, including those operational requirements and limitations that assure compliance with all applicable requirements at the time of permit issuance” and “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(a)(1), (c)(1). Regarding public participation, the regulations require that permit proceedings<sup>10</sup> “provide adequate procedures for public notice including offering an opportunity for public comment and a hearing on the draft permit.” 40 C.F.R. § 70.7(h). Finally, the regulations require that public “notice shall identify . . . a person from whom interested persons may obtain additional information, including copies of the permit draft, the application, all relevant supporting materials . . . and all other materials available to the permitting authority that are relevant to the permit decision.” 40 C.F.R. § 70.7(h)(2).

When a title V petition seeks an objection based on the unavailability of information during the public comment period in violation of title V’s public participation requirements, the petitioner must demonstrate that the unavailability deprived the public of the opportunity to meaningfully participate during the permitting process.<sup>11</sup> See *In re Cash Creek Generation, LLC*, Petition No. IV-2010-4 (Order on Petition) (pg. 6, June 15, 2012) (referred to hereafter as “Cash Creek Generation 2012”); *In re Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC*, Petition No. II-2000-07 (Order on Petition) (May 2, 2001) (applying the concepts of meaningful public participation and logical outgrowth to title V); *cf., e.g., In re Murphy Oil USA, Inc., Meraux Refinery*, Petition No. 2500-00001-V5 (Order on Petition) (Sept. 21, 2011) (discussing a response to significant comments as “an inherent component of any meaningful notice and opportunity for comment” (citing *Home Box Office v. FCC*, 567 F.2d 9, 35 (D.C. Cir. 1977))). To guide this analysis under title V, EPA generally looks to whether the petitioner has demonstrated “that the alleged flaws resulted in, or may have resulted in, a deficiency in the permit’s content.” See *In re Sirmos Division of Bromante Corp.*, Petition No. II-2002-03 (Order on Petition) (May 24, 2004). Without such a showing, it may be difficult to conclude that the ability to comment on the information would have been meaningful. In implementing the requirements for public participation under title V, EPA is mindful that the part 70 regulations were promulgated in light of CAA section 502(b)(6)’s pursuit of “[a]dequate, streamlined, and reasonable procedures . . . for public notice, including offering an opportunity for public comment and a hearing.” 42 U.S.C. § 7661a(b)(6). EPA also notes that where a permitting authority provides an explanation for its decision not to make something available during the public comment period, the petitioner bears the burden of demonstrating that the permitting authority’s explanation is unreasonable.

This analysis about the availability of information during the public comment period is related to the regulatory standard under 40 C.F.R. § 70.5(c) governing information that may not be omitted from a permit application. Specifically, under 40 C.F.R. § 70.5(c), a permit application may not omit information “needed to determine the applicability of, or to impose, any applicable requirement.” So an EPA objection to a proposed permit based on a permit application deficiency may be accompanied by an EPA objection based on a resulting flaw in the public participation process because, in many instances,

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<sup>10</sup> This provision expressly excludes modifications qualifying for minor permit modification procedures and expressly includes initial permit issuance, significant modifications, and renewals. 40 C.F.R. § 70.7(h).

<sup>11</sup> Where a petitioner claims that a permit is not in compliance with an unambiguous, express procedural requirement of 40 C.F.R. Part 70 (e.g., failure to publish public notice as required by 40 C.F.R. § 70.7(h)(1)), EPA will analyze that argument on its own terms.

the unavailability during the public comment period of information needed to determine the applicability of or to impose an applicable requirement also may result in a deficiency in the permit's content. *See In re Louisiana Pacific Corporation*, Petition No. V-2006-3 (Order on Petition) (Nov. 5, 2007); *In re WE Energies Oak Creek Power Plant*, (Order on Petition) (June 12, 2009); *In re Alliant Energy – WPL Edgewater Generating Station*, Petition No. V-2009-02 (Order on Petition) (Aug. 17, 2010).

However, the question of whether a permit application is deficient is distinct from the question of whether the public participation process was deficient. For this reason, it is not always the case that a permit application deficiency necessarily results in a deficient public participation process. For example, even if certain required information is omitted from an applicant's permit application, the permitting authority may have added the information to the permit record prior to the start of the public comment period. Another example might be where information submitted by the permit applicant after the close of the public comment period simply confirms assumptions underlying the draft permit conditions. Under both of those circumstances, though the permit application available during the public comment period may arguably have lacked required information, the omission of that information may not have impacted the public's opportunity to meaningfully participate in the permitting process.

Additionally, under EPA's regulations, correcting a permit application deficiency does not necessarily involve offering an additional opportunity for public comment. Specifically, under 40 C.F.R. § 70.5(b), "[a]ny applicant who fails to submit any relevant facts or who has submitted incorrect information in a permit application shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information." Nothing in that provision requires that the supplemental information must be provided prior to the public comment period or that an additional public comment period must always be held on the newly submitted information. Likewise, EPA's regulations at 40 C.F.R. § 70.4(a)(1) state that a permitting authority may not issue a final permit unless the permitting authority "has received a complete application." Nothing in that provision indicates that the version of the application made available to the public during the public comment period must contain all of the information required to make the application complete. Thus, even after the close of the public comment period, a permit applicant may come into compliance with the permit application requirements of 40 C.F.R. § 70.5 by supplementing or correcting the permit application. Assuming that the application has been corrected or supplemented prior to submission of the proposed permit to EPA, EPA generally would consider whether the correction or supplement cured inadequacies in the permit application in determining whether to object to the proposed permit on the basis of § 70.5. Nonetheless, depending on the circumstances, EPA may determine that an objection is warranted on the basis that the unavailability of the omitted information during the public comment period contravened 40 C.F.R. § 70.7(h) because the absence of that information deprived the public of the opportunity to meaningfully participate in the permitting process, especially where the missing information resulted in, or may have resulted in, a deficiency in the content of the permit.

***Petitioners' Claim:*** The Petitioners state that the public was deprived of a meaningful opportunity to comment on the draft permit because KDAQ omitted certain required materials from the permit record available for public review during the public comment period. *See* Petition at 6-8. In particular, The Petitioners contend that the following information should have been available:

1. Flare monitoring plan;
2. Startup, shutdown malfunction (SSM) plan;
3. Written operation plan for SRU;
4. Written operation plan for pollution control devices;

5. A “more detailed” leak detection and repair (LDAR) Plan;
6. Supporting materials for the estimated controlled emissions under the LDAR plan;
7. Instructions/standards for distinguishing between normal/abnormal visible emissions from the Ammonium Bisulfite Tower Vent (ABS) tower vent;
8. AGR vent sampling plan; and
9. Fugitive coal dust emissions control plans.

Petition at 7-8. *See also* Petition at 33 (discussion regarding the flare minimization plan<sup>12</sup>); *id.* at 31 (further discussion regarding the SSM plan). The Petitioners cite to 40 C.F.R. § 70.5(c) as support for the proposition that the above-listed information is required to be included in the permit application and thus should have been available to the public during the public comment period. *See* Petition at 7 (citing *In re WE Energies Oak Creek Power Plant*, (Order on Petition) (June 12, 2009) at 24, and *In re RockGen Energy Center*, 8 E.A.D. 536, 552-55 (EAB 1999). The Petitioners request that EPA direct KDAQ to make the requested information available to the public and to hold an additional public comment period. Petition at 8.

**EPA’s Response:** For the reasons provided below, EPA denies the Petition with respect to this issue.<sup>13</sup>

As an initial procedural matter, and with regard to items 1, 3, 4, 7 and 9, these issues were not raised with reasonable specificity during the public comment period.<sup>14</sup> As was explained earlier, pursuant to CAA § 505(b)(2), a petition “shall be based only on objections to the permit that were raised with reasonable specificity during the public comment period provided by the permitting agency (unless the petitioner demonstrates in the petition to the Administrator that it was impracticable to raise such objections within such period or unless the grounds for such objection arose after such period).” 42 U.S.C. § 7661d(b)(2). Public comments to KDAQ on this Permit did not raise public participation concerns regarding items 1, 3, 4, 7, and 9. Nor did the Petitioners demonstrate in their Petition that it was impracticable to raise such objection within the public comment period, and there is no indication that the grounds for the objection arose after the public comment period. As a result, EPA denies the Petition on procedural grounds with regard to these issues (additional discussion regarding item 1 is included below).

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<sup>12</sup> The Permit does not include any requirement specifically called a “flare minimization plan” although the Permit includes numerous measures intended to minimize flaring and the Permit does include a “flare monitoring plan.” Petitioners’ public comments discussed concerns regarding the lack of a flare minimization plan, and stated that such a plan should be developed and subject to public notice and comment. *See* Petitioners’ Public Comments at 37. Petitioners’ comments did not state that the flare monitoring plan included in the permit was not adequately subject to public notice and comment. To the extent Petitioners raise an issue with public comment on the flare minimization plan, EPA denies because, as previously indicated, the Permit does not include a “flare minimization plan.”

<sup>13</sup> As a practical matter, EPA notes that the Petition does not allege that Petitioners contacted the person identified by KDAQ pursuant to 40 C.F.R. § 70.7(h)(2) in order to request any of the listed information. EPA also reiterates that Kentucky operates a merged process for PSD permitting and title V permitting, and, as a general matter, the same requirements for public involvement apply to both types of permitting in Kentucky.

<sup>14</sup> With regard to the flare monitoring plan, as was noted in an earlier footnote, Petitioners’ public comments raised concerns that KSG did not prepare a “flare minimization plan” but the public comments do not raise any issues regarding the flare monitoring plan, which was included in the proposed permit and available for public comment. *See supra* note 12.

## Item 2 – Startup, Shutdown Malfunction Plan

The Petitioners cite to the SSM Plan referenced on page 13 of the Permit. Petition at 7. The Petitioners include additional discussion regarding the SSM Plan in the Petition at page 31, which is addressed in this Order at page 33. The SSM Plan referenced by the Petitioners is part of the specific recordkeeping requirements for emission unit 1, the flare. The Plan is to describe “procedures for operating and maintaining the affected sources generating process gas routed to the flare during periods of SSM and a program of corrective action for malfunctioning process and monitoring equipment used to comply with the flare emission limitations.” Permit at 13 (section B.5.a.). The components of the plan are written into the Permit and refer back to other requirements for compliance and monitoring for the flare. The Petition does not include any specific discussion of the nature and purpose of the SSM Plan; but rather, simply states that the plan was not subject to public review and comment and that this is information that must be made available for public review. This issue was not squarely raised as a ‘public participation’ issue in the Petitioners’ public comments to KDAQ; rather, it was raised as part of a more substantive issue regarding the low-sulfur startup procedure for the flare (also discussed in this Order on page 33). The permit record does include some discussion on this issue, in the Comments and Response document prepared by KDAQ (hereafter referred to as “KDAQ RTC”). Specifically, KDAQ explains, “[t]he provisions for flaring minimization and the elements to be covered in the SSM plan are clearly set forth in the permit (Condition B.5.A), and thus were available for public comment. Therefore, developing the plan as part of the permit application and requiring it to be subject to public notice and review requirements is not necessary.” KDAQ RTC at J-62 to J-63.

In prior orders, EPA has determined that a facility operation plan that must be followed by a source must be included in a permit application and available for public review where the plan’s content was needed to impose an applicable requirement or the plan was relied upon as a compliance assurance measure. *See In re WE Energies Oak Creek Power Plant*, (Order on Petition) (June 12, 2009); *In re Alliant Energy – WPL Edgewater Generating Station*, Petition No. V-2009-02 (Order on Petition) (Aug. 17, 2010). Likewise, in *In re RockGen Energy Ctr*, 8 E.A.D. 536, 552-55 (EAB 1999), the EAB held that a permit condition exempting the facility from BACT limits during startup and shutdown and requiring the post-construction development of a plan for limiting emissions during startup and shutdown violated the requirement that BACT limits be established prior to construction. However, in *In re Power Holdings of Illinois*, PSD Appeal No. 09-04, slip op. (EAB 2010), the EAB rejected a challenge to permit provision that required the permittee to submit a flare minimization plan 90 days prior to startup, and to review and revise the plan annually. In that case, the EAB found that the flare minimization plan was not being employed as a substitute for BACT limits. *See id.* at 13-14. Furthermore, though the *Power Holdings* permit identified the flare minimization plan as part of the facility’s BACT obligations, the permit contained numerous other requirements designed to ensure adequate control of flaring emissions resulting from startup, shutdown and malfunction events. *Id.* The EAB concluded that nothing in the record demonstrated that the various permit requirements would be insufficient to satisfy BACT, even without the flare minimization plan. *Id.* at 15-16.

A similar analysis may be applied to the Petitioners’ claims regarding the SSM Plan. As noted by KDAQ, the Permit includes not only the required elements of the SSM Plan, but also numerous terms and conditions regarding SSM events (and the related BACT requirements). *See* KDAQ RTC at J-57 to J-58 and J-62 to J-63. The Petitioners had the opportunity to comment on these terms and conditions and some of them form the basis for separately raised substantive issues that are addressed later in this Order. However, the Petitioners have not demonstrated that the SSM plan’s content is needed to impose an applicable requirement or as a compliance assurance measure. Although the Petition cites to some of

the above orders, no supporting analysis is provided in the Petition applying the KSG-specific facts to the legal citations. The Permit requires development of the SSM Plan, but the Petitioners do not identify any applicable requirement directing KSG to implement such a plan – rather, it appears to be a plan developed by KDAQ under title V to support the other existing (required) terms and conditions, and is supplemental to those terms and conditions. See *In re Power Holdings of Illinois* at 14 (discussing supplemental permit measures). EPA also notes that KDAQ explained why further comment opportunity was unnecessary, see KDAQ RTC at J-63, and the Petitioners made no attempt to demonstrate in their Petition that KDAQ’s explanation was unreasonable. Further, The Petitioners do not identify how the alleged unavailability of this information during the public comment period may have resulted in a permit deficiency or otherwise deprived them of meaningful participation. For these reasons, EPA denies the Petition with respect to this issue.

#### *Item 1 – Flare Monitoring Plan*

EPA denies the Petition with respect to the Petitioners’ claim that KSG’s flare monitoring plan, described on page 11 of the Permit, should have been available for review during the public comment period on the draft permit. EPA’s decision on this issue is based on both procedural grounds (discussed above) as well as on substantive grounds regarding the role of the flare monitoring plan in this particular permit. In this case, the Petitioners did not demonstrate that the flare monitoring plan required by KSG’s permit is relied upon to impose an applicable requirement or as a compliance assurance measure. See KSG Permit<sup>15</sup> at 11-12. The permit provides a detailed description of the components of the written flare monitoring plan, which is to cover eight separately identified elements that appear analogous to a performance test protocol for monitoring the flare. *Id.* These conditions of the flare monitoring plan were included in the permit for public comment and the Petitioners did not raise any specific issues regarding those elements. As noted by the EAB in *In re Power Holdings of Illinois*, “...the [flare minimization plan] requirement in this case does not operate in lieu of BACT emissions limitations. Rather, the FMP provision supplements these limitations and requires Power Holdings to develop methods to reduce emissions from flaring events based on actual operating experience.” *In re Power Holdings of Illinois* at 14. In this case, the written flare monitoring plan appears supplemental to the already existing PSD permit terms and conditions.

In addition, the Petitioners failed to demonstrate that there is any applicable requirement directing KSG to prepare a “flare minimization plan” or “monitoring” plan similar to the plans required by the Bay Area Air Quality Management District. The Petitioners also have not demonstrated that this plan is necessary as a compliance assurance measure. As a result, EPA concludes that the Petitioners have not shown that the alleged omission of the flare monitoring plan from the permit application and/or the unavailability of this information during the public comment period caused the permit not to be in compliance with applicable requirements or requirements of 40 C.F.R. Part 70. Further, the Petitioners do not identify how the alleged unavailability of this information during the public comment period may have resulted in a permit deficiency or otherwise deprived them of meaningful participation. For these reasons, EPA denies the Petition with respect to this issue.

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<sup>15</sup> “KSG Permit” refers to the permit dated September 24, 2010 which was the basis of the Petition.

*Items 5 and 6 (more detailed LDAR plan and supporting materials for LDAR)*

With regard to items 5 and 6 above, the Petition provides no additional supporting information explaining the alleged public participation defect. KDAQ explained in the KDAQ RTC that, “[t]he commenter claims that the LDAR program was not included in the permit or even available and subject to public comment and review. This statement is not true. The program was presented as Appendix D of Volume 1 of the Application and was also incorporated into the draft permit. See Draft Permit Condition B.4 (pp 37-39).” KDAQ RTC at J-70. KDAQ further explained that “Pages 38 and 39 of the permit do not contain permit conditions, which indicate that any type of plan will be submitted later. The complete LDAR program corresponding to the control credits used in the methanol synthetic minor HAP emission limitation was incorporated into the draft permit on pages 37-39. Such conditions will remain in the proposed permit. The LDAR equivalent program was also extensively referenced in the application and the public had opportunity to review and comment on all aspects of the program.” KDAQ RTC at J-71. Indeed, on pages 37-42 the Permit includes numerous terms and conditions related to the LDAR program. The Petitioners made no attempt to demonstrate in their Petition that KDAQ’s explanation was unreasonable. In the Petition, the Petitioners do not provide a citation to the “more detailed” LDAR program, which the Petitioners even qualify by saying “if any,” thus implicitly acknowledging that such a thing may not even exist. Petition at 7.

EPA concludes that the Petitioners have not met their burden of demonstrating that the alleged omission of this information from the permit application and/or the unavailability of this information during the public comment period caused the permit not to be in compliance with applicable requirements or requirements of 40 C.F.R. Part 70. In particular, the Petitioners made no attempt to demonstrate that the alleged omission of this information from the permit application meant that the application lacked information “necessary to determine the applicability of, or to impose, any applicable requirement . . .” See 40 C.F.R. § 70.5(c). The Petitioners also did not identify how the alleged unavailability of this information during the public comment period may have resulted in a permit deficiency or otherwise deprived them of meaningful participation. For these reasons, EPA denies the Petition with respect to this issue.

*Item 8 – AGR vent sampling plan*

The Petitioner cites to the AGR vent sampling plan, which is referenced in the Permit at page 31. The Permit states, “. . . the permittee shall sample and analyze the vent stream from each AGR Unit that is sent to the oxidizer for its sulfur content on a monthly basis for the first six months of operation in accordance with an AGR vent sampling plan submitted to the Division prior to initial startup.” Permit at 31 [Emission Unit (EU) 5 (AGR), section B.4.f.]. The ‘plan’ referenced here appears to be essentially a performance test protocol. This point is explained by KDAQ as follows, “[t]he development of a sampling plan for the AGR vent prior to initial startup is no different than developing and submitting a performance test protocol prior to conducting the test. Permit conditions which allow developing and submitting a performance test protocol prior to conducting the test are common and contained in many permits approved by the EPA.” KDAQ RTC at J-105. KDAQ’s response to this comment provides other reasons to support KDAQ’s decision. See KDAQ RTC at J-105. The Petitioners made no attempt to demonstrate that the alleged omission of this information from the permit application meant that the application lacked information “necessary to determine the applicability of, or to impose, any applicable requirement . . .” See 40 C.F.R. § 70.5(c). The Petitioners also did not identify how the alleged unavailability of this information during the public comment period may have resulted in a permit deficiency or otherwise deprived them of meaningful participation. Moreover, KDAQ responded to the

Petitioners' concerns regarding the unavailability of this information, *see* KDAQ RTC at J-105, and the Petitioners made no attempt in their Petition to demonstrate that KDAQ's explanation was unreasonable. For these reasons, EPA denies the Petition with respect to this issue.

### 3. Petitioners' Claims Regarding New Public Comment Period

**Petitioners' Claims:** The Petitioners contend that KDAQ failed to provide public notice of its revised-proposed permit for KSG following EPA's objection on the air quality impact analysis. Petition at 8-11. Affected permit conditions included submittal of a revised PM<sub>2.5</sub> air quality modeling (for the permit record) and revised operating limits for EUs 6, 7, and 13 (which were required by the revised modeling in order to demonstrate that the facility did not cause or contribute to a PM<sub>2.5</sub> NAAQS violation). The Petitioners explain that a revised-proposed permit was submitted to EPA on July 14, 2010 and that this permit was made available to the public on September 28, 2010, but that no public review was provided for this permit revision. Petition at 8. The Petitioners note that they learned of the revised permit and supporting materials by searching the KDAQ website after September 28, 2010. Petition at 8. The Petitioners cite to Section 165(a)(2) and (a)(3) of the CAA for the proposition that facilities applying for PSD permits must demonstrate that the facility will not cause or contribute to a violation of the NAAQS and include such air quality analyses in the permit record for public review. The Petitioners also contend that the model used for PM<sub>2.5</sub> was not "specified with reasonable particularity" until after the close of the public comment period, which the Petitioners contend was inconsistent with CAA § 165(e)(3)(D). Petition at 10. The Petitioners also provide citations to Kentucky rules stating that public comment was required for this type of permit revision. Petition at 10 (citing to 401 KAR 52:020 §§ 13 and 25).

**EPA's Response:** For the reasons discussed below, EPA grants the Petition with respect to this issue. As noted by the Petitioners, Section 165(a)(3) of the CAA requires that a "facility demonstrate[ ] . . . that emissions from construction or operation of such facility will not cause, or contribute to, air pollution in excess of any . . . (B) national ambient air quality standard in any air quality control region," among other requirements. 42 U.S.C. § 7475(a)(3). In addition, 40 C.F.R. § 51.166(q)(2)(v) requires that SIPs provide "opportunity for a public hearing for interested persons to appear and submit written or oral comments on the air quality impact of the source, alternatives to it, the control technology required, and other appropriate considerations." This requirement is incorporated by reference into the Kentucky SIP through the language at 401 KAR 51:017 § 15, which states, "The cabinet shall follow the applicable procedures of 401 KAR 52:100, 40 C.F.R. § 51.166(q), and this administrative regulation in processing applications under this administrative regulation." The PM<sub>2.5</sub> air quality analysis was revised and submitted to KDAQ in July 2010, following EPA's May 2010 objection on this issue. *See* Attachment D entitled, "Revised PM<sub>2.5</sub> NAAQS Air Dispersion Modeling Analysis" dated July 2010. In addition, as a result of the revised air quality analysis, changes were made to the permit to ensure that the facility would not cause or contribute to a PM<sub>2.5</sub> NAAQS violation. *See, e.g.*, KDAQ Statement of Basis (SOB) for Permit No. V-09-001-R1 at 2-3. Based on 40 C.F.R. § 51.166(q), an opportunity for the public to comment on such information was required. The Petitioners have demonstrated that the PM<sub>2.5</sub> air quality analysis relied upon for the current final permit (Permit No. V-09-001-R1) was not made available for public comment. To correct this deficiency, KDAQ must hold a public comment period on the revised air quality analysis and the changes made to the permit resulting from the revised air quality analysis.<sup>16</sup>

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<sup>16</sup> In granting the objection with regard to the lack of a new public comment in this particular permitting action, where the PM<sub>2.5</sub> air quality analysis relied upon for the final permit was not made available for public comment and was relied upon to make changes in the permit, EPA is not addressing the general

**B. Petitioners' Claims Regarding Consideration of Alternatives Under CAA Section 165(a)(2)**

**Petitioners' Claims:** The Petitioners contend that their comments regarding alternatives to the proposed facility were not adequately responded to by KDAQ. Petition at 12-13. Specifically, the Petitioners cite to CAA § 165(a)(2) and several EAB decisions for the proposition that KDAQ should have considered and more adequately responded to the Petitioners' comments regarding no-build, energy efficiency and renewable energy alternatives (including biomass gasification), among "others" not identified in the Petition. The Petitioners cite to their comments on the draft permit at pages 2-4 where they describe in greater detail the nature of their "alternatives" comments.

**EPA's Response:** For the reasons provided below, EPA denies the Petition on this issue.

The provision of the CAA relied upon by the Petitioners, CAA § 165(a)(2), states, in pertinent part, that major sources may not construct unless "the proposed permit has been subject to a review in accordance with this section..." which includes the opportunity to "submit written or oral presentations on the air quality impact of such source, *alternatives thereto*, control technology requirements, and other appropriate considerations." 42 U.S.C. § 7475(a)(2) (emphasis added). EPA's implementing regulations at 40 C.F.R. § 51.166(q)(2)(v) in turn require SIPs to "provide opportunity for a public hearing for interested persons to appear and submit written or oral comments on the air quality impact of the source, alternatives to it, the control technology required, and other appropriate considerations." Kentucky's PSD SIP expressly adopts this EPA PSD regulation. 401 KAR 51:017 § 15. KDAQ is thus obligated by its SIP to implement 40 C.F.R. § 51.166(q)(2)(v), which itself implements section 165(a)(2) of the CAA. Accordingly, in determining whether the Petitioners have demonstrated that this permit has not been issued in accordance with applicable requirements of the Act, *see* 42 U.S.C. § 7661d(b)(2), it is appropriate for EPA to consider whether KDAQ's response was reasonable in light of CAA section 165(a)(2).

EPA has interpreted the requirements of Section 165(a)(2) to include an obligation by the permitting authority to consider and respond to such comments. *See Prairie State*, 13 E.A.D. at 30 (stating, with regard to comments submitted under section 165(a)(2), that "the response to comments document must demonstrate that all significant comments were considered"). While the permitting authority "is not required to perform an independent analysis of alternatives," the permitting authority is required to provide a reasoned basis for rejection of the proposed alternatives proposed in comments. *See id.* at 30-31. The EAB also noted that it is appropriate for a permit issuer to refrain from analyzing whether a proposed facility is needed where another state agency has been specifically tasked with the authority to consider that issue. *Id.* at 31-34.

EPA has previously addressed a state permitting authority's response to comments raised under CAA § 165(a)(2) in the context of a title V petition. *See, e.g., Cash Creek Generation 2009* at 17-19. In that case, EPA granted a petition claim on the basis that KDAQ had not adequately responded to comments where the response was particularly cursory. In that response to comments, KDAQ essentially declined to even consider comments and stated, in relevant part, "[r]egarding the commenter's reference to CAA Section 165(a)(2), no viable alternatives were presented during the public comment period for

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nature and/or extent of public comment opportunities following EPA objections to permits issued by state permitting authorities under 40 C.F.R. Part 70.

consideration by the Cabinet.” KDAQ RTC for Cash Creek Generation, LLC, November 28, 2007, at page 30.

In the present case regarding KSG, a review of the permit record shows that KDAQ did consider the various alternatives raised in the comments and provided a basis for rejecting them. In the Petition, The Petitioners state that KDAQ “refused to consider the alternatives” and “staked out a position contrary” to the EAB decision in *Prairie State*. Petition at 12. However, KDAQ did address the alternatives raised in the Petitioners’ comment, both in a specific response addressing alternatives and in other analyses throughout the record, and the specific response is not directly “contrary” to *Prairie State*.

In the Application, KSG addressed energy efficiency, explaining that achieving a high level of energy efficiency on a plantwide basis was one of the goals of the facility – effectuated through the use of the E-gas technology, among other means. Application Vol. 1 at 1-2; *see also* Application Vol. 1 at 10-1 and KDAQ RTC J-36. Various alternatives identified by the Petitioners are also considered throughout the permit record, including in the BACT analysis. *See, e.g.*, KDAQ RTC at J-32 (discussing biomass). In addition, in KDAQ’s specific response to the Petitioners’ Section 165(a)(2) comments, KDAQ explained,

The Division solicited comments on the draft permit and held a public hearing at the Merle Travis Music Center, on January 19, 2010. All relevant public comments received by the Division for Air Quality were considered in preparing the proposed permit and submitted to U.S. EPA for a 45-day review. The commenter’s statements on alternatives are noted. However, “opinions” regarding energy policy and alternative energy are not considered relevant to the permit currently being reviewed or part of the permit process and do not merit further response because the broad scope of energy policy extends beyond the purview of the Kentucky Division for Air Quality for this permitting action. There are no laws or regulations that require an applicant for an air permit to demonstrate that there is a need for the proposed facility. The concept of “demonstrating need” is usually used in the context of public utilities regulated by the Public Service Commission (see for example: <http://www.lrc.ky.gov/KRS/278-00/020.PDF>) and is not a requirement in air permitting.

KDAQ RTC at J-10; *see also* Title XXIV, Kentucky Revised Statutes § 278.020 (regarding the Public Service Commission’s duties). As discussed above, while consideration of the need for a facility is not outside the scope of CAA § 165(a)(2) as a general matter, the permitting authority may refrain from considering the question of need under CAA § 165(a)(2) where this consideration has been tasked to another agency. *Prairie State* 13 E.A.D. at 33-34 and cases cited therein. In this case, KDAQ has provided a response identifying several rationales for not adopting the alternatives raised in the comments, including implications of the facility’s design and that the ‘need’ demonstration is tasked with another agency, *see* KDAQ RTC at J-10, and there is analysis of other alternatives elsewhere in the permit record, *see infra* section D.1.a. discussing KDAQ’s response to the Petitioners’ claims regarding analysis of biomass in the BACT analysis. In denying the Petition on this issue, EPA is not endorsing the entirety of KDAQ’s response, but is simply finding that KDAQ’s response provided a rationale for its decision that is also discussed throughout the permit record.<sup>17</sup> This, along with the fact that the

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<sup>17</sup> Going forward, where KDAQ intends to fulfill its obligation to consider alternatives under CAA § 165(a)(2) in part by doing so in the context of other portions of its permit record, including the BACT

Petitioners do not explain how KDAQ's rationale was deficient or how the Permit fails to comply with an applicable requirement of the Act, supports EPA's denial of the Petition on this claim.

### C. Petitioners' Claims Regarding KDAQ's Single Source Determination

**Petitioners' Claims:** The Petitioners contend that KDAQ erred in determining that KSG and the Thoroughbred Mine were two separate sources. Petition at 13. Rather, the Petitioners argue that they should have been permitted as a single source, consistent with federal regulations found at 40 C.F.R. § 51.166(b)(5) and (b)(6) and Kentucky's SIP-approved regulations at 401 KAR 51:017 § 1(9) and (38). The Petitioners identify a three-part test including consideration of the facilities' common ownership, whether they are adjacent, and the facilities' SIC-codes. In instances where the two facilities do not share a common SIC code, the Petitioners assert aggregation may nonetheless be appropriate where one facility is a "support facility" for the other. Petition at 14-15. The Petitioners apply the three-part test and provide supporting information for each prong of the analysis. Although they concede the two facilities do not share a common SIC code, the Petitioners argue that the Mine is a support facility for KSG. The Petitioners conclude by stating that KSG failed to provide the information necessary for KDAQ to properly evaluate whether the two facilities are a single source, and KDAQ's analysis included in the permit record is contrary to law. Petition at 15.

**EPA's Response:** For the reasons provided below, EPA denies the Petition on this issue.

For background purposes, in order for facilities to constitute a single stationary source under the PSD and title V programs of the CAA, all three of the following criteria must be satisfied: (1) the facilities are located on one or more contiguous or adjacent properties; (2) they share the same two-digit (major group) SIC code; and (3) they are under common control. *See* 40 C.F.R. §§ 70.2, 71.2, 51.165(a)(1)(i) and (ii); 51.166(b)(5) and (6), and 52.21(b)(5) and (6). More specifically, the title V regulations define "major source" to mean "any stationary source (or any group of stationary sources that are located on one or more contiguous or adjacent properties, and are under common control of the same person (or persons under common control)), belonging to a single major industrial grouping" and that are major stationary sources as defined by certain provisions of the CAA. *See* 40 C.F.R. § 70.2; *see also* CAA § 501(2), 42 U.S.C. § 7661(2). Consistent with the federal definitions, Kentucky's SIP-approved regulations define "stationary source" as "any building, structure, facility, or installation which emits or may emit any air pollutant subject to regulation under the CAA." 401 KAR 52:001 § 1(233); 40 C.F.R. § 51.166(b)(5)-(6). Kentucky's PSD regulations further define (consistent with federal regulations) "building, structure, facility, or installation" as "all of the pollutant emitting activities that: (a) Belong to the same industrial grouping or have the same two digit major group code as described in the Standard Industrial Classification Manual; (b) Are located on one or more contiguous or adjacent properties; (c) Are under the control of the same person or persons under common control; and (d) Do not include the activities of a vessel." 401 KAR 52:001 § 1(29). In promulgating the title V major source definition found at 40 C.F.R. § 71.2, EPA indicated that the language and application of the title V definition was to be consistent with the PSD definition contained in section 52.21. *See* 61 *Fed. Reg.* 34202, 34210 (July 1, 1996).

In the SOB supporting the Permit, KDAQ provided its basis for determining that the KSG facility and the nearby Thoroughbred Mine were not a "single source." KDAQ SOB at 6-8. In that explanation,

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analysis, it should also explain that reasoning in its response to comments that request consideration of alternatives under section 165(a)(2) of the Act. *See, e.g., Cash Creek Generation 2009* at 18-19.

KDAQ identified the definitions quoted above and stated that the two facilities are classified under separate SIC codes, including an analysis that explained KDAQ's position of why the Mine will not be a support facility for KSG, and that they will be located 3.5 miles apart. KDAQ SOB at 7. In so doing, KDAQ highlighted that the KSG facility is using both petcoke and coal (and not exclusively coal), and has no obligation to accept coal from only the Thoroughbred Mine. *Id.* Further, KDAQ noted that the Thoroughbred Mine's anticipated coal output exceeds the needs of the KSG facility. *Id.* In response to the Petitioners' public comments, KDAQ again went through the three-pronged analysis, and provided a rationale for its decision to permit the sources separately. KDAQ RTC at J-14 to J-15.

The analysis conducted by KDAQ provided a reasoned basis for its determination that the two facilities may be permitted separately. For example, in supporting its determination that the Mine will not serve as a support facility for KSG, KDAQ found the fact that the Mine is being developed independently of KSG, that it is neither required nor anticipated to be the sole source of coal for KSG, and that it will produce more coal than can be used by KSG. KDAQ RTC at J-14. In fact, KDAQ concluded that the Mine and KSG "could each exist as a viable operation without the other." *Id.* The Petitioners provide their own source determination analysis, and as part of that analysis, the Petitioners choose to emphasize certain facts over others to support a conclusion that the facilities should be permitted together. Petition at 13-15. The Petitioners' analysis, however, falls short of identifying how the analysis performed by KDAQ was deficient or inconsistent with applicable requirements, or otherwise inconsistent with title V. While the Petitioners' focus seems to be on facts that they assert support a finding that the two facilities are adjacent, KDAQ's rationale was based primarily on the fact that the facilities had separate SIC codes and that the Mine is not a support facility for KSG. This determination provided a basis for finding that the facilities were two separate sources. *See 45 Fed. Reg. 52676, 52695* (Aug. 7, 1980) (explaining that facilities with two different SIC codes are generally not considered a single source, but that a support facility is considered to be part of the same industrial grouping as that of the primary facility it supports, even if they have different SIC codes). Having made that determination, KDAQ was not required to conduct an analysis under the other prongs of the source determination, such as whether KSG and the Mine are contiguous or adjacent. The Petitioners argue that the support facility analysis was flawed because KDAQ should have examined the exact percentage of Mine coal that will be processed at KSG. Petition at 15. However, they have failed to identify how KDAQ's determination that the Mine was not a support facility for KSG, which was based on consideration of many other factors as described above, was deficient or that a different analysis was required under the CAA or the Kentucky SIP. For the reasons described above, the Petitioners failed to demonstrate that KDAQ's analysis was unreasonable or that the permit does not assure compliance with applicable requirements. For these reasons, EPA denies the Petition on these issues.

#### **D. Petitioners' Contentions Regarding the BACT Analysis and Clean Fuels and Cleaner Process Alternatives**

As a general matter, the Petitioners contend that KDAQ failed to adequately consider the use of clean fuels and cleaner production processes when setting BACT limits for the facility. Petition at 15-16. According to the Petitioners, the analysis of clean fuel/cleaner processes alternatives for gasification facilities requires consideration of natural gas to replace syngas or SNG for production and combustion processes, less polluting feedstocks such as biomass or lower-sulfur coal, and limits on gasification of dirty feedstocks such as petcoke. The Petitioners also assert that a proper top-down BACT analysis for the facility should include consideration of biomass as a feedstock alternative and cites to two examples of such consideration in other gasifier permits issued in Florida and Wisconsin. Petition at 17-18. The Petitioners also contend that KDAQ's BACT analysis was deficient in its consideration of lower-sulfur

coal feedstocks and its failure to consider the prohibition of petcoke as a feedstock. Finally, the Petitioners allege KDAQ's BACT analysis was deficient for EUs 01, 02, 08, 09, and 13 because it failed to consider the use of cleaner fuels, such as natural gas, as BACT.

### ***General Legal Framework***

As support for these claims, the Petitioners cite to the definition of BACT under the CAA. Specifically, the Petitioners cite to CAA § 169(3), which states, in relevant part and with emphasis added,

[t]he term “best available control technology” means 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.

*Id.* (emphasis added). Kentucky's SIP-approved definition of BACT, found at 401 KAR 51:001 § 1(8), is generally consistent with the federal definition.<sup>18</sup> Because many of these issues as raised in the Petition include numerous sub-issues, the Petition issues outlined above are reiterated and responded to, in turn, below.

## **1. Petitioners' Claims Regarding the Feedstock Analysis**

### **a. Consideration of Biomass as a Feedstock**

***Petitioners' Claims:*** The Petitioners contend that neither the application nor the SOB discusses the use of biomass as a feedstock alternative. Petition at 17. The Petitioners argue that a proper top-down BACT must consider low-impact biomass alone or in combination with coal as a feedstock alternative at KSG because it would result in lower SO<sub>2</sub> emissions. Petition at 17. The Petitioners cite to two gasifier facilities where they contend that biomass gasification has already been demonstrated as feasible. The Petitioners state that KDAQ must require KSG to submit an evaluation of biomass as part of its BACT analysis. Further, the Petitioners assert that KDAQ can only allow KSG to avoid using biomass if the cost of pollutant removal from such a fuel is “disproportionately high when compared to the cost of control for that particular pollutant and source in recent BACT determinations,” citing the draft 1990 NSR Manual for support. Petition at 19.

***EPA's Response:*** For the reasons discussed below, EPA denies the Petition with respect to this issue.

In response to the Petitioners' claims regarding biomass, KDAQ explained that it did not agree with the Petitioners' contention that using biofuels would produce fewer emissions of the identified pollutants

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<sup>18</sup> Kentucky's SIP-approved definition does not include the words “clean fuels” that is emphasized in the quote from the CAA. Nonetheless, KSG's application points to the definition in the CAA and neither KSG nor KDAQ raise the wording differences in responding to Petitioners' comments. Thus, for purposes of this Order, EPA notes the difference but does not infer that KDAQ interprets its regulatory definition any differently from the statutory definition.

(including SO<sub>2</sub>). KDAQ RTC at J-26. KDAQ stated that the suggestion by the Petitioners to the contrary “lacks technical data and is unsupported by science.” *Id.* KDAQ then explained that the AGR removes sulfur to “de minimis levels independent of the sulfur level of the feedstock.” *Id.* As a result, KDAQ concluded that “using biofuel would not meaningfully reduce sulfur emissions.” *Id.* The absence of evidence that a control strategy will result in lower emissions may form part of a reasoned basis for eliminating an option from the BACT analysis. *See, e.g., Prairie State*, 13 E.A.D. at 40-41 (finding that the Petitioner had not met its burden of demonstrating that coal washing would result in materially lower emissions). EPA has also recognized that a detailed Step 4 economic analysis is not necessarily required for an option that would achieve equivalent levels of control as another option under consideration. *Id.* at 35.

KDAQ further supported its decision by explaining that biofuels have never been gasified in an E-gas gasifier such as the proposed KSG facility and “the lack of research and development indicates that the technology is not available.” *Id.* KDAQ then provided additional responses to the Petitioners’ claims and concluded that biomass was not an “available option” for KSG. KDAQ noted that biomass gasifiers are a different type of gasifier that are not economical for the full-scale production proposed by KSG. The response also explained that longer term commercial contracts are not available in sufficient quantity for KSG. *Id.*

It is unclear from KDAQ’s response whether the conclusion that biomass was not “available” was used to justify eliminating a biomass feedstock option in the context of Step 1 or Step 2 of a top-down BACT analysis. In the context of Step 1, EPA has recognized that “available” options for a particular facility do not necessarily have to include options that would fundamentally “redefine” the source proposed by the permit applicant. *See, e.g., In re: Desert Rock Energy Company, LLC*, PSD Appeal No. 08-03 et al, slip op. at 59-65 (EAB, Sept. 24, 2009). EPA interprets the Act to require a reasoned justification, based on an analysis of the underlying administrative record for each permit, to support a conclusion that an option is not “available” in a given case on the grounds that it would fundamentally “redefine the source.” *Id.* at 63-72, 76. In the context of Step 2, EPA recommends that a technical feasibility analysis begin with an assessment of whether a control strategy has been “demonstrated,” meaning that it has been installed and operated successfully at a similar facility. *Prairie State*, 13 E.A.D. at 34. If a control strategy has not been demonstrated, the permitting authority should then evaluate whether the option is “available” or “applicable.” In this context, EPA uses “available” to mean a technology that can be obtained through commercial channels or is otherwise available within a common sense meaning of the term. EPA considers an available technology to be “applicable” if it can reasonably be installed and operated on the source type under consideration. *Id.* at 34.

KDAQ does not use the phrase “redefining the source” in its response to comments or state clearly that this is a basis for eliminating the biomass feedstock. However, there is evidence in the record that KDAQ looked at the permit materials to see how the applicant defined its goal, objectives, purpose or basic design for the proposed facility in the application. KDAQ RTC at J-23 (“As explained in the application, the purpose of this project is to produce SNG, ammonium thiosulfate (“ATS”), elemental sulfur, and slag from the gasification of two feedstocks - coal and petroleum coke. Application at 2-4.”). Further, the application notes that “[t]he gasification process at the facility will utilize ConocoPhillips E-Gas™ technology to produce raw synthesis gas (syngas) from a mixture of coal and petroleum coke.” Air Permit Application for New SNG Production Facility, Kentucky NewGas, Volume 1 of 3, October 2009 at 1-2 (hereafter referred to as “Application Vol. 1”). KDAQ also included elements of a Step 2 analysis showing that the biomass feedstock option was not “demonstrated” or “applicable” to the source type under consideration. KDAQ RTC at J-26 (biofuels never gasified in an E-Gas gasifier and

biomass gasifiers are smaller scale). In addition, KDAQ addressed the “availability” of the feedstock in a Step 2 context. *Id.* (necessary quantity of biomass for long-term contracts not available).

Despite KDAQ’s response to the Petitioners’ comments, the Petitioners essentially reiterate their public comments in their Petition, providing no additional support or discussion regarding KDAQ’s response except to argue that KDAQ “refused” to consider biomass and that KDAQ did not support its claim that biomass is not an available option. Petition at 19; *see also MacClarence*, 596 F.3d at 1130-33 (upholding an EPA title V order explaining the petitioner’s burden to rebut the state permitting authority’s reasoned response to public comments). While there is some ambiguity as to how KDAQ applied the term “available” in the context of the top-down BACT process (as described above), there is support in the record for KDAQ’s conclusion that biomass was not “available” to KSG in more than one context. Further, the Petitioners failed to address KDAQ’s conclusion that there is no evidence that the biomass feedstock would reduce emissions. Thus the Petitioners failed to demonstrate that KDAQ lacked a reasoned basis to exclude biomass or that the permit, when viewed in light of KDAQ’s response to comments, is not in compliance with the requirements under the Act.

For the reasons stated above, EPA denies the Petition with respect to this issue.

**b. Claims Regarding Deficiencies With the SO<sub>2</sub> BACT Analysis for the Feedstock**

As a general matter, the Petitioners contend that although low sulfur coal was considered and rejected (Application Vol. 1 at 5-5 to 5-8, SOB at 90-92) in the SO<sub>2</sub> BACT analysis for the AGR, the analysis was deficient for four main reasons. Petition at 19-20. First, the Petitioners state that KDAQ did not independently verify KSG’s statements that use of lower-sulfur coal would be prohibitively expensive. Petition at 20. Second, the Petitioners argue that KDAQ failed to consider all the low-sulfur coal options including Central Appalachian Coal. Petition at 20. Third, the Petitioners raise concerns with the cost analysis itself focusing on allegations that KDAQ failed to adequately consider other facilities and that KDAQ’s reliance on incremental rather than average costs was inadequate. Petition at 22. Fourth, the Petitioners raise the issue that KDAQ’s clean fuels analysis is deficient because KDAQ failed to consider pollutants other than SO<sub>2</sub>. Specifically, KDAQ made “no attempt” to consider whether the use of Powder River Basin (PRB) coal, lower-sulfur eastern coal or biomass would affect emissions of pollutants other than SO<sub>2</sub>, specifically highlighting PM and NO<sub>x</sub>. Petition at 22-23. The Petitioners conclude that for these reasons, the consideration of low-sulfur coal in the BACT analysis was deficient. Each of these claims will be discussed with more specificity below.

***Independent verification of KSG’s Cost Statements by KDAQ***

***Petitioners’ Claims:*** The Petitioners contend that KDAQ’s analysis lacked sufficient evidentiary basis for its conclusion in that KDAQ accepted KSG cost figures for low sulfur coal without providing any independent data or information to support KSG’s figures. As a result, the Petitioners claim that KDAQ failed to adequately document its decision making. The Petitioners provide some information suggesting cheaper PRB coal and low-sulfur eastern coal is available. Petition at 20 n.29.

***EPA’s Response:*** For the reasons provided below, EPA denies the Petition with respect to this issue. In its response to the Petitioners’ comments, KDAQ explained that the cost information needed to verify KSG’s calculations is included in the application. KDAQ RTC at J-31. KDAQ also provided additional technical explanation of some of the cost estimates. *Id.*, and *see also* KDAQ RTC at J-27 to J-28. The

Application in section 5.3.1 provides detailed information regarding cost estimates, including specific sources used in estimating the costs of the different feedstocks. The Petitioners do not address the response provided by KDAQ or raise specific deficiencies with the estimates provided in the Application, and instead appear to reiterate their public comments in the Petition with no further analysis. KDAQ stated in responding to the Petitioners' comments that nothing in the Kentucky SIP requires either the specific cost analysis or level of detail requested by the Petitioners. *See* RTC at J-30. While EPA may use a particular form of a cost analysis in its own permitting actions, EPA's approach is not necessarily required in SIP-approved states. Accordingly, there is some discretion afforded to the state permitting authority in assessing costs, even when they choose to use a top-down BACT analysis. Given this discretion and KDAQ's explanation in the RTC, EPA finds that the Petitioners failed to demonstrate that KDAQ's cost estimates were unreasonable or deficient or that the Permit does not assure compliance with an applicable requirement of the Act.

### ***Consideration of all low-sulfur coal options***

***Petitioners' Claims:*** The Petitioners contend KDAQ erred in failing to consider other lower-sulfur coal alternatives, such as less-expensive eastern coals. Petition at 20. The Petitioners give the specific example of Central Appalachian Coal, which they state has a lower sulfur content than KSG's preferred feedstock and is low in cost as well. Petition at 20. The Petitioners also state that the analysis of low sulfur coal only considered the most expensive source of low sulfur eastern coal. Petition at 21. The Petitioners cite to the KDAQ RTC, stating that KDAQ failed to explain "why" a lower-sulfur coal would be cost prohibitive. Petition at 21.

***EPA's Response:*** For the reasons provided below, EPA denies the Petition with respect to this issue. The application considered four feedstocks in addition to the design basis coal/petcoke combination, as well as the associated costs of these different feedstocks. Application Vol. 1 at Section 5.3.1. In its RTC, KDAQ explains that there is some flexibility in the CAA and its implementing regulations regarding the cost analysis in a top-down BACT analysis. KDAQ RTC at J-30. The application also provides specific information regarding the technology that will be utilized (E-gas gasifiers) and the other products anticipated to be manufactured at the facility (e.g., sulfur), which provide additional support for the selected fuel options. *See, e.g.,* Application Vol. 1 at 1-2. The SOB also explains the choice of feedstocks as a balance of emissions reductions and facility output of sulfur products from the AGR. KDAQ SOB at 91. Given the information in the record, the Petitioners have not demonstrated why this analysis, taken as a whole, was unreasonable or how it was inconsistent with requirements under the Act. While it is clear that the Petitioners do not agree with the analysis, the Petitioners fail to demonstrate that it was deficient. *See, e.g., Sierra Club v. EPA*, 499 F.3d 653, 655 (7<sup>th</sup> Cir. 2007) (finding that the consideration of alternative fuel options need not include every possible option). For the reasons described above, the Petitioners failed to demonstrate that KDAQ's analysis was unreasonable or that the permit does not assure compliance with applicable requirements of the Act.

### ***Comparison to other facilities***

***Petitioners' Claims:*** The Petitioners contend that KDAQ's analysis did not follow the required methodology to reject clean fuels based on cost. Petition at 21. The primary reason cited by the Petitioners is that KDAQ did not demonstrate that the cost-per-ton of pollutant prevented was disproportionate to the cost-per-ton incurred by other sources that were controlling the pollutant. The Petitioners cite to other BACT determinations and several EAB decisions to support their point.

**EPA's Response.** For the reasons provided below, EPA denies the Petition with respect to this issue. In the application, KSG does include consideration of fuels used by a variety of different sources. *See, e.g.*, Application Vol. 1 at 5-6; *see also* Table F-2 (comparing fuels and emissions from various facilities; not specifically discussing costs). In the SOB, KDAQ explained that, “[a]s shown in Table 7-9 and 7-10 below, replacing local coal and petroleum coke with alternate low-sulfur feedstocks is not an economically viable alternative. The small reduction in emissions does not justify the cost of using the alternative fuels as feedstocks.” KDAQ SOB at 91; *see also* Section 7 of the SOB. In response to the Petitioners’ public comments, KDAQ explained,

Neither the CAA nor the federal and state regulations specify how an economic evaluation in a BACT analysis is to be performed. The cost analysis performed by Kentucky Syngas with respect to consideration of other feedstocks was appropriate and reasonable. The Division has provided a reasoned justification for its decision (see permit Statement of Basis, Section 7) and reasonably concludes that permit conditions are appropriate and has a reasoned basis for choosing one compliance method over another. The methodology followed by Kentucky Syngas and the Division reasonably considered the difference in feedstock cost to potentially achieve a reduction in emissions (assuming a change to a lower-sulfur feedstock would lead to lower SO<sub>2</sub> emissions). The commenter suggests that the change in feedstock should be evaluated without taking into consideration the remainder of the process. The Division does not concur with this reasoning. To properly evaluate this process the AGR vent and the ABS tower vent must be considered. Both the AGR vent and the ABS tower vent (the primary SO<sub>2</sub> emissions points) are inherent parts of the process of producing both the SNG and the sulfur products. Thus, it was appropriate to consider emissions from the process as a whole related to the change in feedstock. Kentucky Syngas assumed that the only cost differential with a change in feedstock would be the cost of the feedstock itself. Adding the cost of the process as a whole to the cost of the feedstock would not impact the conclusion of the analysis, but would increase the average cost per ton reduced (assuming a reduction in emissions) across the board for all coals considered.

KDAQ RTC at J-30. In the Petition, the Petitioners do not respond to KDAQ’s explanation, or provide an analysis as to why KDAQ’s BACT analysis, taken as a whole, was unreasonable or deficient. Although EPA agrees that comparisons with other facilities in a manner suggested by the Petitioners can provide additional support in a BACT analysis, such comparisons are not the only way to perform this component of the analysis. As explained above and reiterated in KDAQ’s response, nothing in the CAA or the Kentucky SIP requires the specific cost comparisons requested by the Petitioners, so KDAQ has some discretion in assessing costs. In this case, KDAQ provided a reasoned explanation for its approach (which did include consideration of some other facilities and costs as was described in the Application), and the Petitioners do not specifically challenge this rationale. *See, e.g., MacClarence*, 596 F.3d at 1130-33. As a result, the Petitioners failed to demonstrate that the permit does not assure compliance with the applicable requirements of the Act.

### ***Incremental and average costs***

***Petitioners’ Claims:*** The Petitioners contend that KDAQ’s determination of certain fuels being economically infeasible is deficient because it relies solely on incremental costs rather than average costs. Petition at 22. The Petitioners state that average cost effectiveness must always be paired with

incremental cost effectiveness in a BACT analysis. Petition at 22. (citing to EPA's 1990 Draft New Source Review (NSR) Manual (hereafter referred to as the "Draft NSR Manual."))

**EPA's Response:** For the reasons provided below, EPA denies the Petition with respect to this issue. In Section 5.3.1 of the Application, KSG provides information regarding average and incremental costs. Application Vol. 1 at Table 5-3 at page 5-8. The Petitioners do not cite to the Application in this part of the Petition (at page 22), but rather, base their discussion on the Draft NSR Manual. In its response to the Petitioners' public comments, KDAQ explained that the information necessary to evaluate average and incremental costs is included in the permit record and KDAQ provides a specific example of how such an evaluation would occur. KDAQ RTC at J-31; *see also* KDAQ SOB at 91-92. The Petitioners do not respond to KDAQ's rationale in the response to comments document and instead reiterate statements from their public comments. As a result, the Petitioners failed to demonstrate that the BACT analysis was unreasonable.

### ***Other pollutant reductions***

**Petitioners' Claims:** The Petitioners contend that the clean fuels analysis only considered SO<sub>2</sub> and not other pollutant reductions, despite indications by KSG that low sulfur coal may have an effect on emissions of other pollutants. Petition at 22. The Petitioners suggest sulfuric acid mist (SAM) and PM<sub>2.5</sub> emissions would be lower if a lower-sulfur coal was used. The Petitioners appear to contend that the PM<sub>2.5</sub> BACT analysis and any SAM BACT analysis must also consider lower-sulfur fuels. Petition at 23. The Petitioners also state that NO<sub>x</sub> is dependent on the fuel source and should be considered. Before rejecting cleaner fuels, KDAQ must consider the cost implications when the pollution reductions of lower sulfur coal are spread across all the pollutant emissions that would be affected at the facility. *Id.*

**EPA's Response:** For the reasons provided below, EPA denies the Petition with respect to this issue. In the Application, KSG conducted BACT analyses for multiple pollutants that were subject to PSD review (including NO<sub>x</sub> and PM). *See generally* Application Vol. 1 Section 5. The Application focuses on SO<sub>2</sub> as the key pollutant for the feedstock analysis. KSG explains its analysis further in its response to the Petitioners' public comments by stating, "Kentucky Syngas considered other pollutants, but concluded that SO<sub>2</sub> was the pollutant most likely to be affected by the choice of fuel...If fuel switching is uneconomical for the pollutant that will be affected the most, then it would likewise be uneconomical for any other pollutant." KSG Response to Comments at 12. Further, KSG explained that with respect to SAM, the facility is not a significant source for that pollutant and thus, PSD does not apply. *Id.* KSG also explains that the nature of the PM<sub>2.5</sub> emissions at the facility is such that a change in feedstock would not have any impact on PM<sub>2.5</sub> emissions. *Id.* Finally, KSG notes that because the facility is not "combusting" coal, the NO<sub>x</sub> emissions would not be impacted by a different feedstock choice. *Id.* KDAQ underscores these points in its response to the Petitioners' public comments, stating that,

Other pollutants were considered. SO<sub>2</sub> was the pollutant most likely to be affected by the feedstock choice. BACT is performed on a pollutant by pollutant basis. The analysis of SO<sub>2</sub> (the pollutant most affected by the feedstock choice) demonstrated that switching the feedstock was not economical for controlling SO<sub>2</sub>. In fact, the change was far from what would be considered economical. Since switching the feedstock had its greatest affect on SO<sub>2</sub> and it was uneconomical, it was demonstrated that this method would only be less economical for other pollutants which are less affected (smaller reductions) by the change.

KDAQ RTC at 32. Despite this direct response to the Petitioners' comments by KDAQ, the Petitioners do not respond to KDAQ's stated rationale and instead, in their Petition, simply reiterate their public comments. As a result, the Petitioners failed to demonstrate that KDAQ's rationale was inconsistent with requirements under the Act or that the permit fails to assure compliance with an applicable requirement of the Act.

**c. Claim Regarding Prohibition of Petcoke**

***Petitioners' Claims:*** The Petitioners contend that KDAQ failed to consider whether petcoke should be prohibited in its feedstock analysis. Petition at 23. The Petitioners suggest that because cleaner fuels are available and would result in greater emission reductions, consideration of this alternative was required under the BACT analysis. Alternatively, the Petitioners state that KDAQ should have considered whether there should be a limit to the percentages of petcoke in the feedstock when setting BACT limits. Petition at 23. The Petitioners also raise concerns with consideration of 100% petcoke because it results in weaker emission limits based on the dirtiest potential feedstock mixture (i.e., petcoke) rather than setting limits that are based on the maximum degree of reduction of each pollutant. Petition at 24. The Petitioners rebut statements in KDAQ's RTC by saying that setting BACT based on "worst-case" does not afford maximum protection.

***EPA's Response:*** For the reasons provided below, EPA denies the Petition with respect to this issue. In their public comments submitted to KDAQ, under the heading "Petroleum Coke," the Petitioners raised the following issues:

The applicant failed to consider the implications of using petroleum coke as a fuel. There is no limit on the percentage of petroleum coke that the plant might process. In fact, the applicant claims to be fuel flexible with the ability to process up to 100% petroleum coke. The implications of the use of petroleum coke as the fuel must be considered when calculating potential to emit (PTE) and in a BACT analysis of cleaner fuels. Petroleum coke may have a sulfur content in the range of 6% - significantly higher than most coals.

Furthermore, there is the possibility of the facility processing large quantities of petroleum coke derived from the increased processing of dirty Canadian heavy crude at refineries across the Midwest. The increasing availability of petroleum coke in the Region is tied intrinsically to an exponentially large increase in the processing of heavy crude from Canada at refineries. Canadian crude derived from tar sands is higher in metals such as mercury, nickel and vanadium. Such contaminants get concentrated in petroleum coke at the end of the refining process. Consequently, the presence of increased contaminants in the dirtier form of petroleum coke derived from Canadian Crude must be considered in both the PTE calculations and in a cleaner fuels analysis.

Petitioners' Public Comments at 22 (footnotes omitted). KDAQ responded to these comments in the KDAQ RTC at J-34, wherein KDAQ explained how the "implications" of using petcoke were considered in the Application and the BACT analysis. In the Petition, the Petitioners state for the first time that the BACT analysis for the feedstocks was deficient because KDAQ failed to consider whether petcoke should be "prohibited as a feedstock." Petition at 23.

KDAQ provided a response to the comment the Petitioners originally made. KDAQ's response explained,

Kentucky Syngas did not fail to consider the implications of using petroleum coke as a fuel. Emissions estimates were based on using petroleum coke. Kentucky Syngas evaluated emissions using 100% petroleum coke and the emissions limits proposed for the facility account for such use. Kentucky Syngas specifically addressed the implications of feedstock flexibility on PTE in the April 1, 2009 response to the Notice of Deficiency (NOD) #1 Addendum 1, Item 1(3). Although Kentucky Syngas does anticipate that both coal/petroleum coke specifications and the feedstock mixture percentages will vary on a short-term basis, the proposed BACT emission limitations and modeled stack parameters for the project are considered “worst-case” despite the fact that they were established based on the design feedstock specifications in Table 2-1 of Volume 1 to the Application and the design feedstock mixture percentage of 2:1 coal to petroleum coke. The only emission points that could be directly affected by the gasifier feedstock characteristics and mixture percentage are the flare, AGR Vent, and ABS Tower Vent. In the NOD response, Kentucky Syngas provided a detailed description of the potential influence of feedstock characteristics and mixture percentages on the operation of the flare, AGR Vent, and ABS Tower Vent and provided justification that the proposed BACT limits and modeled stack parameters appropriately reflect the worst case operating mode for the Plant.

KDAQ RTC at J-34. Section 505(b)(2) of the CAA requires that “[t]he petition shall be based only on objections to the permit that were raised with reasonable specificity during the public comment period provided by the permitting agency (unless the petitioner demonstrates in the petition to the Administrator that it was impracticable to raise such objections within such period or unless the grounds for such objection arose after such period).” 42 U.S.C. § 7661d(b)(2); *see also* 40 C.F.R. § 70.8(d). In the case of the petcoke comment, as outlined above, the Petitioners did not raise in their public comments, *with reasonable specificity*, the issue they now raise in the Petition. Further, the Petitioners make no claims that raising such an issue (prohibition of petcoke) was impracticable (and there does not appear to be any record support for such an argument), and it does not appear that any other commenter made the claim that use of petcoke should be prohibited. Nor is there any indication that the grounds for raising such a claim arose after the close of the public comment period. While the Petitioners’ public comment is related to petcoke, it does not raise, with reasonable specificity, the issue of a prohibition of petcoke as a necessary component of KDAQ’s BACT analysis. Accordingly, the public comments are too broad and vague to have provided Kentucky with adequate notice and opportunity to respond to the specific issue being raised in the Petition,<sup>19</sup> and EPA denies the Petition as to this issue. *See, e.g., In the Matter of Carmeuse Lime and Stone*, Petition No. V-2010-1 (Order on Petition) (Nov. 4, 2011) at 7.

For the reasons described above, the Petitioners failed to demonstrate that KDAQ’s analysis was unreasonable or that the permit does not assure compliance with applicable requirements of the Act.

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<sup>19</sup> Although KDAQ did not directly address the elimination of petcoke feedstock, we note that the permit record suggests the proposed facility’s stated aim or purpose, as outlined in the Application, includes use of petcoke for several reasons including, but not limited to, technicalities associated with the E-gas gasifier system. *See, e.g.,* Application Vol. 1 at 1-1 (explaining that use of petcoke “will improve gasifier performance and output”); 2-4 (explaining that sulfur and nitrogen in the petcoke will be “converted in the process into saleable product”).

**d. Claims Regarding Clean Fuels Analysis for Other Processes**

**Petitioners' Claims:** KDAQ failed to consider clean fuels by not considering the exclusive use of natural gas as BACT for five different emission units (which the permit allows to be powered by SNG), EUs 1, 2, 13, 8 and 9, as well as two units powered by diesel, EUs 6 and 7. Petition at 24. The Petitioners also allege that even if emissions are the same between natural gas and SNG, the BACT analysis is flawed because it did not consider and eliminate the use of natural gas. Petition at 25. The Petitioners cite to another permit recently issued by KDAQ for the Cash Creek Generating Facility where the Petitioners state that natural gas is used to fire the firewater pumps and standby generators. Petition at 25.

**EPA's Response:** For the reasons provided below, EPA denies the Petition with respect to this issue. In response to the Petitioners' public comments, KDAQ cites to information provided by KSG's response stating that

SNG is cleaner than natural gas because it contains virtually no sulfur (<50 ppb) and no long chain CO producing hydrocarbons such as ethane, propane or butane normally found in natural gas. The low sulfur content and non-existent long chain hydrocarbons in the SNG are a result of the process used to make SNG. The catalysts employed and chemistry will not allow these contaminants to be present in the SNG. The principle compound of SNG is methane with small quantities of hydrogen, nitrogen and CO<sub>2</sub>. Furthermore, the SNG must contractually meet the pipeline specifications for natural gas. Consequently, the emissions from the combustion of SNG will always be the same or lower than natural gas. With respect to diesel fuel, it is only used for safety related systems. The diesel backup generators and fire-water pumps are critical devices that must operate independent from any other utilities including the electrical grid or natural gas pipelines. In the event of power failure or natural gas interruptions, diesel is the most reliable fuel to insure that these safety systems are operational in order to protect personnel, the environment and plant equipment. Furthermore, failure to provide independent operation of these devices creates an unacceptable risk that would likely prove uninsurable and therefore not commercially available.

KSG Response to Comments at 8-9; KDAQ RTC at J-24. In responding to the Petitioners' public comments, KDAQ and KSG identify several key bases for the decision not to consider natural gas for the emission units identified by the Petitioners, including the chemical equivalency of natural gas and SNG, and the safety and reliability of diesel. In the Petition, the Petitioners recognize KDAQ's rationale that the emission limits for firing SNG and natural gas would be identical, but the Petitioners do not explain why this and/or the other bases provided by KDAQ, are unreasonable and/or result in a permit that is not consistent with applicable requirements. Instead, the Petitioners cite to *Cash Creek Generation*, a 2009 EPA title V petition order. In the facts presented in that order, the facility was generating electricity through the use of natural gas (which was available onsite) and other fuels, and KDAQ had not provided a sufficient rationale to support its conclusion that natural gas was not "available." *Id.* at 10. EPA's order granting that petition focused on KDAQ's failure to provide a reasoned basis for its analysis, and did not specifically assert that natural gas must be found as BACT for that facility. In the case of KSG, KDAQ did not suggest in its response to comments that natural gas

was not available; but rather, provided a different and reasoned justification<sup>20</sup> for its determinations. The Petitioners do not respond to the rationale provided by KDAQ, and as a result, failed to demonstrate that KDAQ's analysis was unreasonable or that it resulted in a deficient permit.

**E. Petitioners' Claims Regarding Enforceability of Sourcewide Emission Limits for VOCs, Methanol, and H<sub>2</sub>S/TRS, and Lack of a Limit for Combined HAPs.**

**Petitioners' Claims:** In different places throughout the Petition, the Petitioners raise concerns with the enforceability of the sourcewide emission limits included in Section D of the Permit for VOCs, (Petition at 25, 29, 31, 42, and 45) methanol (Petition at 25, 29, 36, 37, 38, and 42), and H<sub>2</sub>S/TRS (Petition at 25, 29, and 30). The Petitioners also state that KSG's methodology for calculating the PTE for combined (the Petitioners say "total") HAPs was flawed and as a result, the facility should have a limit and/or monitoring for combined HAPs. Petition at 42-45. The Petitioners identify several bases for the concern including, but not limited to, that the PTE calculations for these pollutants did not adequately consider emissions associated with periods of SSM and that the methods for ensuring compliance with the sourcewide emission limits do not adequately account for all actual emissions and all flaring emissions. The Petitioners claim, for example, that the calculations of the flare's PTE were flawed because those calculations failed to include emissions during unplanned shutdowns and malfunctions, arguing that PTE calculations from the flare must include all active flaring emissions. Petition at 25-30. The Petitioners state that 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, EPA, and citizens to determine whether the facility is complying with the condition." Petition at 28.<sup>21</sup>

**EPA's Response:** For the reasons provided below, EPA grants the Petition on the issue of enforceability of source-wide emissions limits and on an issue relating to combined HAPs.

**VOCs, methanol, and H<sub>2</sub>S/TRS**

As the Petitioners note, under Kentucky's federally approved SIP the calculation of a facility's PTE for purposes of determining whether the facility should be classified as "major" for a particular pollutant includes consideration of "[a] physical or operational limitation on the capacity of the source to emit [the] pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, . . . if the limitation or the effect it would have on emissions . . . [i]s federally enforceable." 401 KAR 51:001, § 1 (190) (PTE definition in Kentucky's SIP); *see also* 40 C.F.R. § 52.21(b)(4) (federal PTE definition for PSD applicability); 40 C.F.R. § 63.2 (providing substantially the same PTE definition for determining applicability of Maximum Achievable Control Technology (MACT) standards for HAPs). *See generally In re Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC*, Petition No. II-2000-07 (Order on Petition) (May 2, 2001) at 21, 24-25 (discussing PTE analysis and PTE limits). In other

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<sup>20</sup> EPA does not here provide an opinion on this rationale provided by KDAQ, but rather, simply finds KDAQ provided a rationale and that Petitioners failed to make a demonstration that the bases provided in the record for KDAQ's decision were inconsistent with applicable requirements.

<sup>21</sup> In order to address these issues together, EPA is responding to these issues out of order from their presentation in the Petition. This Order then addresses the remaining issues presented on pages 25-45 of the Petition as part of subsequent issues.

words, if a permit applicant agrees to an enforceable limit<sup>22</sup> that is sufficient to restrict PTE, the facility's "maximum capacity to emit" for PTE purposes is calculated based on that limit. In this case, KSG agreed to accept sourcewide limits for VOCs, methanol and H<sub>2</sub>S/TRS. *See* Permit at 92-93. Therefore, an EPA objection regarding KSG's sourcewide limits for the PTE calculations associated with these three pollutants is warranted if the sourcewide limits in the permit are not enforceable. Because EPA has determined that these limits are not adequately enforceable, EPA is granting with respect to these issues, as described below.<sup>23</sup>

As noted above in EPA's summary of the Petitioners' claims, the Petitioners identify several concerns regarding the enforceability of the three sourcewide limits. As explained below, EPA concludes that the Petitioners have met their burden of demonstrating that the sourcewide limits for VOCs, methanol and H<sub>2</sub>S/TRS are not enforceable as a practical matter. Among other issues, the Petitioners demonstrated that KDAQ failed to provide a reasoned explanation for how the compliance demonstration method associated with the three sourcewide emissions limits accounts for all actual emissions from the flare. More specifically, for VOCs, the Permit provides no methodology for ensuring compliance with the 36 tons per year (tpy) emission limit. Permit at 92. In the compliance demonstration, the permit simply points to compliance with other limits, appearing to rely on compliance with VOC limits for some units, methanol limits for some units and CO limits for some units; however, the permit does not clearly require the source to determine whether all actual VOC emissions total 36 tpy or less. Further, it is not clear how the permit ensures that the VOC emissions remain below that level. The same deficiency exists for H<sub>2</sub>S/TRS – again, the permit's compliance demonstration methodology does not clearly require the source to determine whether all actual emissions of H<sub>2</sub>S/TRS total 9 tpy or less. It is also not clear how the permit would ensure that H<sub>2</sub>S/TRS emissions remain below that level. With respect to methanol, the permit does include a methodology for calculating compliance with the 9 tpy limit; however, the methodology does not appear to account for all actual emissions from the applicable units. Permit at 93-94. The calculation includes emissions associated with some flaring events (e.g., gasifier rotations, certain startups and certain shutdowns), but the calculation does not appear to include any provision to ensure that all actual flare emissions are counted towards determining compliance with the sourcewide methanol limit.

In response to the Petitioners' public comments, KDAQ made some changes to the permit. Most notably, KDAQ added a provision regarding the flaring of sweet syngas during the startup and planned shutdown process. Permit at 6 (condition B.1.d.). However, because there are no other limits on the flaring of sour syngas during other periods, this response does not completely address the Petitioners'

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<sup>22</sup> Although the federal definition of PTE for PSD also includes the term "federally enforceable," following two court decisions, *National Mining Ass'n v. EPA*, 59 F.3d 1351 (D.C. Cir.1995) and *Chemical Manufacturers Ass'n v. EPA*, No. 89-1514 (D.C. Cir.1995), EPA clarified that the term "federally enforceable" as used in relation to the definition of PTE for the federal PSD program, should be read to mean "federally enforceable or legally and practicably enforceable by a state or local air pollution control agency." John Seitz and Robert Van Heuvelen, "Release of Interim Policy on Federal Enforceability of Limitations on Potential to Emit" (Jan. 22, 1996), at 3. The term "federal enforceability" has also been interpreted to require practical enforceability. *See, e.g., In re Shell Offshore, Inc., Kulluk Drilling Unit and Frontier Discoverer Drilling Unit*, 13 E.A.D. 357, 394 n.54 (EAB 2007).

<sup>23</sup> As further described below, EPA is also granting the Petition with regard to issues raised pertaining to the applicability determination for CAA Section 112 requirements for combined HAPs, inasmuch as it is directly correlated to the enforceability of the sourcewide methanol limit.

concerns. As a result, EPA is granting the Petition and directing KDAQ to revise the permit and permit record as appropriate to ensure that the methodology for ensuring compliance with the sourcewide limits for VOCs, H<sub>2</sub>S/TRS, and methanol, respectively, adequately accounts for *all* actual emissions, including those from all flaring events. Alternatively, KDAQ may take other action, consistent with the requirements of the Act, to ensure that the facility does not trigger major source requirements for these pollutants or to ensure that the facility complies with major source requirements for these pollutants.

As stated by the Petitioners on page 28 of the Petition, an emission limit can be relied upon to restrict a source's PTE only if it is legally and practicably enforceable. EPA grants the Petition on the Petitioners' claims regarding the enforceability of the sourcewide emission limits for VOC, methanol and H<sub>2</sub>S/TRS because the Petitioners demonstrated that the permit is deficient. EPA is thus focusing on the method of determining compliance with sourcewide VOCs, H<sub>2</sub>S/TRS, and methanol emission limits, and therefore, need not reach the separate issues regarding how PTE was calculated for VOCs, H<sub>2</sub>S/TRS, and methanol raised throughout pages 25-45 of the Petition. Notably, EPA is responding below to numerous other issues raised on these pages.

### ***Combined HAPs***

***Petitioners' Claims:*** With regard to combined HAPs, the Petitioners generally state that the Permit relies on an "erroneous minor source determination" for hazardous air pollutants, although the Petition does not clearly delineate whether the issue raised involves consideration of individual HAPs (i.e., the 10 tpy threshold) or combined HAPs (i.e., the 25 tpy threshold), or both. *See* Petition at 35-37. EPA interprets the issue presented to be that the Petitioners contend that the HAP analysis, on the whole, is deficient because it fails to account for all emissions in the estimation of PTE, or all actual emissions in the compliance assurance requirements for methanol (which is the basis for the facility not having a combined HAP limit).

### ***EPA's Response:***

For the reasons provided below, EPA grants the Petition on this issue. The facility intended to stay below the CAA Section 112 applicability threshold for combined HAPs by accepting a sourcewide limit for methanol. The pre-controlled PTE for combined HAPs was estimated at 36.7 tpy. Application Vol. 1 at 4-8, Table 4-2. The pre-controlled PTE for methanol was estimated at 30.8 tpy. *Id.* The next highest emitting HAP PTE after methanol was hexane, estimated at 1.7 tpy. In granting the Petitioners' claims regarding the enforceability of the sourcewide methanol limit, the failure of the permit to include a combined HAP limit is necessarily also called into question. EPA is granting because the facility avoided being considered a major source for combined HAPs due to an unenforceable sourcewide limit taken for methanol. EPA is not in this order requiring that KDAQ take any specific action with respect to combined HAPs; however, depending on how KDAQ resolves EPA's objection on the sourcewide methanol limit, additional revisions to the permit or permit record may be required with respect to combined HAPs. Thus, at this time, EPA is granting the Petition with regard to KDAQ's determination that the source would be below the relevant thresholds for combined HAPs, as part of EPA's grant above regarding the sourcewide methanol limit.

## **F. Petitioners' Claims Regarding Enforceability of Flare Conditions**

***Petitioners' Claims:*** The Petitioners generally contend that the emission limits for CO, NO<sub>x</sub> and SO<sub>2</sub> cannot be met given that "there will be malfunction emissions" that were not included in the PTE

calculations. Petition at 31. The Petitioners outline four primary bases for the contention that the emissions limits are not “backed up by any enforceable design or operational limits, and thus fail to control PTE.” Petition at 31. First, the Petitioners state that since VOC control efficiency is not being measured, the calculations for VOCs are unverifiable (because they are present in the flare gas but not mass conserved). Second, the Petitioners state that the permit does not require the use of a “proprietary low sulfur startup” procedure and that the SSM Plan and flare monitoring plan should be subject to public notice and comment. Petition at 31-32. The Petitioners contend that this procedure is relied upon for the PTE calculations, and thus, must be in the permit. The Petitioners also note that KDAQ’s failure to “release” the SSM Plan and subject it to public review violates the CAA (The Petitioners state that the SSM Plan may contain some of the startup procedure). The Petitioners conclude by stating that “to the extent compliance with VOC limits rests on compliance with CO emission limits for the flare, that limit is unenforceable” because it relies on a to-be-determined flare monitoring plan. Third, the Petitioners contend that the permit does not limit the number of unplanned shutdown and malfunction events, the duration of malfunction events, and thus, does not functionally limit emissions during such events per assumptions used for the PTE calculation. The Petitioners argue that the root cause analysis requirements in the permit contain no “concrete steps” and that the permit definitions of “flaring incident” implicate the SO<sub>2</sub> limit. Petition at 32. Fourth, the Petitioners contend that there are no minimum detection limits that would allow detection of the 500 pounds of SO<sub>2</sub> in the flare gas per day (which is the trigger for a “flaring incident,” which in turn triggers the root cause analysis process). Petition at 32. The lack of minimum detection limits (or the capacity to detect such limits) means that the permit cannot be verified to meet the VOC limit of 36 tpy. Failure to detect the 500 pound threshold results in the permit tacitly allowing emissions during flaring events. The permit also fails to set any minimum detection limit for either the volume of gas flow, the concentration of gases within that volume, or any flow verification methods. The Petitioners cite a permit issued by the Bay Area Air Quality Management District, which includes flare monitoring that could be included in this permit. As a result, the Petitioners argue that the permit lacks enforceable limits on the flare’s PTE. Petition at 33.

***EPA’s Response:*** For the reasons provided below, EPA denies the Petition with respect to the issues raised in this claim, but only to the extent that they are not related to enforceability of the emission limits for VOCs, methanol, and H<sub>2</sub>S/TRS, and the approach to combined HAPs, which were previously addressed in Section E of this Order.

#### ***Enforceability of emission limits for CO, NO<sub>x</sub> and SO<sub>2</sub>***

The Permit includes specific BACT emission limits for CO, NO<sub>x</sub> and SO<sub>2</sub> for the flare, on both a 30-day rolling average and 365-successive calendar day total. Permit at 7. These limits were derived through a top-down BACT analysis described in the Application and the KDAQ SOB. Pursuant to the terms of the Permit, these limits apply at all times, including during malfunctions. Permit at 7. The Permit also requires numerous monitoring requirements to assure compliance with permit terms and conditions addressing the BACT limits. These include the pilot flame detection and automatic reignition system; continuous pilot and assist gas monitoring; continuous process gas flow rate and sulfur content monitoring (which includes volumetric flow rate and other monitoring); periodic process gas sampling; flare monitoring plan; and a root cause analysis requirement. Permit at 10-11. The Permit also includes a number of specific testing requirements described in the opacity performance test; flare compliance assessment (which includes specific information aimed at assuring compliance with the required destruction removal efficiency); and continuous monitoring system performance evaluation. Permit at 9-10.

In response to the Petitioners' public comment, KDAQ underscored the Permit's requirements by explaining that the Permit contains physical and operational limitations that are enforceable as a practical matter. KDAQ RTC at J-57. KDAQ highlighted the flare compliance assessment, which seeks to verify that the "flare operates in accordance with the manufacturer's design specifications and to verify the heat and material balance data used as a basis for the flare emission limitations." *Id.* KDAQ also notes the continuous gas flow rate and composition monitoring. *Id.* The Petition includes two sentences on this point, which do not recognize or provide a rebuttal to KDAQ's response to comments, or identify any of the above-described conditions in the Permit and explain why they are deficient. As a result, the Petitioners failed to demonstrate that KDAQ's analysis was unreasonable or that the permit is inconsistent with the Act.

### ***VOC control efficiency***

The PTE calculation for the flare, described in the Application at C-3, assumes a control efficiency of 98% for VOCs. Application Vol. 1 at C-3, page 10. This control efficiency was based on guidance from the Texas Commission on Environmental Quality, "Air Permitting Guidance for Chemical Sources: Flares and Vapor Oxidizers," dated October 2000. *See generally* [http://www.tceq.state.tx.us/assets/public/implementation/air/rules/Flare/Resource\\_5.pdf](http://www.tceq.state.tx.us/assets/public/implementation/air/rules/Flare/Resource_5.pdf). The Petitioners do not appear to raise specific concerns with KSG's 98% control efficiency of VOC for a flare. The Permit requires a Flare Compliance Assessment, the purpose of which is to demonstrate that the flare design complies with manufacturer's specifications and to validate the plant-wide heat and material balance data used as the basis for the emission limits applicable to the flare. Permit at 9 (Condition B.3.b). In addition, the performance test associated with the Flare Compliance Assessment must demonstrate that the parameters of the design analysis and the operating conditions of the flare are such that the flare is achieving the required destruction removal efficiency. *Id.*

In the RTC, KDAQ identifies the various permit conditions, summarized above, and makes an additional point regarding the compliance demonstration for the CO emission limit, noting that the permit also requires KSG to continuously monitor the CO and non-CO hydrocarbon content of the flare. KDAQ RTC at J-57. KDAQ explains that this will ensure that VOC emissions are below the emission limit that assures emissions will not exceed the significance level. *Id.* KDAQ also corrects statements by Petitioner regarding the VOC PTE calculation. KDAQ RTC at J-58.

The Petition does not acknowledge or criticize either the permit conditions discussed above or the response by KDAQ on the issue of the control efficiency. As a result, the Petitioners failed to demonstrate that KDAQ's analysis was unreasonable or that the permit is inconsistent with the Act. Nonetheless, as KDAQ reviews and revises the compliance demonstration requirements for the sourcewide VOC limits, KDAQ should consider whether the 98% control efficiency should be included as part of the compliance demonstration in Section D of the Permit, in addition to the flare compliance assessment requirements noted above, to ensure that the VOC compliance demonstration adequately includes all actual emissions resulting from the facility, and whether any further revisions to the permit are appropriate to ensure that the 98% control efficiency is maintained and to ensure compliance with the sourcewide VOC limit. *See, e.g., Cash Creek Generation 2012* at 17-18.

### ***SSM plan and flare monitoring plan***

A similar and overlapping issue was previously addressed in this order on page 11, *supra*. That discussion is incorporated herein by reference with the following additional supporting information.

The low-sulfur startup procedure is described in detail in the Application as part of KSG's measures to minimize flaring. Application Vol. 1 at 7-7. The procedure is also discussed in the SOB as part of the CO and SO<sub>2</sub> BACT analyses. KDAQ SOB at 74, 81. The Permit identifies the low-sulfur startup procedure as a control measure for the flare on page 5. Additional requirements included in the Permit to support the low-sulfur startup procedure include the limit on flaring of sweet syngas and installation of startup burners that facilitate "seamless transfer of operation between methane operation and coal/petcoke operation while downstream gas clean-up units are operational." KDAQ RTC at J-58. KDAQ also states in the RTC that "additional elements" of the low-sulfur startup procedure will be included in the SSM Plan. KDAQ RTC at J-58. This last statement seems to give rise to the Petitioners' primary concern – that an SSM Plan that is to-be-developed would include a BACT requirement. The Petitioners do not respond to the above discussion provided by KDAQ in the RTC or the identification of the specific permit term, which requires that KSG perform the low-sulfur startup procedure. In addition, the Permit includes the specific BACT limits, as well as the startup procedure, and the SSM Plan is supplemental to the permit conditions. *See, e.g., In re Power Holdings of Illinois.*

With regard to the flare monitoring plan, the previous discussion on page 12, *supra*, of this Order responds to what appears to be the same issue raised again at the top of page 32 regarding a "to-be-determined" flare monitoring plan. As was explained earlier in this Order, the Petitioners' claims on pages 31-32 of the Petition regarding the SSM Plan and flare monitoring plan failed to demonstrate that KDAQ's analysis was unreasonable or that the permit is inconsistent with requirements under the Act.

With regard to the last point made by the Petitioners on page 32 regarding enforceability of the sourcewide VOC limit, EPA has separately addressed that issue in this Order in Section E. If in response to EPA objections regarding other issues addressed by this order, KDAQ chooses to rely on implementation of a plan to assure compliance with BACT or another applicable requirement, KDAQ would need to amend the permit to include the parts of the plan that are necessary to assure compliance with the applicable requirement(s), and further, the appropriate plan details would need to be made available for public review and comment.

#### ***Limits on number of startup and shutdown events***

In the terms and conditions for the flare, the Permit provides definitions for "cold startup event," "shutdown event," and "gasifier rotation." Permit at 6. In addition, the Permit includes operating limits on the duration of each cold startup, shutdown, and gasifier rotation. Permit at 6. With regard to the BACT emission limits, the permit states that the limits apply at all times including during periods of startup, shutdown, malfunctions, and normal operations. Permit at 7. In the PTE calculation for the flare, KSG assumed one cold plant startup, one total plant shutdown, and twenty gasifier rotations. Application Vol. 1 at C-3, page 10. These particular assumptions are incorporated into the permit in the flare requirements, which include maximum hours per event for cold startup and shutdown, and a limit on 2,160 hours per year for gasifier rotations. Permit at 6. Since the Application explains that gasifier rotations involve startup and shutdown events, the 2,160 hours per year has the effect of limiting the number of startup and shutdown events related to gasifier rotations. Permit at 6; *see also* Application Vol. 1 at 2-23 to -24. The Petitioners did not demonstrate how this annual limit, coupled with the limits on the duration of individual startup and shutdown events, was deficient.

In response to the Petitioners' public comments, KDAQ explained that as an initial matter, that BACT limits apply at all times. KDAQ RTC at J-59. In addition, KDAQ states that the "total hours of flaring

during these events are limited in the permit as are the short-term and annual emissions from the flare. Therefore, limits on the number of cold startups and planned shutdowns are unnecessary. Kentucky Syngas will ensure compliance with both short-term and annual emission requirements by conducting continuous monitoring of the flare gas flow rate and composition and keeping records of the hours of operation for each operating mode described in the permit.” KDAQ RTC at J-58 to J-59. The Petitioners do not provide a response, in the Petition, to KDAQ’s RTC or the permit terms and conditions identified by KDAQ. Rather, the Petitioners reiterates public comments made without providing additional analysis. As was discussed earlier in this Order, and as was noted by KDAQ in the RTC, all emissions must be considered in determining compliance with applicable limits.

With regard to the Petitioners’ issues of the root cause analysis and flaring incidents, EPA underscores that the emission limits apply at all times and, as previously discussed, all actual emissions must be counted toward compliance with the emission limits in the Permit. Given these circumstances, EPA does not agree that the permit is “tacitly allowing emissions during such events” that exceed permit limits (Petition at 32); and nor apparently does KDAQ. *See, e.g.*, KDAQ RTC at J-59 (noting that limits apply at all times). As a result, the Petitioners failed to demonstrate that KDAQ’s analysis was unreasonable or that the permit is inconsistent with requirements under the Act. EPA additionally notes that issues raised regarding the enforceability of the emission limits for VOCs, methanol, and H<sub>2</sub>S/TRS, and the approach to combined HAPs, would need to be addressed in the context of responding to EPA’s grants on those issues in Section E of this Order.

#### ***Minimum detection limits and gas flow rates***

With regard to the issues raised in the third full paragraph on page 32, pertaining to minimum detection limits for the 500 pounds of SO<sub>2</sub> trigger for a flaring incident, the permit requires an initial performance test to demonstrate compliance with the SO<sub>2</sub> limits as a result of various parameters including volumetric flow, heat content, exit velocity, and heating value (including sulfur content at associated heating values). Permit at 5-18. In addition, the flare has three different emission limits for SO<sub>2</sub>, and associated continuous monitoring. Permit at 7; *see also* Permit at 11 (condition B.4.c.). The Petitioners do not address any of the existing Permit terms or identify a deficiency. The continuous monitoring will allow detection of the threshold trigger. The Petitioners provide a conclusory sentence at the end of this portion of the Petition (on page 33) stating that the lack of minimum detection limits means that the permit cannot be “verified” to meet the VOC limit of 36 tpy. The Petitioners’ claim on this last point is vague. As was explained above, the parameters necessary to monitor for the trigger are included in the permit. As a result, the Petitioners failed to demonstrate that KDAQ’s analysis was unreasonable or that the permit is inconsistent with requirements under the Act.

The same analysis applies to the gas flow rate. There are various requirements in the permit to establish appropriate gas flow rates consistent with the BACT limits, through performance testing, and then to continuously monitor the gas flow rate. *See, e.g.*, Permit at 9-11. The Petitioners do not specifically address any of these permit requirements and instead cite to a permit for a different type of facility in a different part of the country with distinct applicable requirements (Petition at 33). As a result, the Petitioners failed to demonstrate that KDAQ’s analysis was unreasonable or that the permit is inconsistent with requirements under the Act.

## G. Petitioners' Claims Regarding Flare Permit Measures and BACT

**Petitioners' Claims:** The Petitioners contend that no proper BACT analysis was performed for the flare. Petition at 33. As a result, the Petitioners conclude that the permit does not adequately limit shutdown and emergency emissions, and sets emissions limits for the flare that do not meet BACT. *Id.* The Petitioners support this contention with three basic arguments. Petition at 33. First, the Petitioners' claim that proper BACT would include a flare minimization plan that is subject to public notice and comment. Petition at 33. The Petitioners cite to a petroleum refinery permit for an example, as well as the Bay Area Air Quality Management Regulations (in California) in support of this contention. Petition at 34. The Petitioners explain that the root cause analysis may not serve as a substitute for a flare minimization plan. Petition at 34. The Petitioners cite to *RockGen* for support on this point and conclude that in order to "meet BACT requirements," KDAQ must look to air regulations in California and the Shell Martinez refinery permit. Petition at 35. Second, the Petitioners state that the permit allows generalized compliance and alternatives to complying with federal regulations. Petition at 35. The Petitioners claim that the permit allows infrequent and inadequate monitoring. The Petitioners state that no top-down BACT determination was made comparing flare detection and monitoring requirements in the permit to BACT. Third, the Petitioners argue that no top-down BACT analysis was provided, demonstrating that the emission limits for CO, NO<sub>x</sub>, and SO<sub>2</sub> are BACT. Specifically, the Petitioners state that the 14,591 pound/hour 8-hour average CO limit is "very large," does not represent BACT, and is not the result of a BACT determination. The Petitioners also make similar claims for the limits for H<sub>2</sub>S and SO<sub>2</sub>.

**EPA's Response:** For the reasons provided below, EPA denies the Petition with respect to these issues.

As a procedural matter, a number of BACT-related issues raised in this section of the Petition do not appear to have been raised with reasonable specificity in comments to KDAQ. In addition, the Petitioners provide no explanation as to why raising such issues was impracticable, nor is there an indication that the grounds for such objection arose after the close of the public comment period. Thus, consistent with Section 505(b)(2) of the CAA, the Petitioners failed to meet the threshold requirements for raising these issues in a title V petition to EPA. Specifically, the issues beginning on page 35 with the sentence "[s]ubstantively, to meet BACT requirements..." and continuing until the end of section VII of the Petition, do not appear to have been raised anywhere in comments to KDAQ on the Permit, and EPA is denying the Petition on these issues as a procedural matter.

As a substantive matter, the facility clearly performed a top-down BACT analysis for CO, NO<sub>x</sub> and SO<sub>2</sub> (the facility did not undertake a PSD review for H<sub>2</sub>S but has a sourcewide limit in Section D of the Permit).<sup>24</sup> See Application Vol. 1 Section 5. This BACT analysis is further discussed in the KDAQ SOB. Thus, there can be no question that the facility performed a top-down BACT analysis. The emission limits established for CO, NO<sub>x</sub> and SO<sub>2</sub> are incorporated into the permit along with the associated monitoring, testing and reporting to ensure compliance with the limits. Permit at 5-18. Further, the Permit explicitly states that these emission limits apply at *all* times, including periods of startup, shutdown, malfunction and normal operations. Permit at 7.

With regard to the issues raised in public comments to KDAQ, KDAQ provided a detailed response in the KDAQ RTC, which the Petitioners do not mention or respond to in the Petition. KDAQ RTC at J-62 to J-64. KDAQ begins by noting that the facility did perform a top-down BACT analysis and that,

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<sup>24</sup> Previously in this Order, EPA granted an issue in the Petition regarding the enforceability of the sourcewide H<sub>2</sub>S limit.

“[n]one of the ‘widely used methods to control emissions from emergency flaring emissions’ identified by the commenter are applicable or available for the Kentucky Syngas flare.” KDAQ RTC at J-62. KDAQ then explains why the thermal oxidizer, an enclosed ground-level flare, and a flare gas recovery system are not suitable for KSG. KDAQ RTC at J-63 (flare gas recovery). With regard to the flare minimization plan and root cause analysis comments, KDAQ explained,

All aspects of flare minimization plan requirements for flares imposed on the refinery industry are incorporated into the permit despite the differences between refinery and gasification flares. For clarification: RCA is an incident investigation during malfunctions resulting in flaring emissions above permit limits. A Flare Minimization Plan details plant operating procedures relating to flaring and identifies the flare monitoring procedures that will be employed. These measures to reduce flare emissions are entirely distinct and should not be confused as part of the same plan. The permit requirements addressing RCA are concrete, objective, and practically enforceable. In fact, the requirements identified in the permit are consistent with similar requirements in the NSPS for petroleum refineries.

KDAQ RTC at J-62. KDAQ concludes by noting that,

[a]ll applicable and available “standards, technologies, and practices designed to minimize emissions from flaring” from federal NSPS and NESHAP regulations applicable to refineries and chemical plants have been incorporated into the permit regardless of whether the regulations are applicable to the Kentucky Syngas facility. The commitment to apply these flare control measures was made in the context of the BACT analysis and the permit provides sufficient requirements to ensure continuous compliance with the flare BACT emission limitations.

KDAQ RTC at J-63 to J-64. Despite KDAQ’s response, the Petitioners do not identify any specific deficiencies with either KDAQ’s rationale or the BACT analyses themselves. As a result, Petitioners failed to demonstrate that KDAQ’s analysis was unreasonable or that the permit is inconsistent with requirements under the Act.

#### **H. Petitioners’ Claims Regarding HAP Requirements Not Previously Addressed**

As a general matter, the Petitioners contend that the permit lacks appropriate case-by-case MACT determinations for HAPs and instead relied on an erroneous minor source determination. Petition at 35. The Petitioners argue that the underlying PTE calculation for HAPs is flawed because a worst-case scenario was not considered; malfunction emissions were not considered; and fugitive methanol emissions from the AGR assumed unreasonably high control efficiencies. Petition at 37. More specifically, the Petitioners contend that the permit should limit combined HAP emissions as well as methanol. Petition at 36. Additionally, the Petitioners contend that the permit does not provide any assurance of the facility staying below the major source threshold because the methanol limit is unenforceable. Issues regarding the enforceability of the sourcewide methanol limit and related combined HAP issues were previously addressed in this Order in Section E. This portion of the Order responds to the remaining issues raised on pages 35-45 that were not previously addressed. To ensure that EPA has responded to each of the Petitioners’ claims, this section will use the headings from the Petition.

1. **Petition Heading: The PTE Calculations Are Not Worst Case/Failure to Calculate and Count HAPs from Flaring Malfunctions**

**Petitioners' Claims:** The Petitioners contend that the calculations for HAPs must include all potential HAP emissions and that the KSG calculations are incomplete because they fail to include HAP emissions that occur during malfunctions or unplanned shutdowns. Petition at 37. The Petitioners state that the units with the highest potential for HAP emissions (i.e., the AGR) have pressure relief valves (PRVs) that are routed to the flares during malfunctions, and therefore "the most significant HAP emissions during malfunction or unplanned shutdown will be seen at the flare." Petition at 37. The Petitioners further state that "considering that the flares will be venting .04 tpy of methanol during *planned* startups and shutdowns...these methanol emissions from the flare will likely contribute more than 2 tpy, thus rendering the facility a major source." Petition at 38. For support, the Petitioners cite to EPA's objection to the title V permit for the Big Stone Power Plant in South Dakota. Petition at 38.

**EPA's Response:** For the reasons provided below, EPA denies the Petition with respect to these issues that were not previously granted in Section E.

Although the pre-controlled PTE for combined HAPs was estimated at 36.7 tpy, in taking an enforceable synthetic minor limit for methanol (by far the HAP with the largest emissions), KDAQ determined that it was not necessary to include a direct limit on combined HAP emissions in KSG's permit. Application Vol. 1 at 4-8, Table 4-2. Assuming that KDAQ revises the permit to ensure that the methanol limit is enforceable, no further action may be required to address total HAPs. EPA notes that due to the unenforceability of the sourcewide methanol limit, EPA anticipates that the Permit will be revised and a subsequent public comment period held.

KSG explains in the Application that the facility's process was developed with the intention of largely removing HAPs so that the end-of-the-pipe gases contain "negligible" quantities. Application Vol. 1 at Section 3.15. This is achieved through use of a non-hazardous vitreous slag by-product, which removes heavy metals contained within the coal and petcoke feedstocks. Metallic and various organic HAPs in the raw syngas are largely removed by the particle removal devices (e.g., charcoal filter), chloride removal system, carbon absorber beds and the AGR. Application at 3-17 to 3-18. Emission factors for HAPs for natural gas were based on AP-42 tables 1.4.3 and 1.4.4. *Id.* Emission factors for the SNG are based on a mix of three sources, including emission factors collected during a series of stack tests at two gasification facilities (with adjustments for anticipated changes in metallic content at KSG) and AP-42 chapter 1.1 for bituminous coal combustion. Under normal operations, all syngas produced is fed to the AGR leaving fugitive equipment leaks as the only emission source. The application notes that flaring during planned startup and shutdown events (1 cold startup/shutdown and 20 gasifier rotations) could emit up to 0.04 tpy of methanol. In the Petition, the Petitioners appear to interpret this as 0.04 tpy *per* event (Petition at 38), but the Application explains that it is for the *total* per year in consideration of the previously identified startup, shutdown and rotation events. Application Vol. 1 at 4-9. Thus, the Petitioners' statement regarding the 0.04 tpy appears to misconstrue the circumstances. Notably, as was explained earlier in this Order, in assessing compliance with the methanol limit, EPA expects that all actual emissions will be counted, regardless of the basis for their occurrence.

The Petitioners include a citation to the EPA objection letter for the title V permit for the Big Stone Power Plant in South Dakota (although it involves a distinct fact pattern at a different type of facility). Consistent with EPA's position in Big Stone, in Section E of this Order, EPA explained its grant on issues regarding the enforceability of the sourcewide methanol (and other) limits, emphasizing the

importance of ensuring that the compliance demonstration includes consideration of all actual emissions. See also KDAQ RTC at J-77 to J-78.

EPA notes that KDAQ must include more specificity in the compliance demonstrations for VOCs, methanol and H<sub>2</sub>S/TRS, or otherwise ensure that the facility complies with major source requirements, and that EPA expects that the facility will be adequately monitoring all emissions, including excess emissions and all flaring emissions, to determine compliance with these and the other limits set forth in the permit. EPA notes that due to the unenforceability of the sourcewide methanol limit, EPA anticipates that the Permit will be revised and a subsequent public comment period held.

## **2. Petition Heading: The PTE Calculations Are Not Worst Case/Unsupported Control Equipment Efficiencies for Methanol**

**Petitioners' Claims:** The Petitioners contend that methanol emissions were underestimated because the vast majority of HAP emissions are fugitive emissions from leaks of methanol at the AGR. Petition at 38. The Petitioners explain that the uncontrolled PTE of methanol from the AGR is 21.39 tpy. The Petitioners then highlight statements from the Application regarding fugitive equipment leaks from the AGR, stating that an average control efficiency of 90% was considered. Petition at 39. The Petitioners state that these rates are "extraordinarily high" assumed control efficiencies for an LDAR program and that they are, therefore, unreasonable. The Petitioners say that KSG should rely instead on EPA's Protocol for Equipment Leak Emissions Estimates. Petition at 39. The Petitioners further state that consistent with their interpretation of EPA's Protocol, LDAR programs for SOCFI facilities are assumed to control leak rates in the 45-67% range instead of the 75-95% range. The Petitioners conclude that the 90% assumption is unrealistic and unenforceable. The Petitioners claim that KSG's compliance with the 9 tpy methanol limit is based upon this unrealistically high assumed control efficiency for the AGR, which was also used to calculate the expected fugitive methanol emissions from the AGR. Petition at 39. The Petitioners contend that using "faulty calculations and emissions limitations . . . do not assure compliance." Petition at 39.

**EPA's Response:** For the reasons provided below, EPA denies the Petition with respect to the Petitioners' claim that KDAQ's control equipment efficiencies for methanol were unreasonable.

The Permit sets forth a comprehensive LDAR program to control fugitive HAP emissions focused mainly on EUs 14-17. The Application explains as follows,

In the absence of industry-specific data collected through leak detection and repair (LDAR) programs at sites which utilize gasification for syngas production, the emission factors provided in the EPA protocol are the only reference factors available. Therefore, speciated fugitive organic compound emissions from piping components in syngas service were estimated using the Average Emission Factor Approach described in Section 2.3.1 of the EPA protocol. From among the SOCFI [Synthetic Organic Chemicals Manufacturing Industry], refinery, marketing terminal, and oil and gas production average emission factors in Tables 2-1 to 2-4 of the EPA protocol, Kentucky NewGas relied on the SOCFI factors for estimating emissions from syngas leaks, since syngas most closely resembles gaseous process streams that could be present at a SOCFI process unit. Rather than relying directly on the average SOCFI equipment leak emission factors in EPA protocol to estimate potential emissions, Kentucky NewGas has instead chosen to use the SOCFI without ethylene emission factors obtained from the

Texas Commission on Environmental Quality's (TCEQ) *Air Permit Technical Guidance for Chemical Sources: Equipment Leak Fugitives*. As noted in the TCEQ guidance document, the SOCMI without ethylene emission factors are appropriately used for process lines that contain less than 11 percent ethylene and they were derived for use at industrial facilities with equipment leak components that do not contact process fluids with high percentages of VOCs. Section C-24 of Appendix C provides a complete summary of the fugitive equipment leak emissions calculation methodology utilized to estimate emissions for components in syngas production process area.

Application Vol. 1 at 3-12 (footnotes omitted). The Application also cites the same EPA Protocol cited by the Petitioners, U.S. EPA, Office of Air Quality Planning and Standards, *Protocol for Equipment Leak Emission Estimates*, November 1995, EPA 453/R-95-017. In response to the Petitioners' statement that the above-identified EPA Protocol estimates control efficiencies of 45-67%, KDAQ explained that such a range of control efficiencies is associated with a leak detection threshold of 10,000 parts per million (ppm). KDAQ RTC at J-73. In the case of Kentucky Syngas, KDAQ noted that higher control efficiencies "are justified and reasonable" because the Permit establishes a lower leak detection threshold, consistent with MACT requirements, at 2,000 ppm for pumps and compressors and 500 ppm for all other components. KDAQ RTC at J-73; Application Vol 1 at 4-11. The Application explains that KSG considered the LDAR control efficiencies to be between 0% and 100%, depending on the specific component. Application Vol 1 at 4-11. A 100% control efficiency is utilized for the components that are enclosed or sent to a closed vent system. *Id.* These control efficiencies and analyses are consistent with MACT-level LDAR programs. *See generally* Leak Detection and Repair, A Best Practices Guide, EPA Office of Compliance (Oct. 2007), available at <http://www.epa.gov/compliance/resources/publications/assistance/ldarguide.pdf>. In addition to the low leak detection thresholds, the Permit requires monitoring of at least 5,176 components in the AGR Process Area alone. Permit at 37.

The Petition does not acknowledge KDAQ's response to comments, much less address those responses (such as the inapposite comparison between the KSG facility and Table 5-2). Further, the Petitioners' claims in the Petition do not appear to consider the permit conditions included for the KSG facility. As a result, the Petitioners failed to demonstrate that KDAQ's analysis regarding assumed control efficiencies was unreasonable or that the permit is inconsistent with requirements under the Act.

**a. Undercounting from the AGR**

***Petitioners' Claims:*** The Petitioners claim that both fugitive emissions of methanol and direct and fugitive emissions of other VOCs were omitted from the application and have not been accounted for in the Permit. Petition at 40. In explaining this claim, the Petitioners highlight the exhaust stream from the Rectisol AGR unit stating, among other points, that the exhaust stream may include "other VOCs," which are also "a HAP." Petition at 40. The Petition then cites to a recent draft construction permit for the Rentech facility in Illinois, which was a major source for HAPs. The Petitioners also cite to the Air Products Baytown facility in Texas, which the Petitioners state has a BACT limit for methanol.

***EPA's Response:*** For the reasons provided below, EPA denies the Petition with respect to Petitioners' claim that fugitive emissions from the AGR have been undercounted.

Some of the issues raised in this portion of the Petition overlap with previous sections in the Petition regarding the PTE calculations, and EPA responded in previous portions of this Order to those claims. In

response to the Petitioners' comments on this issue, which mirrored their claims in the Petition, KDAQ explained,

Aside from methanol and COS, no other organic HAPs will be present in measureable quantities within the AGR vent. The commenter's claim that other VOC and HAPs will be emitted by the AGR vent is unsupported. Noting that another gasification facility using Rectisol® emits more than 10 tpy from the AGR vent and fugitive equipment leaks has no relevance to the Kentucky Syngas permit. The permit requires that Kentucky Syngas install controls to minimize methanol emissions from the AGR including the installation of a high efficiency oxidizer and implementation of a LDAR program. Neither fugitive nor direct methanol emissions from the AGR unit have been omitted or underestimated. All methanol emissions are accounted for in the permit and they will be minimized through the methanol control requirements throughout the permit.

KDAQ RTC at J-71. The Petition does not acknowledge or respond to KDAQ's response, nor does it identify how KDAQ's rationale is inconsistent with requirements under the Act. With regard to the Air Products facility cited in the Petition, the information provided in the citation from the Petitioners (to the RACT/BACT/LAER clearinghouse) notes that the facility has a methanol limit for the Rectisol vent, but provides no further information regarding the basis for that limit. Further, the Petitioners do not provide any specific discussion about how that permit is relevant to the KSG permit. For these reasons, the Petitioners failed to demonstrate that KDAQ's analysis was unreasonable or that the permit is inconsistent with requirements under the Act.

#### **b. Other Fugitive Components**

***Petitioners' Claims:*** The Petitioners identify three bases for the fugitive emissions calculations for KSG and then conclude that the Permit does not require any of this information to be corroborated. Petition at 40. Instead, the Petitioners argue that the Permit allows the same emission factors to be used in the emissions calculations to demonstrate compliance as are used in calculating PTE (citing to pages 92-94 of the Permit). The Petitioners conclude by stating that “[s]ole reliance on emission factors and control efficiencies, for both emissions calculations and ensuring compliance with emissions limits, is improper.” Petition at 40.

***EPA's Response:*** For the reasons discussed below, EPA denies the Petition with respect to this issue. This issue overlaps with previously raised issues, including EPA's grant of the Petition regarding the sourcewide limit for methanol (Section E of this Order). Previously addressed issues and discussion need not be repeated here. Pages 92-94 of the Permit specifically regard Section D of the Permit and the sourcewide limits for VOCs, H<sub>2</sub>S/TRS, and methanol, among other requirements. EPA previously explained why EPA granted the Petition regarding the compliance demonstration for these three pollutants. To the extent that this section of the Petition is addressed by that discussion, such discussion is incorporated herein by reference. To the extent that this section of the Petition attempts to raise other issues, those issues are not raised with sufficient specificity for EPA to understand what claims are being made. With regard to the Petitioners' conclusory statements regarding emission factors, Petitioner has not supported its broad assertion that emissions factors and control efficiencies may not be used for emissions calculations and ensuring compliance with emission limits – in fact, EPA has recognized that such factors, if technically supported and appropriate, can be a component to both developing PTE and assuring compliance with permit limits. *See, e.g., In re Shell Offshore, Inc.*, slip. op. at 23-34 (Mar. 30,

2012). Petitioner has not identified any specific concern with the emissions factors used in this case, nor provided any explanation of why their use was “improper.” Petition at 40.<sup>25</sup>

KDAQ provided a response to the Petitioners’ comments, which closely resembled claims raised in the Petition, as follows,

Condition D.6 of the permit requires Kentucky Syngas to conduct monthly calculations of methanol emissions from AGR process area fugitive equipment leaks based on the SOCFI average emission factors and actual component counts present for that month. The SOCFI average emission factors should provide a conservatively high estimate for actual methanol emissions from the AGR unit since they were developed based on leak rate data from existing chemical plants constructed many years ago. The pipeline equipment at the Kentucky Syngas plant will be state-of-the-art and will be actively repaired or replaced when leaks are identified through frequent leak detection monitoring. Pages 38 and 39 of the permit do not contain permit conditions which indicate that any type of plan will be submitted later. The complete LDAR program corresponding to the control credits used in the methanol synthetic minor HAP emission limitation was incorporated into the draft permit on pages 37-39. Such conditions will remain in the proposed permit. The LDAR equivalent program was also extensively referenced in the application and the public had opportunity to review and comment on all aspects of the program.

KDAQ RTC at J-71. With regard to the specific issues raised here, the Petitioners do not acknowledge or reply to KDAQ’s response, or provide a particularized rationale for why KDAQ erred or the permit is deficient. For these reasons, the Petitioners failed to demonstrate that KDAQ’s analysis was unreasonable or that the permit is inconsistent with the Act.

**3. Petition Heading: Permit Lacks Enforceable Terms and Conditions and Thus Fails to Properly Limit PTE/Design and Operational Limits Needed to Assure Compliance with Claimed Control Efficiencies**

**Petitioners’ Claims:** The Petitioners reiterate previously raised issues (addressed in Section E of this Order) by again stating that there is nothing in the permit to assure compliance with the 90% assumed control efficiency from the LDAR program for fugitive leaks from the AGR. Petition at 41. Further, the Petitioners claim that nothing in the permit requires any monitoring to determine whether these projected control efficiencies and leak rates are being achieved in practice. The Petitioners then raise concerns regarding the actual components of the LDAR plan including the leak detection provisions (quarterly monitoring is insufficient); repair requirements (not sufficiently rigorous); and the fact that the term ‘reasonable efforts’ is subjective and unenforceable. *Id.*

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<sup>25</sup> In its response to Petitioners’ comments, KDAQ makes a statement that there is “no requirement” that the permit assure compliance with control efficiencies. KDAQ RTC at J-73. EPA does not necessarily agree with KDAQ’s blanket statement. *Cash Creek Generation 2012 at 17-18*. In Section E of this Order, EPA granted issues in this Petition to require changes necessary to ensure that stated permit limits are adequately enforceable. Such changes may include, among others, a specific requirement to ensure compliance with a control efficiency..

**EPA's Response:** For the reasons described below, EPA denies the Petition with respect to this issue. There is some overlap between issues raised here and previously discussed issues on which EPA is granting the Petition (*see* Section E of this Order). Those discussions are incorporated herein by reference. As was discussed earlier, neither KSG, KDAQ, nor the permit assumes a blanket 90% control efficiency for the LDAR program. The Application explains the different expectations in the control efficiencies based on the particular type of component at issue. Application Vol. 1 at 4-10 and 4-11. In terms of the specifics of the LDAR program, there is not a federally-mandated program that they are required to follow. Nonetheless, as was previously discussed, the Permit includes leak detection thresholds that are consistent with a MACT-like LDAR program, and the remaining monitoring, reporting, and recordkeeping requirements also generally follow a MACT-like model. *See, e.g.*, 40 C.F.R. Part 63, Subpart G.

In response to the Petitioners' comments, at KDAQ RTC at J-73 to J-74, KDAQ explained,

The LDAR program established by the permit satisfies the applicable legal requirements. See Permit, Section B, containing provisions for location of, inspection of, monitoring and checks of, replacement and repair of, and design and operation of new and reworked valves, piping connections, pressure-sensing devices, pump compressors, agitator seals and associated components as well as requirements to maintain detailed records of the same as well as monthly and twelve month rolling total emissions (and supporting data) of CO, SO<sub>2</sub>, and methanol from equipment leak components. Calculating actual emissions from fugitive equipment leaks using fixed SO<sub>2</sub>MI average emission factors (reflecting average leak rates across many existing chemical plants in a variety of industries), actual site-specific component counts, actual process fluid compositions, monthly hours of operation in methanol service, and LDAR control credits is consistent with the compliance demonstration approach used for assessing compliance with equipment leak emission limitations across a variety of chemical manufacturing industries. The leak repair requirements incorporated into the permit are consistent with similar requirements for both NSPS and NESHAP LDAR programs applicable to chemical plants. The repair timeframes for a LDAR program are specifically accounted for when establishing the control credits, so simply highlighting the 5-day first attempt and 15-day repair deadlines for the selected LDAR program do not call into question the validity of the control credits. Finally, the claim that the LDAR program will achieve nearly 90% control above the uncontrolled SO<sub>2</sub>MI average leak rate (based on data from existing plants) is supported by the EPA equipment leak protocol and the Texas Commission on Environmental Quality's (TCEQ) Air Permit Technical Guidance for Chemical Sources: Equipment Leak Fugitives.

KDAQ RTC at J-74. The Petitioners do not acknowledge KDAQ's response to comments or explain with any specificity why KDAQ's rationale is inconsistent with requirements under the Act. Further, in evaluating the LDAR program, it is important to appreciate the applicable LDAR requirements (which can vary depending on various factors). The Petitioners do not cite to any LDAR related legal support for their propositions on page 41 of the Petition, in the only full paragraph, where the Petitioners discuss their concerns with the LDAR program repair and reporting requirements, among other issues. As a result, it is unclear what requirement the Petitioners believe the Permit failed to meet. For these reasons, the Petitioners failed to demonstrate that KDAQ's analysis was unreasonable or that the permit is inconsistent with requirements under the Act.

**4. Petition Heading: Permit Lacks Enforceable Terms and Conditions and Thus Fails to Properly Limit PTE/Permit has Insufficient Monitoring to Ensure Compliance with the Limits on PTE**

**Petitioners' Claims:** The Petitioners raise various issues that appear to overlap with issues previously responded to in Section E of this Order. In summary, the Petitioners contend that the permit requires no "genuine monitoring" of HAP emissions at all. Petition at 42. The Petitioners cite to the EPA objection letter for the Big Stone facility for the proposition that KDAQ should develop periodic monitoring requirements that assure compliance with the permit conditions. Petition at 43. The Petitioners also state that the permit must include monitoring of both individual and total HAP emissions. The Petitioners raise additional concerns regarding the lack of monitoring for organic HAPs. The Petitioners state that because the permit fails to require continuous emissions monitoring for VOCs (or compliance assurance monitoring), VOCs cannot act as a surrogate for organic HAPs. Further, the Petitioners assert that compliance with the CO limit does not assure compliance with the VOC limit without establishing a quantified relationship between CO and VOCs. The Petition then provides some information regarding different types of organic HAPs and concludes that a single indicator (e.g., VOC or CO) cannot be used as a monitoring surrogate for these diverse groups. The Petitioners recommend that the permit be revised to include the components of a much more detailed LDAR program, gas-leak imaging cameras, and direct measurement of fugitive emissions. Petition at 45.

**EPA's Response:** Except for the issues previously identified for a grant in this Petition (in Section E of this Order), EPA denies the Petition as to the remainder of the issues presented in this section of the Petition, as described below. This Order previously addressed issues regarding the methanol limit and combined HAP emissions (Section E), and that information is incorporated herein by reference.

The claims pertaining to the surrogate information for CO and VOCs, and methanol relate back to EPA's previous discussion, and grant, of the Petition regarding the compliance demonstrations for the sourcewide limits for VOC, methanol, and H<sub>2</sub>S/TRS, and the approach for addressing combined HAP emissions. *See supra* Section E. For example, with regard to the Petitioners' claim that individual and total HAPs must be monitored, changes are expected to the permit regarding the sourcewide methanol limit, which thus implicates KDAQ's treatment of combined HAPs. As a result, EPA anticipates that further action will be taken with regard to Section E that could impact the claims made in this portion of the Petition. On the issue of surrogacy between CO and VOC, KDAQ provided additional information on this relationship in its response to the Petitioners' public comments, as follows:

Concerning the use of VOC and CO monitoring, Kentucky Syngas offered the following justification in its response to comments submitted to the Division in accordance with 401 KAR 52:100: "With respect to Comments' claim (p. 45) that VOCs and CO are not proper surrogates for organic HAPS, they are incorrect. Furthermore, a review of the speciated plant-wide HAP emissions inventory provided in Section C-23 of Appendix C to Volume 1 of the Application shows that of the organic HAPs emitted by the Kentucky Syngas plant the vast majority are VOCs and only trace levels of semi-volatile or aromatic organic compounds are expected to be emitted if at all. In addition, no particulate organic compounds including polynuclear aromatic compounds and dioxins have been quantified since they are not expected to be emitted. This HAP profile fully supports the use of compliance monitoring requirements for CO and VOC emission limitations to be used as a surrogate for compliance with the plant-wide methanol emission limitation, particularly for the AGR vent and flare. In addition, no particulate

organic compounds including polynuclear aromatic compounds and dioxins have been quantified since they are not expected to be emitted. Detailed studies of air toxics emissions from coal gasification performed by the Department of Energy at the Louisiana Gasification [sic] Technology Inc. (LGTI) plant and performed by Shell Synthetic Fuels Inc. show “that dioxins and furans are not present at the detection limit of 1 part per billion by volume in the synthesis gas, nor were there any precursors at the same detection level.” Ratafia-Brown, Jay A. et. al, An Environmental Assessment of IGCC Power Systems, Presented at the Nineteenth Annual Pittsburgh Coal Conference, September 23-27, 2002. Thus using VOC and CO as surrogates is appropriate and the permit contains adequate monitoring. The permit requires for CO and for VOC “CEMS or a performance test shall be conducted every 2½ years (no more than thirty-two (32) calendar months following the last performance test.)”. See SOB at 160. The Commenters provide no support for the claim that gas leak imaging cameras in addition to Method 21 surveys is an appropriate method. As explained above, use of an LDAR program of the type here is a recognized appropriate method of control to address hazardous air pollutant emissions.” The Division has reviewed and concurs with the explanation provided by Kentucky Syngas.

KDAQ RTC at J-77 to J-78. The Petitioners do not acknowledge or provide any reply to KDAQ’s response to their comments, and instead reiterate their public comments in the Petition. As a general matter, CO concentrations may be used as a surrogate for VOC because CO is a product of incomplete combustion, and thus elevated levels of CO indicate incomplete combustion (i.e., low CO concentrations indicate complete combustion of VOC compounds). *See, e.g.*, <http://cfpub.epa.gov/oarweb/mkb/faq.cfm>. The Petitioners provide no information explaining why KDAQ’s analysis is unreasonable or deficient. In addition, some of the items requested by the Petitioners (e.g., use of gas leak imaging cameras) is clearly not a requirement, and, as with many of the contentions in this part of the Petition, the Petitioners do not cite to requirements to support these claims. Further, the Petitioners appear to overlook the Permit requirements to continuously monitor parameters for which appropriate ranges are established through performance testing. *See, e.g.*, Permit at 10-12 for flare, among other requirements. For these reasons, the Petitioners failed to demonstrate that KDAQ’s analysis was unreasonable or that the permit is inconsistent with requirements under the Act.

#### **I. Petitioners’ Claims Regarding Insufficient Monitoring Provisions for Various Units**

Generally, the Petitioners contend that the permit’s monitoring requirements are insufficient for several emission units at the KSG facility. Petition at 46. Each of these individual contentions will be addressed below. The Petitioners begin this section of the Petition (on page 46) with a general introduction and statement of their position on the legal standards for monitoring requirements in title V permits. Petition at 46-47. The Petitioners cite to 40 C.F.R. § 70.6, an EPA Region 9 document, a D.C. Circuit Court opinion, and the draft 1990 NSR Manual. The Petitioners conclude with references to CAA § 504(a) and 401 KAR 52:020. EPA is not, in this Order, specifically responding to Section X.A. of the Petition, which is the Petitioners’ interpretation on various legal citations. In response to public comments on monitoring issues, KDAQ provided some background information on legal references and interpretations it used in making the determinations in the permit. KDAQ RTC at J-96. EPA is not providing an opinion on KDAQ’s enumeration either. Rather, EPA is responding to the specific issues raised by the Petitioners regarding the KSG permit.

## 1. Claims Regarding Cooling Tower and Wet Surface Air Cooler

**Petitioners' Claims:** The Petitioners contend that monitoring requirements for PM/PM<sub>10</sub>/PM<sub>2.5</sub><sup>26</sup> from the "cooling tower and wet surface air cooler" do not adequately ensure compliance with the PM/PM<sub>10</sub>/PM<sub>2.5</sub> limits. Petition at 48. EPA presumes that the Petitioners mean compliance with permitted emission limits. In the heading for this section, the Petitioners refer to "EP-2," which is the Claus SRU and ATS Unit (EU2 ) and "EP-3," which is the Mechanical Induced Draft Cooling Tower (EU 3). However, the Petitioners' substantive claims appear to address only the Wet Surface Air Cooler (EU 4), and Cooling Tower (EU 3); thus, EPA is responding with regard to the specific claims made in the narrative under the heading on page 48. First, the Petitioners contend that the three variables that underlie the emissions calculations for particulate matter must be monitored individually. Petition at 48. These are the circulating water flow rate in the cooling tower and air cooler, total dissolved solids, and the drift rate. *Id.* Second, the Petitioners state that the permit must have sufficient monitoring to ensure that the hourly particulate matter emission limit is actually being met. Third, the Petitioners state that KSG must be required to maintain records of continuous or hourly data for the three variables identified above. Petition at 49. For support, the Petitioners cite to *Sierra Club v. EPA*, 536 F.3d 673 (D.C. Cir. 2008), for the proposition that infrequent monitoring fails to ensure compliance with a short-term limit.

**EPA's Response:** For the reasons provided below, EPA denies the Petition with respect to this issue.

EPA has previously addressed monitoring claims raised in the title V petition context, and provided the following legal framework in *In the Matter of CITGO Refining and Chemicals Company L.P. West Plant, Corpus Christi, Texas*, Petition No. VI-2007-01 (Order on Petition) (May 28, 2009) at 6-8.

In August 2008, the United States Court of Appeals for the District of Columbia Circuit emphasized that section 504(c) of the Act requires *all* title V permits to contain monitoring requirements to assure compliance with permit terms and conditions. *Sierra Club v. EPA*, 536 F.3d 673 (D.C. Cir. 2008); *see also* 40 C.F.R. §§ 70.6(a)(3)(i)(B) and 70.6(c)(1). This decision overturned EPA's interpretative rule, signed December 15, 2006, which had taken the position that permitting authorities were prohibited from adding monitoring requirements to title V permits where the applicable requirements contained some periodic monitoring, even if that periodic monitoring was not sufficient to assure compliance with permit terms and conditions. 71 *Fed. Reg.* 75422 (Dec. 15, 2006). The Court held that EPA's interpretative rule violated the statutory directive in Section 504(c) of the Act that each permit must include monitoring requirements to assure compliance with the permit terms and conditions. *Sierra Club*, 536 F.3d at 678. If an applicable requirement contains a periodic monitoring requirement that is

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<sup>26</sup> For purposes of this section, the term "particulate matter" includes PM, PM<sub>10</sub> and PM<sub>2.5</sub>. To the extent that each type of particulate matter is discussed, the acronym will be used with the meaning attributed to it in the Kentucky SIP. In such a circumstance, PM refers to a material, except uncombined water that exists in a finely divided form as a liquid or solid measured by a U.S. EPA-approved test method or a test method approved in the Kentucky SIP. 401 KAR 51:001 § 1(178). PM<sub>10</sub> refers to particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers as measured by a reference method in 40 C.F.R. Part 50, Appendix J, and designated in accordance with 40 C.F.R. Part 53, or by an equivalent method designated in accordance with 40 C.F.R. Part 53. 401 KAR 51:001 § 1(185). PM<sub>2.5</sub> refers to particulate matter with an aerodynamic diameter less than or equal to a nominal two and five-tenths (2.5) micrometers as measured by a reference method in 40 C.F.R. Part 50, Appendix L, and designated in accordance with 40 CFR Part 53, or by an equivalent method designated in accordance with 40 C.F.R. Part 53. 401 KAR 51:001 § 1(184).

inadequate to assure compliance with a term or condition of the title V permit, the Court concluded, title V of the Act requires that "somebody must fix these inadequate monitoring requirements." *Id.* at 678. The Court overturned EPA's interpretative rule, but found that EPA's current regulation at 40 C.F.R. § 70.6(c)(1) -- requiring that each permit contain monitoring requirements sufficient to assure compliance with permit terms and conditions -- may, and must, be interpreted consistent with the Act. *Id.* at 680.

To summarize, EPA's Part 70 monitoring rules (40 C.F.R. §§ 70.6(a)(3)(i)(A) and (B) and 70.6(c)(1)) are designed to satisfy the statutory requirement that "[e]ach permit issued under [title V] shall set forth . . . monitoring . . . requirements to assure compliance with the permit terms and conditions." CAA § 504(c). As a general matter, permitting authorities must take three steps to satisfy the monitoring requirements in EPA's Part 70 regulations. First, under 40 C.F.R. § 70.6(a)(3)(i)(A), permitting authorities must ensure that monitoring requirements contained in applicable requirements are properly incorporated into the title V permit. Second, if the applicable requirement contains no periodic monitoring, permitting authorities must add "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). Third, if there is some periodic monitoring in the applicable requirement, but that monitoring is not sufficient to assure compliance with permit terms and conditions, permitting authorities must supplement monitoring to assure such compliance. 40 C.F.R. § 70.6(c)(1). EPA notes that periodic monitoring that meets the requirements of 40 C.F.R. § 70.6(a)(3)(i)(B) will be sufficient to satisfy the requirements of 40 C.F.R. § 70.6(c)(1) (*i.e.*, will be sufficient to assure compliance with permit terms and conditions). In addition, in many cases, monitoring from applicable requirements will be sufficient to assure compliance with permit terms and conditions.

In all cases, the rationale for the selected monitoring requirements must be clear and documented in the permit record. 40 C.F.R. § 70.7(a)(5). Further, permitting authorities have a responsibility to respond to significant comments. *See, e.g., In the Matter of Onyx Environmental Services*, Petition V-2005-1 (Feb. 1, 2006). The determination of whether the monitoring is adequate in a particular circumstance generally will be a context-specific determination. The monitoring analysis should begin by assessing whether the monitoring required in the applicable requirement is sufficient to assure compliance with permit terms and conditions. In many cases, such as with monitoring developed pursuant to the CAM rule, monitoring from the applicable requirement will be sufficient. Some factors that permitting authorities may consider in determining appropriate monitoring are (1) the variability of emissions from the unit in question; (2) the likelihood of a violation of the requirements; (3) whether add-on controls are being used for the unit to meet the emission limit; (4) the type of monitoring, process, maintenance, or control equipment data already available for the emission unit; and (5) the type and frequency of the monitoring requirements for similar emission units at other facilities. The preceding list of factors is only intended to provide the permitting authority with a starting point for their analysis of the adequacy of the monitoring. As stated above, such a determination generally will be made on a case-by-case basis and other site-specific factors may be considered.

With regard to the claims raised in the KSG Petition, the Permit outlines the specific PM-related requirements for the Wet Surface Air Cooler and Cooling Tower. Permit at 43-45. These units have BACT limits for PM as well as established limits for drift elimination and a total dissolved solids concentration. The Units also have additional requirements such as a prohibition on chromium-based water treatment chemicals and visible emissions limits. *Id.* The Permit includes a compliance demonstration calculation in order to derive the PM limit (in pounds per hour over a 30-day averaging period) and the percent of drift control (for which the Permit has a limit of 0.0005 percent drift control). Permit at 44. The Permit requires an initial performance test to verify the drift eliminator's efficiency.

Such a test serves to establish the range for key parameters, which are then regularly monitored. These parameters include circulation of water, volume of make-up water sent to the two Units and the total cooling tower and wet surface air cooler water circulated. Permit at 45.

In response to the Petitioners' public comment, KDAQ explained,

The permit contains adequate provisions for demonstrating compliance with the operating and emissions limitations. 2. Emission Limitations – Compliance Demonstration Method clearly identifies the equation for calculating emissions based on the testing and monitoring provisions included in permit Conditions 3, 4 and 5 for EU 03 and 04. The expression of the emissions limitation in units of lb/hr does not mean that it is an "hourly" limit as claimed by the commenter. As indicated in the monitoring and recordkeeping provisions which are integral to the method used to demonstrate compliance with the emission limitations, the limitation is based on monthly TDS testing and water usage. The permit provisions are enforceable and sufficient to ensure compliance.

KDAQ RTC at J-98. The Petitioners appear to misinterpret the limit as an hourly limit when in fact it is a pounds per hour limit over a 30-day average. As a result, the Petitioners' claims in the Petition do not address the actual permit requirements. In response to the other issues raised in the Petition, KDAQ explained:

The commenter's statement regarding requirement 5(c)(1) is incomplete and therefore misleading. The permit condition required monthly records of PM/PM<sub>10</sub>/PM<sub>2.5</sub> emissions which are supported by calculation using emission factors, average monthly water circulation rate, monthly suspended solids test results, and other applicable data. Furthermore, the term "other applicable data" is not ambiguously used to imply that undetermined or nonspecific data is the sole criteria supporting emission calculations, rather it was used in addition to very specific terms (emission factors, average monthly water circulation rate, monthly suspended solids test results) as an "inclusive" term to imply that in addition to the specified items other information may be required and therefore applicable to the emission calculation.

KDAQ RTC at J-99. KDAQ then provided a detailed explanation of the compliance demonstration provided in the Permit (at 44) to address the Petitioners' specific concerns regarding compliance with the drift rate and to demonstrate that the monitoring required by the Permit is sufficient to assure compliance with that limit. KDAQ RTC at J-99. The claims in the Petition are largely based on a misunderstanding of the nature of the emission limit and the Petitioners do not acknowledge KDAQ's response. For these reasons, the Petitioners failed to demonstrate that KDAQ's analysis was unreasonable or that the permit does not assure compliance with the applicable requirements of the Act.

## **2. Claims Regarding the Sulfur Recovery Unit (SRU) and Ammonium Bisulfite Tower Vent (ATS) Unit**

The Petitioners raise claims regarding monitoring for the short-term/hourly emissions limits for CO, NO<sub>x</sub>, SO<sub>2</sub>, and PM/PM<sub>10</sub>/PM<sub>2.5</sub>. These are responded to in turn below.

For background purposes, the SRU is the part of the facility where sulfur is produced. *See* Application Vol. 1 at 2-13-14. The ATS Unit produces ammonium thiosulfate and uses a portion of the sulfur-rich process gas from the AGR unit, the NH<sub>3</sub> and H<sub>2</sub>S rich sour gas streams from the Sour Water Treatment Unit, and the process stream containing the remaining sulfur compounds from the SRU to produce an approximately 58 weight percent ammonium thiosulfate solution. *Id.* at 2-14-15. The permit conditions associated with these two units are found on page 19-24. The units have BACT-level emission limits for CO, NO<sub>x</sub>, SO<sub>2</sub> and PM/PM<sub>10</sub>/PM<sub>2.5</sub>.

**a. NO<sub>x</sub>, CO, and SO<sub>2</sub> Claims**

***Petitioners' Claims:*** The Petitioners contend that the monitoring in the permit is deficient for both NO<sub>x</sub> and CO. Petition at 49. The Petitioners state that for NO<sub>x</sub>, indirect monitoring is only allowed where direct monitoring is infeasible. They contend that a NO<sub>x</sub> Continuous Emissions Monitoring System (CEMS) is feasible and thus should be required. Similarly, Petitioners state that KDAQ should require a CO CEMS to be installed as well. The Petitioners note that the auxiliary boiler is equipped with a NO<sub>x</sub> CEMS and it has fewer NO<sub>x</sub> emissions than the SRU/ATS Unit. The Petitioners cite to the Draft 1990 NSR Manual for support for these "requirements." Petition at 49.

***EPA's Response:*** For the reasons provided below, EPA denies the Petition with respect to these claims.

The NO<sub>x</sub> and CO testing requirements include an initial performance test to demonstrate compliance with the NO<sub>x</sub> and CO limits. This test must be repeated every five years. Permit at 21. KSG is also required to install, calibrate, maintain and operate temperature measurement devices and monitor the temperature of the ATS incinerator combustion chamber in accordance with stated parameters. Permit at 22. During the NO<sub>x</sub> and CO performance tests, the average combustion chamber temperature necessary to determine compliance with the emission limits shall be documented and then temperature will be continuously monitored in 15 minute intervals as described in the Permit on page 22. Additional recordkeeping and reporting is further described in this section of the Permit. The Petitioners do not cite to an applicable requirement stating that CEMS are required.

In response to the Petitioners' public comments, which closely resembled the claims raised in their Petition, KDAQ explained,

CEMS are not necessary because process related NO<sub>x</sub> emissions from the ABS tower vent will not fluctuate significantly and NO<sub>x</sub> is controlled using a passive control device and low NO<sub>x</sub> burners. Continuous combustion chamber temperature monitoring will provide adequate assurance that the facility is complying with the NO<sub>x</sub> emission limitations on a continuous basis between performance tests.

KDAQ RTC at J-101. The Petitioners do not acknowledge KDAQ's response on this point, or the specific permit terms identified above. KDAQ provides further discussion with regard to the NO<sub>x</sub> CEMS as follows,

Installing NO<sub>x</sub> CEMS on the limited use auxiliary boiler is a direct requirement of NSPS Subpart Db, and has no relevance to the permit requirements for demonstrating compliance with the ABS Tower Vent NO<sub>x</sub> BACT limit. There is no direct regulatory requirement that requires CEMS on the ABS tower vent and the permit already contains

monitoring requirements which provide adequate assurance that the facility is complying with the NO<sub>x</sub> emission limitations on a continuous basis between performance tests.

KDAQ RTC at J-102. The response appears to address the Petitioners' claim although the Petitioners neither acknowledge the response, nor explain why the rationale is deficient. KDAQ provides similar responses for CO, explaining that,

CO emissions from the ATS incinerator form as a result of incomplete combustion of process gas containing trace levels of hydrocarbons and incomplete combustion of supplemental fuel. Utilizing good combustion practice and continuously monitoring the combustion chamber temperature will provide adequate assurance that the facility is continuously complying with the CO BACT limit between performance tests.

KDAQ RTC at J-102. KDAQ's RTC provides additional information regarding the Petitioners' claims that is not directly quoted here. *Id.* at J-102 to J-103. Again, KDAQ's response appears to address the Petitioners' claim although the Petitioners neither acknowledge the response nor explain why the rationale is deficient. Further, the Petitioners do not identify an applicable requirement or other requirement under the Act that requires CEMS for these pollutants. For the reasons described above, the Petitioners failed to demonstrate that KDAQ's analysis was unreasonable or that the permit does not assure compliance with applicable requirements of the Act.

With regard to SO<sub>2</sub>, the Petitioners do not provide any analysis beyond inclusion of SO<sub>2</sub> in the general heading and opening statement to the section in the Petition. Petition at 49. The Permit provides specific requirements for SO<sub>2</sub>, including the initial performance test as described above (Permit at 21). In addition, the Permit requires additional performance tests for SO<sub>2</sub> based on Method 6. *Id.* The purpose of this test is to establish the appropriate volumetric flow rate associated with compliance with the SO<sub>2</sub> BACT limits. Other parameters to be established through the testing include gas velocity. The Permit also requires installation of an SO<sub>2</sub> CEMS. Permit at 21. Thus, it appears that the permit includes sufficient monitoring to assure compliance with the SO<sub>2</sub> limits. For these reasons, the Petitioners failed to demonstrate that KDAQ's analysis was unreasonable or that the permit is inconsistent with requirements under the Act. *See, e.g., MacClarence*, 596 F.3d at 1130-33.

#### **b. PM Claims**

***Petitioners' Claims:*** The Petitioners contend that a PM CEMS is also required and cite to the Draft 1990 NSR Manual for support. Petition at 49. The Petitioners state that fiber-bed filter differential pressure drop monitoring is insufficient and should not be used because it is "surrogate" monitoring and the SOB and Permit do not explain why direct CEMS monitoring is "infeasible." Petition at 49. In addition to a PM CEMS, the Petitioners state that KDAQ should require periodic monitoring of condensable PM as well. Petition at 50. The Petitioners also state that the visual emissions monitoring is deficient because it does not use Continuous Opacity Monitoring System (COMS) or Method 9 and instead relies on a "normal" versus "abnormal" designation. Petition at 49.

***EPA's Response.*** For the reasons described below, EPA denies the Petition with respect to this issue.

The Permit includes a BACT limit for PM/PM<sub>10</sub>/PM<sub>2.5</sub> and a performance test requirement. Permit at 20-21. In addition, the Permit requires installation, calibration, maintenance and operation of a continuous parameter monitoring system to measure and record the fiber-bed filter differential pressure

drop, to ensure that the fiber-bed filter is adequately controlling PM/PM<sub>10</sub>/PM<sub>2.5</sub> emissions. Permit at 22. Additional visible emissions observations are required to further confirm the proper functioning of the fiber-bed filter. Permit at 22. Recordkeeping requirements are also identified. Permit at 22-24.

In response to the Petitioners' public comments, which closely resemble their claims on this issue, KDAQ explained (citing to KSG's response to the Petitioners' public comments),

PM emissions from the ABS Tower vent form from combustion processes in the ATS incinerator and from entrained ABS liquid droplets that escape from the fiberbed filter with the treated exhaust stream. As such, the majority of the PM emissions from the ABS Tower Vent are expected to be condensable PM and the EPA has not promulgated continuous monitoring methods for condensable PM emissions. Therefore, relying on continuous differential pressure drop measurements to assess fiber-bed filter performance and PM emissions between performance tests is a reasonable approach for demonstrating continuous compliance.

KDAQ RTC at J-102. In the Petition, the Petitioners do not explain why the monitoring described in the permit and explained in the KDAQ RTC fails to provide the information necessary to determine that the fiber-bed filter is assuring compliance with the emission limits. With regard to the Petitioners' concerns regarding the visible emissions requirements (on page 22 of the Permit; Petition at 50 (first full paragraph)), KDAQ explained,

The ABS Tower vent is not subject to an opacity standard so COMS and Method 9 readings would provide no data relevant for compliance. The daily qualitative visible emissions observations required by the permit are intended to provide added assurance that the fiber-bed filter is operating as designed and PM emissions are consistent with the value measured during the most recent performance test. Conducting performance testing every 62-months is appropriate considering Kentucky Syngas will install an SO<sub>2</sub> CEMS and will conduct continuous parametric monitoring to ensure the ATS incinerator and fiber-bed filter are operating as designed in accordance with manufacturer's specifications.

KDAQ RTC at J-102. Although not required by any applicable requirement or other provision under title V or the Act, the daily visible emissions test provides another mechanism by which to verify proper operation of the fiber-bed filter. The other parameters such as differential pressure drop provide additional information to assure compliance with the permit terms and conditions such as the PM/PM<sub>10</sub>/PM<sub>2.5</sub> limit (Permit at 20). Because the fiber-bed filter is not anticipated to have any visible emissions, the "normal" and "abnormal" determinations are sufficient – if the device has any visible emissions at all, that would be abnormal. Thus, this additional measure provides important redundancy to ensure that the limits are being met. The Petitioners do not acknowledge the information provided by KDAQ in response to their comments, or explain why the rationale provided is deficient or how the permit fails to assure compliance with applicable requirements of the Act. For these reasons, EPA denies the Petition as to this issue. *See, e.g., MacClarence*, 596 F.3d at 1130-33.

### c. Performance Test Claims

**Petitioners' Claims:** The Petitioners contend that the permit only requires performance tests for CO, NO<sub>x</sub>, SO<sub>2</sub>, and PM/PM<sub>10</sub>/PM<sub>2.5</sub> every five years and the Petitioners request that they be performed at least annually. Petition at 50. For support, the Petitioners cite to a D.C. Circuit case.

**EPA's Response:** For the reasons provided below, EPA denies the Petition as to this issue.

The Permit requires an initial performance test in order to establish appropriate monitoring for the parameters, which are then monitored continuously in order to assure compliance with terms and conditions of the Permit (the emission limits for the above-noted pollutants described on page 20 of the Permit). The follow-up testing every five years is not the only subsequent monitoring required by the Permit. Permit at 21-24. Once the parameters are established, the parameters themselves (as described above for each of the identified pollutants) are monitored on a basis sufficient to assure compliance with the permit terms and conditions. *Id.* There is no specific requirement to have an annual performance test, and the Petitioners do not cite to any such requirement. The case cited to by the Petitioners, *Sierra Club v. EPA*, involved a challenge to specific portions of EPA's title V monitoring rules. 536 F.3d 673 (D.C. Cir. 2008) (see page 45-46, *supra* for a description of the facts of that case). In and of itself, *Sierra Club v. EPA* does not require more frequent performance tests at this facility, and the Petitioners do not explain how that case forms the basis of a requirement that supports what the Petitioners request – that performance testing be completed on at least an annual basis.

In response to the Petitioners' public comments, KDAQ explained that between all the other required monitoring and the SO<sub>2</sub> CEMS, the Permit provided sufficient assurance of compliance with the emission limits. KDAQ RTC at J-102. The Petitioners do not acknowledge or reply to KDAQ's response, or provide any explanation as to why KDAQ's position is unreasonable or how the permit fails to comply with the Act. For these reasons, EPA denies the Petition as to this issue. *See, e.g., MacClarence*, 596 F.3d at 1130-33.

### 3. Claims Regarding Acid Gas Removal Unit

The Petitioners raise various concerns, outlined below, regarding the monitoring requirements for Emission Unit 5 (EU 5) – the AGR – for NO<sub>x</sub>, SO<sub>2</sub>, PM/PM<sub>10</sub>/PM<sub>2.5</sub>, CO, H<sub>2</sub>S, and VOCs. Petition at 51. Generally, the purpose of the Rectisol-based AGR unit is to remove sulfur and other compounds from the syngas that may affect the catalyst used in the Methanation Unit and to reduce the concentration of CO<sub>2</sub> in the syngas outlet. Application Vol. 1 at 2-12-13.

#### a. NO<sub>x</sub> Claims

**Petitioners' Claims:** The Petitioners contend that the permit must include direct monitoring for NO<sub>x</sub> from EU5, such as a NO<sub>x</sub> CEMS. If continuous monitoring is not required, then at least hourly monitoring is required. Petition at 51. For support, the Petitioners cite to the CAA, 40 C.F.R. § 70.6(a), (c), and *Sierra Club v. EPA*.

**EPA's Response:** For the reasons described below, EPA denies the Petition with respect to this claim.

With respect to NO<sub>x</sub>, the Permit includes a BACT limit for NO<sub>x</sub>. Permit at 26. The Permit also requires an initial performance test and subsequent performance tests every 2.5 years. Permit at 27. NO<sub>x</sub> will be

controlled at this unit through the use of regenerative thermal oxidizers. Permit at 30. As part of this control approach, KSG will install a gas temperature monitor in the combustion chamber of the thermal oxidizer (or immediately downstream of the combustion chamber before any substantial heat exchange occurs). Permit at 31. Once the parameters are established (use of the temperature sensor), temperature data shall be collected every 15 minutes.

In response to the Petitioners' comments, KDAQ explained,

The only NO<sub>x</sub> emissions from the AGR vent are formed from the combustion of supplemental fuel in the oxidizer burners when the process requires the vent streams temperature to be raised to conditions suitable for combustion reactions. The continuous combustion chamber monitoring required by the permit will provide adequate assurance that the oxidizer is operating as designed and NO<sub>x</sub> emissions are consistent with the emission rate measured during the most recent performance test. Refer to draft permit Section B, 4. Specific Monitoring Requirements for the AGR Unit. If Kentucky Syngas elects to use a CO, SO<sub>2</sub>, or VOC CEMs rather than performing periodic stack tests and continuous parametric monitoring, data collected by the CEMs can be used to assess oxidizer performance and demonstrate NO<sub>x</sub> emissions are consistent with the emission rate measured during the most recent performance test.

KDAQ RTC at J-104. The citations provided by the Petitioners do not themselves require that this facility install a NO<sub>x</sub> CEMS. (EPA previously discussed *Sierra Club* on page 45 of this Order.) The Petitioners do not acknowledge KDAQ's response or provide any analysis regarding the citations as to why those citations support the Petitioners' contention that NO<sub>x</sub> CEMS are required for this facility. The Petitioners failed to demonstrate that KDAQ's rationale was deficient or that the permit fails to assure compliance with applicable requirements of the Act. *See, e.g., MacClarence*, 596 F.3d at 1130-33.

#### b. SO<sub>2</sub> Claims

***Petitioners' Claims:*** The Petitioners contend that the SO<sub>2</sub> monitoring provisions from EU5 are deficient because there is no "direct" monitoring of SO<sub>2</sub> required. Petition at 51. The Petitioners also state that the SO<sub>2</sub> monitoring provisions for the ABS tower vent, citing to pages 21-22 of the Permit, should be required for EU 5. Further, the Petitioners state that hourly monitoring of SO<sub>2</sub> is required to ensure that the "hourly emissions limit" is not exceeded. Petition at 51. With regard to the "indirect" monitoring requirements, the Petitioners likewise argue that these must be "strengthened." Petition at 51. Specifically, the Petitioners contend that the monitoring in the permit is too infrequent and one of the elements relies on the AGR vent sampling plan that has not yet been developed. Rather, the permit must spell out the requirements for the sulfur content sampling. Petition at 51.

***EPA's Response:*** For the reasons described below, EPA denies the Petition as to this issue.

With regard to SO<sub>2</sub>, there is an option for KSG to install an SO<sub>2</sub> CEMS or conduct a performance test and continuously monitor to ensure that performance is maintained. Permit at 27. The Permit specifies the performance test requirements, including measures KSG must undertake with regard to SO<sub>2</sub> (following Method 6). *Id.* The test will establish the parameter range for volumetric flow, temperature and other information, and KSG is thereafter required to continuously monitor these parameters. Compliance with the SO<sub>2</sub> limit can therefore be evaluated. The SO<sub>2</sub> limit is not an "hourly" limit as stated by the Petitioners. Rather, the SO<sub>2</sub> limit is stated in pounds per hour based on a 3-hour average,

and the permit also includes an annual limit. Permit at 26. The Petitioners did not directly address these permit requirements.

In response to the Petitioners' public comments, KDAQ explained,

The AGR vent may produce SO<sub>2</sub> emissions when trace quantities of reduced sulfur compounds are combusted in the oxidizer. In comments submitted on the draft permit Kentucky Syngas requested that the permit be revised to allow SO<sub>2</sub> CEMs rather than H<sub>2</sub>S CEMs as means for demonstrating compliance with the SO<sub>2</sub> BACT limit and 401 KAR 59:105 SO<sub>2</sub> and H<sub>2</sub>S emission limitations. The Division has incorporated this change into the permit. The permit now contains the option to either 1) install a SO<sub>2</sub> CEMS or 2) to conduct monthly reduced sulfur compounds grab samples from the AGR vent stream and to conduct continuous oxidizer combustion chamber temperature measurements. Either option ensures that continuous compliance with both the SO<sub>2</sub> and H<sub>2</sub>S emission limitations can be demonstrated between performance tests.

KDAQ RTC at J-104. The AGR vent sampling plan is additional supporting information to explain how the facility will analyze the vent stream for sulfur content on a monthly basis for the first six months. Permit at 31. This AGR vent sampling plan is essentially an extended performance test to verify that the parameter monitoring is sufficient. As was previously discussed in this Order, EPA does not agree that the vent sampling plan must be developed in advance and subjected to public notice and comment. *See supra* at 13. On this issue, KDAQ further explained,

The development of a sampling plan for the AGR vent prior to initial startup is no different than developing and submitting a performance test protocol prior to conducting the test. Permit conditions which allow developing and submitting a performance test protocol prior to conducting the test are common and contained in many permits approved by the EPA. Condition 4 (f) of the permit establishes that the sampling must be performed and when it must be done given that the permittee does not install a SO<sub>2</sub> CEMS. The necessary content of the monitoring requirement in question was contained in the permit that was made available for public review. The requirements of the plan are simply to identify the methods for collecting and analyzing samples of AGR vent gas collected on a monthly basis. Such details are not required in the permit.

KDAQ RTC at J-105. The Petition neither acknowledges KDAQ's response to public comments, nor explains how KDAQ's rationale is deficient or how the permit fails to assure compliance with applicable requirements of the Act. *See, e.g., MacClarence*, 596 F.3d at 1130-33.

**c. PM/PM<sub>10</sub>/PM<sub>2.5</sub> Claims**

***Petitioners' Claims:*** The Petitioners allege that the permit contains no monitoring requirements for particulate matter from EU5 (AGR). Petition at 52. The only particulate matter related monitoring that the Petitioners note is an "initial test of opacity." The Petitioners state that KDAQ must establish monitoring of PM emissions on a continuous or hourly basis to ensure that the "short-term" emissions limit is met. The Petitioners state that ongoing opacity monitoring must be required – either a COMS or method 9 readings at periodic intervals. Petition at 52.

***EPA's Response:*** For the reasons described below, EPA denies the Petition as to this issue.

With regard to PM/PM<sub>10</sub>/PM<sub>2.5</sub>, the Permit sets a BACT limit in pounds per hour on a 24-hour average. Permit at 26. The facility is required to undertake the initial compliance test previously discussed, which sets forth key parameters, including temperature. As part of the performance test, an opacity associated with compliance with the applicable emission limitation would be correlated to the parameters to be monitored on a continuous basis. Permit at 27.

In response to the Petitioners' public comments, KDAQ explained,

The only source of PM associated with the AGR vent is supplemental fuel combustion in the oxidizer burners. Oxidizer performance and PM emissions can be assessed using the continuous combustion chamber temperature measurements or CEMs data, and therefore, neither PM CEMs nor PM performance testing is necessary to quantify the PM emissions from the AGR vent. The AGR vent is not subject to an opacity standard and conducting Method 9 observations would not provide any data meaningful for assessing compliance. The option to install CEMs with less frequent performance testing (every 62-months) or to conduct continuous oxidizer combustion chamber temperature monitoring with more frequent performance testing (every 32-months) will ensure adequate data is collected to continuously demonstrate compliance with the AGR vent CO, SO<sub>2</sub>, and H<sub>2</sub>S emission limitations. Either method provides reasonable assurance that these emission limitations will not be exceeded.

KDAQ RTC at J-105. Thus, the permit includes specific requirements to continuously monitor parameters to verify compliance with the PM/PM<sub>10</sub>/PM<sub>2.5</sub> limit. Other conditions include good combustion practices and the recordkeeping requirements. Permit at 32. The Petition neither acknowledges KDAQ's response to public comments, nor explains how KDAQ's rationale is deficient or how the permit fails to assure compliance with applicable requirements of the Act. *See, e.g., MacClarence*, 596 F.3d at 1130-33.

#### **d. Claims Regarding Monitoring for CO, H<sub>2</sub>S and VOC**

***Petitioners' Claims:*** The Petitioners contend that the monitoring requirements for CO, H<sub>2</sub>S and VOC are inadequate. Petition at 52. The Petitioners state that because use of CEMS is "clearly feasible," then CEMS should be required. The Petitioners' footnote 51 includes a number of legal citations to support the contention regarding CEMS. The Petitioners also state their position that the permit was weakened between the draft and final form because KDAQ removed the H<sub>2</sub>S CEMS obligation and replaced it with SO<sub>2</sub> monitoring. The Petitioners state that direct monitoring of H<sub>2</sub>S must be required.

***EPA's Response:*** For the reasons provided below, EPA denies the Petition as to this issue.

With regard to CO, H<sub>2</sub>S and VOC, the Permit establishes a number of different testing, monitoring, recordkeeping and reporting requirements, beginning with a performance test (and repeat of that test every 2.5 years), as previously discussed. Permit at 27. During this test, specific information regarding compliance is obtained with respect to, among other pollutants, H<sub>2</sub>S. The Permit also includes pollution control equipment such as catalytic oxidizers. Permit at 28-29. CEMS are also an option. Monitoring information is described on pages 29-31 of the Permit.

In response to the Petitioners' public comments, KDAQ explained,

The option to install CEMs with less frequent performance testing (every 62-months) or to conduct continuous oxidizer combustion chamber temperature monitoring with more frequent performance testing (every 32-months) will ensure adequate data is collected to continuously demonstrate compliance with the AGR vent CO, SO<sub>2</sub>, and H<sub>2</sub>S emission limitations. Either method provides reasonable assurance that these emission limitations will not be exceeded.

KDAQ RTC at J-105. In explaining their position that the monitoring is inadequate, the Petitioners appear to overlook the continuous monitoring of certain parameters, such as temperature, which is established through the performance testing and from which compliance may be assured with the emission limits. As a result, the performance tests are not the only method by which compliance is assured. Rather, the performance tests ensure that the initially designed parameters continue to be appropriate for assuring compliance with the emission limits. The Petitioners cite to KDAQ's RTC (at J-104) to claim that the permit was "weakened" between the draft and final stage due to H<sub>2</sub>S monitoring changes; however, the Petitioners only provide a conclusory statement without explaining why KDAQ's rationale was unreasonable. With regard to VOC and H<sub>2</sub>S, further changes will be made to the permit (as a result of this Order) to assure adequate compliance demonstrations for these sourcewide limits and to ensure that they account for all emissions. With regard to the specific issues raised in this part of the Petition, the Petitioners failed to demonstrate that the permit does not assure compliance with applicable requirements of the Act.

#### 4. Claims Regarding Auxiliary Boiler

**Petitioners' Claims:** The Petitioners claim that the monitoring for CO, NO<sub>x</sub>,<sup>27</sup> SO<sub>2</sub>, PM/PM<sub>10</sub>/PM<sub>2.5</sub> and opacity for EU8 (Natural Gas/SNG-Fired Auxiliary Boiler) are all insufficient. Petition at 52. The Petitioners contend that a CO CEMS, a PM CEMS, periodic monitoring for SO<sub>2</sub> and "genuine monitoring" for opacity are required. Petition at 52-53.

**EPA's Response:** For the reasons described below, EPA denies the Petition as to this issue.

In the Application, KSG explains that a nominal 600 million British thermal units (MMBtu)/hr natural gas or SNG-fired auxiliary boiler (EU8) will be provided to supply steam for startup, swap, or upset condition steam demands. Startup steam from the auxiliary boiler will be required to heat column reboilers and process heaters before the gasification process is generating steam in the High Temperature Heat Recovery boiler. This boiler will operate at a reduced load (20 percent of its nameplate capacity) during normal operations and will operate at full load only when needed. Application Vol. 1 at 2-20. The BACT analysis for the auxiliary boiler is described in the Application beginning on page 10-10. The final BACT determination is described in the Application at 10.3.1.5 and includes a combination of emission limits and operational practices. The Permit includes these requirements. Permit at 53-54. The monitoring that supports these limits is discussed in the permit and includes performance testing (initial and every 5 years), a fuel analysis plan, and additional requirements stemming from 40 C.F.R. § 60.46b(c). Permit at 55. The Permit also requires installation of a NO<sub>x</sub> CEMS along with numerous other testing, recordkeeping and reporting requirements. Permit at 56-58.

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<sup>27</sup> The Petition makes no statements regarding NO<sub>x</sub> besides its inclusion in the first sentence of Section E at page 52. Thus, Petitioner has failed to make any statement to which EPA can respond regarding NO<sub>x</sub> from EU8.

In response to the Petitioners' public comments, KDAQ explained,

In this case the auxiliary boiler is subject to 40 CFR Part 60, Subpart Db, the NSPS for Industrial-Commercial-Institutional Steam Generation Units. The permit requirements (Section B, EU-08, Conditions 4 and 5) are consistent with the requirements of 40 C.F.R. 60 Subpart Db and satisfy all the monitoring requirements of this NSPS. Despite the commenter's claim that CEMS should be required, as stipulated in 40 CFR 60.47b and 60.48b, Subpart Db does not require continuous emissions monitoring for SO<sub>2</sub> or PM/opacity for the auxiliary boiler. Consistent with 40 CFR 60.48b, operating limitation 1a, requiring the combustion of only natural gas or SNG in the auxiliary boiler, ensures continuous compliance with the PM/opacity limits.

KDAQ RTC at J-107 to J-108. In addition, KDAQ provides other specific responses to the Petitioners' public comments explaining other operational style limitations such as, "Kentucky Syngas will purchase an auxiliary boiler designed to have one or more of the following: Low NO<sub>x</sub> Burner (LNB), Over-fire Air (OFA), and Flue Gas Recirculation (FGR). Operation of the auxiliary boiler will be limited to no more than 20% capacity for readiness purposes during normal operation and no more than 500 hours per year at full capacity (primarily during cold plant startups)." KDAQ RTC at J-108. The Petitioners do not appear to acknowledge the monitoring in the Permit (aside from the initial performance test) that is not based on a CEMS. Nonetheless, such monitoring exists, as is described above. Such monitoring is still "genuine" monitoring, and the Petitioners have not explained why it does not provide methods for assuring compliance with the stated emission limits. The Petitioners do not appear to address KDAQ's explanation excerpted above. For these reasons, the Petitioners failed to demonstrate that the monitoring approach in the permit is inadequate to assure compliance with applicable requirements of the Act, and as a result, EPA denies the Petition as to this issue. *See, e.g., MacClarence*, 596 F.3d at 1130-33.

#### **J. Petitioners' Claims Regarding Estimating, Controlling, and Modeling PM**

As a general matter, the Petitioners contend that KDAQ significantly underestimated PM<sub>10</sub> and PM<sub>2.5</sub> emissions from the facility, which is unlawful and also raises the strong possibility that KSG will exceed the NAAQS and/or PSD increment for PM<sub>10</sub> and PM<sub>2.5</sub>. Petition at 54. The Petitioners identify four areas at the facility where they believe that particulate matter emissions were underestimated. Petition at 54. Those areas are: the cooling tower and wet surface air cooler, unpaved roads, paved roads, and material storage piles. In addition, the Petitioners contend that the material handling measures (such as for the coal and slag storage piles) listed in the permit (at 85-87) are impermissibly vague and unenforceable. Petition at 62.

EPA responds below to the comments regarding the cooling tower and wet surface air cooler. With regard to the remaining issues raised on pages 57-62 of the Petition, these issues were not raised with reasonable specificity to KDAQ during the public comment period for this Permit. The Petitioners also include no discussion in the Petition demonstrating that it was impracticable to raise these issues during the public comment period or regarding grounds arising after the public comment period. Thus, it appears that Petitioner failed to meet a threshold procedural requirement described in CAA § 505(b)(2) and 40 C.F.R. § 70.8(d). For these reasons, EPA is denying the Petition with respect to those issues, but addressing the remaining issues below.

## 1. Cooling Tower and Wet Surface Air Cooler

**Petitioners' Claims:** The Petitioners contend that PM<sub>10</sub> and PM<sub>2.5</sub> emissions from the cooling tower and wet surface air cooler are underestimated because AP-42 emission factors and presumptions were not used. Petition at 54. Further, the Petitioners contend that such underestimated emissions were used in the air quality impact analyses. Petition at 54. In addition, the Petitioners do not agree that the methodology employed by KSG for the emissions analysis resulted in an appropriate emissions estimate. The Petitioners contend that KSG used assumptions stemming from an "independent paper" regarding the percentage of particles that are PM<sub>10</sub>. The Petitioners provide differences in calculation between the KSG methodology and the AP-42-based methodology and claim that the differences are significant. Petition at 55. The Petitioners also state that use of the "alternative" analysis was particularly inappropriate for the wet surface air cooler because of the total dissolved solids concentrations in the KSG facility. Petition at 55-56. The Petitioners cite to a previous EPA title V petition order for the proposition that because of uncertainties associated with AP-42, conservative methodologies should be utilized – and here, the Petitioners contend, KSG did not use a conservative methodology. Petition at 56. The Petitioners disagree with KSG's reliance on the Reisman/Frisbie method for calculating emissions in part because the nature of the water from the Ohio River was not considered by KSG. Petition at 56.<sup>28</sup>

**EPA's Response:** For the reasons described below, EPA denies the Petition as to this issue.

With regard to the two units at issue here, the cooling tower and the wet surface air cooler (EUs 3 and 4), the Application provides the following explanation of the associated particulate matter emissions:

### 3.13.2 COOLING TOWER EMISSIONS

The mechanical draft cooling tower will be composed of 30 cells and will have a maximum circulating water flow rate of 444,000 gpm. Particulate matter emissions can be produced in evaporative cooling towers as dissolved solids in the circulating water become entrained in the water vapor produced as process heat is rejected to the atmosphere. As shown in Section C-6 of Appendix C, Kentucky NewGas has estimated short-term and annual potential emissions of PM<sub>10</sub> from the cooling tower based on the methodology presented in AP-42 Chapter 13.5 for Wet Cooling Towers using the maximum circulating water flow rate, the total dissolved solids (TDS) in the circulating water, and the drift rate established in the BACT determination (refer to Section 10.1).

### 3.13.3 WET SURFACE AIR COOLER EMISSIONS

Despite the relatively high TDS of the deluge water used in the wet surface air cooler, modeling the unit as a cooling tower using the AP-42 methodology in Chapter 13.5 is still appropriate from a theoretical standpoint (i.e., the AP-42 methodology is established based on first principles and not an empirical relationship within a specified range of operating parameters), and therefore, as shown in Section C-6 of Appendix C, Kentucky NewGas has established

Application Vol. 1 at 3-10. With regard to the particulate matter emissions estimates (for PTE) for the cooling tower, the Application explains that, "[t]here is very limited test data on PM emissions from

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<sup>28</sup> This last statement, found at the bottom of page 56 of the Petition, was not included in the public comments submitted to KDAQ. As was previously discussed, it appears that Petitioner failed to meet a threshold procedural requirement described in CAA § 505(b)(2) and 40 C.F.R. § 70.8(d).

cooling towers as most permits monitor cooling tower emissions based on the total dissolved solids (TDS) in the recirculation water as opposed to emissions testing. Additionally, the test method that is used to verify percent drift (CTI ATC #140) does not differentiate based on particle size.” September 21, 2009, Addendum to Application Vol. 1 at 16. KSG then explains its basis for using the methodology outlined in Joel Reisman and Gordon Frisbie, *Calculating Realistic PM<sub>10</sub> Emissions from Cooling Towers*, Environmental Progress, Vol. 21 Iss. 2 pgs. 127-130, Apr. 20, 2004 (hereafter referred to as “Reisman/Frisbie Method”). *Id.* As was previously discussed, the Permit includes a number of enforceable limits and monitoring, testing, recordkeeping and reporting requirements for the particulate matter emission limits at the Cooling Tower and Wet Surface Air Cooler.

In the response to the Petitioners’ public comments, KDAQ provided several key points. First, in response to the Petitioners’ claims regarding use of AP-42 factors, KDAQ provided a rationale for its determinations that the Reisman/Frisbie Method was more accurate for the KSG facility. Specifically, KDAQ pointed out key information from AP-42 (KDAQ RTC at J-39 to J-40) and stated,

the applicant has provided a scientific study, Abstract No. 216 “Calculating Realistic PM<sub>10</sub> Emissions from Cooling Towers” by Joel Reisman and Gordon Frisbie, which defines the fraction of drift that is emitted as PM<sub>10</sub> particulate. The commenter offers a different study to support its claim that all particulate emitted from a cooling tower is PM<sub>10</sub>. The commenter claims there are differences that exist between the cooling towers and operating conditions in the study and the proposed units at the Kentucky Syngas Facility. However, the commenter did not provide [sic] any information that specifically describes why the scientific study used by applicant was flawed.

KDAQ RTC at J-39 to J-40. KDAQ then explains the source of the information for the Reisman/Frisbie Method as stemming from drift eliminator manufacturers as further support that this study is more accurate for estimating emissions than AP-42. KDAQ also responds to the Petitioners’ statements regarding the cited-to EPA title V petition order, *In re Tesoro Refining and Marketing Co., Martinez, California Facility*, Petition No. IX-2004-6 (Order on Petition) (Mar. 15, 2005) (hereafter referred to as “*Tesoro*”).

As was explained by EPA in *Tesoro*,

An AP-42 emission factor is a value that roughly correlates the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. AP-42 Fifth Edition, Volume I, Introduction. The use of these emission factors may be appropriate in some permitting applications, such as establishing operating permit fees. EPA, however, has also stated that AP-42 factors do not necessarily yield accurate emissions estimates for individual sources. *See In the Matter of Cargill, Inc.*, Petition IV-2003-7 (Amended Order) at 7, n.3 (Oct. 19, 2004); *In re: Peabody Western Coal Co.*, CAA Appeal No. 04-01 [12 E.A.D. 22] at 22-26 (EAB Feb. 18, 2005). Because emission factors essentially represent an average of a range of facilities and of emission rates, they are not necessarily indicative of the emissions from a given source at all times; with a few exceptions, use of these factors to develop source-specific permit limits or to determine compliance with permit requirements is generally not recommended. *Id.*; AP-42 Fifth Edition, Volume I, Introduction.

*Tesoro* at 32. In the present case, KSG and KDAQ provided a rationale for using the Reisman/Frisbie study. In response to the Petitioners' claims regarding *Tesoro*, KDAQ opined,

EPA came to the limited conclusion, specific to the refinery at issue in *Tesoro*, that the AP-42 "emission factor does not demonstrate a deficiency in the Permit" at issue. *Tesoro* at 34. Thus, the Administrator in *Tesoro* merely determined that in that case the use of AP-42 did not render the permit deficient. The Administrator did not determine that use of the AP-42 emission factor was required. In fact, the EPA acknowledged that "the emission factor is conservatively high compared to the 0.0005% drift rate that cooling towers are capable of achieving."<sup>29</sup>

KDAQ RTC at J-40. KDAQ then provides specific responses to two other scientific papers suggested by the Petitioners as more applicable to the KSG facility. *Id.* at 41. Notably, the Petition includes some statements not raised at all in public comments to KDAQ: specifically, the discussion of brackish water and the specific information regarding the Ohio River. Petition at 56 (bottom of the page). Because KDAQ was not provided with any notice of such comments, there is no KDAQ response to these issues. Accordingly, EPA focused on the comments that were provided to KDAQ and KDAQ's response. The fundamental issue in that regard is that there is no requirement to use AP-42 and that KDAQ provided a rationale for its use of the Reisman/Frisbie Method.

In the Petition, the Petitioners do not appear to acknowledge or address KDAQ's response, including any of the technical information provided in the response to comments. KDAQ has provided a technically-supported rationale for its determination, and the Petitioners do not explain or demonstrate how KDAQ's rationale was deficient or how the permit fails to assure compliance with the applicable requirements of the Act. *See, e.g., MacClarence*, 596 F.3d at 1130-33. For these reasons, EPA denies the Petition on these issues.

#### **K. Petitioners' Claim that the Ozone Impact Analysis was Inadequate**

***Petitioners' Claim:*** The Petitioners contend that KSG and KDAQ failed to show that the proposed source will not cause or contribute to violations of ozone air quality standards. Petition at 63. The primary reason for this assertion is the Petitioners' contention that KSG's qualitative assessment of ozone impacts is insufficient to ensure protection of the ozone NAAQS. Rather, the Petitioners argue that individual source modeling of ozone impacts is required. Petition at 63. The Petitioners state that federal regulations and Kentucky's SIP-approved rules require modeling for each pollutant that the proposed source would emit in significant amounts. Petition at 64. In addition, the Petitioners contend that KSG/KDAQ should have obtained federal approval of any deviation from federal regulatory guidelines for the modeling pursuant to 42 U.S.C. § 7475(e) of the CAA and 40 C.F.R. Part 51, Appendix W at 3.3.2 and 5.2.1. Petition at 65. In particular, the Petitioners contend that the statement in Appendix W § 5.2.1(c) that "model users should consult with the Regional Office to determine the most suitable approach on a case-by-case basis (subsection 3.2.2)" must be read in context to mean that a case-by-case approach should be taken to determine individual source modeling methods for ozone impacts, following the process outlined in Subsection 3.2.2 of Appendix W, not to exempt a source from

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<sup>29</sup> This block quote includes KDAQ's paraphrase of the *Tesoro* Order; however, the *Tesoro* Order speaks for itself. The general proposition for which it is cited, that AP-42 is not required to be used, is generally accurate.

such modeling. Petition at 65. The Petitioners address KDAQ's RTC at J-117 to 118 and raise four concerns with KDAQ's approach. Petition at 66. First, that KDAQ failed to follow the correct procedure to receive federal agency approval. Petition at 66. Second, that the method for ozone analysis in this case was not individual source modeling. Petition at 66. Third, that KDAQ did not provide support for the claim that actual ozone modeling is not technically feasible. Petition at 66. Fourth, that KDAQ did not demonstrate why the qualitative modeling approach was appropriate. Petition at 66.

The Petitioners also make several claims regarding the qualitative analysis used by KSG and KDAQ. Petition at 67. First, the Petitioners object that KDAQ improperly relied on a qualitative ozone analysis that was based on ozone modeling for Georgia, stating that KDAQ made "little to no effort" to demonstrate that ozone modeling for Georgia is appropriate for Kentucky based on similarities in atmospheric transport, dispersion, and chemical transformations. Petition at 67. The Petitioners note four significant differences between the topography and climate in Kentucky and Georgia that they believe demonstrates that using the Georgia data was inappropriate. Petition at 67. The Petitioners also address KDAQ's RTC by stating that KDAQ failed to address the Petitioners' comments about the differences in terrain, land use and other characteristics between Kentucky and Georgia. Petition at 68. The Petitioners also disagree with KDAQ's conclusion about deriving the relative ozone impact from the NO<sub>x</sub> to VOC ratio, arguing that this approach has been discredited (citing Exhibit 50 – 2006 EPA Letter). The Petitioners further note that ozone precursors emitted by proposed power plants in Kentucky have been shown to cause significantly large ozone increases, citing a 2001 modeling study by Kentucky. Petition at 68. The Petitioners then explain their belief that Muhlenberg County may have an ozone problem that would worsen with the KSG facility. Petition at 69. The Petitioners cite to advances in modeling for ozone impacts, including VISTAS (Visibility Improvement State and Tribal Association of the Southeast) regional modeling, and state that it is "fairly fast and inexpensive" to perform such modeling analyses. Petition at 69. The Petitioners also state that enhancements such as the use of fine grid resolution and plume-in-grid treatment have made photochemical models like CAMx and CMAQ more suitable for predicting ozone impacts from large NO<sub>x</sub> plumes from power plants. Petition at 70. The Petitioners state that KDAQ's response to their comments did not address the substantive point – that individual source modeling is feasible and the Petitioners cite to several facilities where that type of modeling has occurred. Petition at 70.

***EPA's Response:*** The permit record includes various information regarding the ozone impacts analysis. With respect to Petitioner's contention that KSG was legally required to perform quantitative modeling to assess the proposed new facility's impacts on ambient ozone levels, EPA denies the Petition. While Kentucky's SIP requires that all applications of air quality modeling used in PSD permitting "shall be based on the applicable models, databases, and other requirements" specified in Appendix W of 40 C.F.R. Part 51, Appendix W does not specify a particular model for use in analyzing an individual source's impacts on ambient ozone levels in PSD permitting. Rather, Appendix W Section 5.2.1.c explains: "Choice of methods used to assess the impact of an individual source depends on the nature of the source and its emissions." It further states that model users "should consult with the [EPA] Regional Office to determine the most suitable approach [for analyzing single source ozone impacts] on a case-by-case basis." Appendix W Section 5.2.1.c. EPA has explained that this provision sets forth "a process of determining particular models or other analytical techniques that should be used on a case-by-case basis" to evaluate whether a source will cause or contribute to a violation of the ozone NAAQS for purposes of PSD. Letter from Gina McCarthy, EPA Assistant Administrator Office of Air and Radiation to Robert Ukeiley (Jan. 4, 2012) at 2. As EPA Region 4 explained in another context, depending on the nature of the source, its emissions and background ozone concentrations, "an ozone impact analysis *other than modeling* may be required." 76 *Fed. Reg.* 41100, 41108 (July 13, 2011) (emphasis added).

EPA also denies the Petition with respect to the Petitioners' contention that KSG's qualitative analysis is insufficient to demonstrate that the proposed facility will not cause or contribute to an ozone NAAQS violation. While the Petitioners are correct that neither KSG nor KDAQ attempted to demonstrate that Georgia's ozone modeling is appropriate for Kentucky based on similarities in atmospheric transport, dispersion, and chemical transformations, the qualitative analysis based on Georgia's modeling is just one aspect of KSG's overall analysis of the proposed facility's anticipated ozone impacts. KSG's Application at Volume 2, Attachment A describes the ozone impact analysis completed by KSG. In its analysis, KSG considered the most recent three years (2006-2008) of ambient data from the Warren County monitoring station as representative of the background ozone concentration for the area surrounding the facility. Application Vol. 2 at 253; *see also* September 4, 2009 letter regarding KSG's Ozone Ambient Impact Analysis. KSG explained that this was a conservative estimate of background because Warren County is located in a more urban area than the KSG facility site. To further support this conclusion, KSG also cited to the projected 8-hour average ozone design values derived from photochemical modeling conducted for the Visibility Improvement State and Tribal Association of the Southeast-Southeastern States Air Resource Managers (VISTAS-SESARM). *Id.* This study showed that the predicted 2009 8-hour ozone design values in Muhlenberg County range from approximately 0.052 ppm to 0.065 ppm, depending on the CMAQ grid settings. *Id.* KSG then states that increases in ozone formation resulting from the KSG facility will be less than 0.00001 ppm. *Id.* KSG then used the Georgia EPD data to predict the relationship between NO<sub>x</sub> and ozone concentrations. KSG also considered four nearby counties, including Christian County, Kentucky, and determined that the source would not be expected to impact maximum ozone concentrations in the four counties. KSG also identified a number of programs focused on reducing NO<sub>x</sub>, which are expected to have an ozone benefit, including the Clean Air Interstate Rule, NO<sub>x</sub> SIP Call, and installation of control devices at nearby coal-fired power plants. Application Vol. 2 at 254. Each county was individually assessed by KSG. *Id.* at 355. EPA recently designated Muhlenberg County, Kentucky as attainment for the 2008 8-hour ozone standard. *See, e.g.*, <http://www.epa.gov/ozonedesignations/2008standards/state.htm> (last visited May 10, 2012). While the Petitioners do not apparently agree with this approach, the Petition focuses on arguing that a different analysis should have been conducted instead of identifying deficiencies with the analysis that was performed and KDAQ's explanations in the RTC.

With regard to the Georgia's sensitivity modeling, the analysis based on Georgia's modeling merely supplements KSG's overall analysis of the proposed facility's anticipated ozone impacts. Significantly, KSG did not submit the analysis as a definitive demonstration of the effect that the proposed source will have on ambient ozone levels. Rather, recognizing that there may be differences between Georgia and Kentucky with respect to ozone formation, KSG simply offered the analysis in further support of its conclusion—made based on consideration of the other factors described above—that the proposed facility will not cause or contribute to a violation of the ozone NAAQS. KDAQ explained in response to the Petitioners' public comments that use of the Georgia modeling results likely lead to a conservative ozone impacts analysis given the fact that the Georgia modeling addressed an urban area whereas the location of the proposed source is predominantly rural. KDAQ RTC at J-119. Regardless, the Petitioners have not demonstrated that the totality of KSG's analysis is insufficient to demonstrate that the proposed facility will not cause or contribute to an ozone NAAQS violation.

EPA also denies the Petition with respect to the Petitioners' contention that KDAQ failed to follow the correct procedure to receive federal agency approval. Appendix W, § 5.2.1(c) states that "model users should consult with the Regional Office to determine the most suitable approach on a case-by-case basis," which may include analytical techniques other than modeling for ozone, as explained above.

KDAQ's approach to the ozone analysis was consistent with general guidance provided by EPA Region 4 to KDAQ in presentations and discussions, and with communications between Region 4 and the KDAQ modeler handling the KSG application. The method was selected based on a case-specific review of the magnitude of the project's emissions, the projected ambient background ozone levels during operation, the levels of existing emissions of ozone precursors in the region, and the available modeling systems and other approaches to analyzing single source ozone impacts. The Petitioners have not demonstrated that section 5.2.1.c of Appendix W requires explicit written EPA approval of the methods used on a case-by-case basis for each individual permit, particularly in a situation like this where a qualitative approach was used for the ozone impacts analysis. Nor have the Petitioners pointed to any prior EPA statements adopting such an interpretation. EPA has not previously established specific guidelines for documenting for the record a consultation with EPA Regional Offices under section 5.2.1.c. Given the lack of specificity in EPA's guidelines, as well as the facts that KDAQ's approach was consistent with prior Region 4 guidance and that KDAQ did contact EPA to confirm its approach, the Petitioners have not demonstrated that KDAQ's approach in this case was unreasonable or inconsistent with the guidelines in section 5.2.1.c of Appendix W. EPA agrees that it is preferable for permitting authorities to provide clear documentation that they have consulted with an EPA Regional Office regarding an ozone impacts analysis under section 5.2.1.c. of Appendix W, but, under the circumstances of this case, the Petitioners have not demonstrated that KDAQ's approach for KSG was inconsistent with any relevant applicable requirement.

EPA acknowledges that the Petitioners also raise the claim that KDAQ did not adequately respond to their comments. While KDAQ's analysis emphasizes certain elements differently than the Petitioners' discussion in the comments, KDAQ does provide a response to comments, which breaks down the Petitioners' assertions and responds to their primary points. *See* KDAQ RTC at J-117 to J-121. The Petitioners have not demonstrated that the response to comments was inadequate. Specifically, KDAQ did explain that ozone modeling is not required or technically feasible. *See id.* at 117. Moreover, the Petition appears to acknowledge some of KDAQ's responses (e.g., Petition at 70), and, although the Petitioners appear to disagree with KDAQ's decision, the Petition does not demonstrate that KDAQ's decision was unreasonable or deficient.

For these reasons, EPA denies the Petition on the claims regarding inadequacy of the qualitative ozone impacts analysis.

#### **L. Petitioners' Claims Regarding PM<sub>2.5</sub>**

***Petitioners' Claim.*** The Petitioners contend that KDAQ's use of PM<sub>10</sub> as a surrogate for PM<sub>2.5</sub> is impermissible for BACT purposes. Petition at 70. The Petitioners explain that although KDAQ identified PM<sub>2.5</sub> as a pollutant subject to BACT, the permit does not include a BACT limit for PM<sub>2.5</sub> and instead uses PM<sub>10</sub> as a surrogate for PM<sub>2.5</sub>. To support this general contention, the Petitioners cite to an EPA title V Petition Order, *In the Matter of Louisville Gas and Electric Company, Trimble County*, Petition No. IV-2008-3 (Order on Petition) (Aug. 12, 2009) (LG&E Order) and other information the Petitioners characterize as guidance issued by Region 4 to states. Petition at 76. The Petitioners explain that KDAQ's analysis of PM<sub>10</sub> surrogacy does not satisfy the requirements of the LG&E Order. The Petitioners raise the following specific concerns about the surrogacy analysis provided by KSG and KDAQ (Petition at 76-80): (1) the analysis utilized by KDAQ/KSG does not satisfy either of the two approaches identified by EPA as adequate in the LG&E Order; (2) KDAQ has not demonstrated that the degree of control of PM<sub>2.5</sub> by the control technology selected in the PM<sub>10</sub> BACT analysis will be at least as effective as that would be selected through a PM<sub>2.5</sub> BACT analysis; (3) with regard to the statistical

relationship between PM<sub>10</sub> and PM<sub>2.5</sub>, the Petitioners highlight concerns with the chosen AP-42 multipliers, other technical issues associated with use of AP-42, and that the use of the chosen multipliers failed to adequately take into consideration the facts of the permit at issue; (4) with specific regard to the feedstock analysis and the ancillary equipment analysis, the Petitioners contend that KDAQ concluded that the control options for PM<sub>10</sub> and PM<sub>2.5</sub> would have “comparable effectiveness” without sufficiently explaining this conclusion (and further, that the LG&E Order called for “at least as effective” not “comparable effectiveness”) and also that the type of suppression ultimately chosen was incorrect per AP-42; (5) with specific regard to the SNG production process, the ancillary equipment, auxiliary boiler, and sulfur recover process/ABS tower vent, KDAQ failed to provide a sufficient assessment/analysis as to the surrogacy for those units in part because KDAQ did not consider that condensable PM<sub>2.5</sub> is not PM<sub>10</sub>; (6) with specific regard to the sulfur recovery process/ABS tower vent, the Petitioners raised concerns with the BACT analysis assumption that all PM<sub>10</sub> is also PM<sub>2.5</sub> and further, that a control method for filterable PM is inappropriate for PM from natural gas combustion because of condensable and filterable components; the Petitioners also raise concerns with KDAQ’s reliance on a particular EPA rulemaking; and (7) with specific regard to ancillary equipment and the cooling towers, the Petitioners suggest that KDAQ/KSG relied on the uncertainty in the prediction of the particle size distribution to conclude that PM<sub>10</sub> can act as a surrogate as opposed to actually demonstrating a relationship and justifying the surrogacy analysis, and further, that the analysis fails to demonstrate that the selected controls would be as effective as PM<sub>2.5</sub> controls. The Petitioners briefly address KDAQ’s RTC by stating that KDAQ failed to directly address the substance of the Petitioners’ comments. Petition at 80. The Petitioners conclude by stating that KDAQ did not follow the LG&E Order and that instead of responding to the Petitioners’ concerns, KDAQ stated that the LG&E Order was flawed and need not be followed. Petition at 80.

***EPA’s Response:*** For the reasons provided below, EPA denies the Petition as to this issue.

As part of KSG’s initial application, KSG submitted a document titled, Appendix G, “Reasonableness Analysis for PM<sub>10</sub> as a Surrogate for PM<sub>2.5</sub>” as an attachment to Volume 1 of the permit application. This document detailed KSG’s “surrogacy” analysis and was KSG’s initial demonstration that “for each emission unit at the proposed site 1) the available data show a consistent relationship between PM<sub>2.5</sub> and PM<sub>10</sub> emissions, and 2) the pollution control technologies that establish BACT for PM<sub>10</sub> are also the best technologies for controlling direct PM<sub>2.5</sub>.” Appendix G at 8. Appendix G then provides an emission source-by-source discussion of the relationship between PM<sub>10</sub> and PM<sub>2.5</sub>, which includes detailed technical analyses for the facility. Appendix G at 8-20. On May 24, 2010, EPA issued an objection letter to the proposed KSG permit explaining that, “[w]e agree that Kentucky Syngas has established a statistical relationship between PM<sub>10</sub> and PM<sub>2.5</sub> emissions from the units in question and that KDAQ has reached a reasonable decision concerning the best available control technology determination. Kentucky Syngas submittals have not, however, demonstrated that projected PM<sub>2.5</sub> emissions would not cause or contribute to a PM<sub>2.5</sub> NAAQS violation.” In KDAQ’s response to the Petitioners’ comments on the PM<sub>2.5</sub> surrogacy issues, KDAQ cites to Appendix G and explains that the analysis therein demonstrated that for each emission unit at the proposed site, the available data show a consistent relationship between PM<sub>2.5</sub> and PM<sub>10</sub> emissions. KDAQ RTC at J-88.

In the Petition, the Petitioners mainly compare KSG to the LG&E Order, but fail to identify deficiencies in the KSG-specific analysis actually provided by KSG. The Petitioners only have a handful of references to the Appendix G analysis and include a variety of conclusory statements such as “...there is no authority for the conclusion that...” wet suppression is reasonably assumed to have the same effectiveness in controlling PM<sub>2.5</sub> as it does for PM<sub>10</sub>. Petition at 77. However, Appendix G provides at

least three references to scientific studies regarding this point, as well as additional analysis describing the specific facts at the KSG facility and why these studies support KSG's conclusions. Appendix G at 9-10. The Petition does not explain why these studies are inapposite, how KDAQ's reliance on these studies is deficient, or how the Permit fails to comply with an applicable requirement as a result of these studies. In another example, the Petitioners state that "...these portions of KDAQ's analysis lack *any* assessment of or conclusions related to the control options." Petition at 78 (emphasis in original). For the units identified in that portion of page 78 of the Petition, Appendix G (which KDAQ relied upon as noted in the KDAQ RTC at J-88) provides such an assessment, including references to scientific studies supporting the use of certain AP-42 factors, among other information, and providing a rationale for the determinations made in Appendix G. Appendix G at 12-21. The Petitioners are required, pursuant to CAA § 505(b)(2), to provide a demonstration that the permit is not in compliance with the requirements of the Act. *See, e.g., MacClarence*, 596 F.3d at 1130-33; *Sierra Club v. Johnson*, 541 F.3d 1257, 1266-1267 (11th Cir. 2008); *Citizens Against Ruining the Environment v. EPA*, 535 F.3d 670,677-678 (7th Cir. 2008); *Sierra Club v. EPA*, 557 F.3d 401, 406 (6<sup>th</sup> Cir. 2009) (discussing the burden of proof in title V petitions). On this issue, the Petition fails to meet that requirement because it largely fails to address any of the rationale provided in Appendix G, much less identify a basis on which KDAQ/KSG's rationale was deficient.

In addition, the Petition fails to explain how the permit does not comply with an applicable requirement of the Act. EPA has previously discussed permitting authorities' obligations to provide responses to public comments as indicated in previously granted title V petition orders (*See, e.g., In the Matter of East Kentucky Power Cooperative* (Nov. 30, 2009) at 9-10), and, here, KDAQ did specifically refer the Petitioners to Appendix G, which included substantive analysis on the Petitioners' comments. KDAQ RTC at J-88. Appendix G provides a source-by-source analysis for KDAQ and KSG's conclusions, and thus provides the specific information responsive to the Petitioners' comments. In the Petition, however, the Petitioners appeared to largely ignore the source-specific analyses in Appendix G and again reiterate, almost verbatim, the public comments. Thus, the Petitioners did not appear to address the support in the permit record (Appendix G) for the conclusions on which the Petitioners are now seeking an EPA objection. On the other issues raised in this portion of the Petition, which also overlap with previously discussed public participation claims, a small subset of those issues will be subject to further public notice and comment per EPA's granting of a previous issue in the Petition. With the exception of those issues, EPA denies the Petition with respect to the issues described above and in the Petition at pages 70-80.

#### IV. CONCLUSION

For the reasons set forth above and pursuant to section 505(b)(2) of the CAA and 40 C.F.R. § 70.8(d), I hereby grant in part and deny in part the issues in the Petition dated October 27, 2010.

11/19/2010

Date



Lisa P. Jackson  
Administrator