

December 16, 2009

Before the
OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

COMMENTS

of

OKLAHOMA GAS AND ELECTRIC COMPANY

on

REGIONAL HAZE IMPLEMENTATION PLAN REVISION

Proposed by

The State of Oklahoma
Department of Environmental Quality

Draft of November 13, 2009

I. Executive Summary

On November 13, 2009, the State of Oklahoma issued its Draft Regional Haze Implementation Plan Revision (the "Revised SIP"). The Revised SIP requires, among other things, that Oklahoma Gas and Electric Company ("OG&E") install dry flue gas desulfurization technology with a spray absorber system ("Dry FGD" or "scrubbers") to control certain visibility-impairing emissions on four coal-fired generating units at OG&E's Muskogee and Sooner Generating Stations. Such a requirement is contrary to applicable law as scrubbers would not be cost effective on these units under Section 169A of the Clean Air Act.

Installation of scrubbers also would have a severe financial impact on OG&E, its customers and the Oklahoma economy. The installation of scrubbers is projected to cost more than \$1 billion, which OG&E believes would be among the largest privately funded capital investments ever in Oklahoma. Operation and maintenance of the scrubbers would cost even more. OG&E estimates that the largest rate increase in its history would be required to recover from its customers the capital and operating costs of the scrubbers. Moreover, compelling OG&E to install scrubbers is also contrary to a national trend toward reducing carbon dioxide ("CO₂") emissions from these types of facilities. Once OG&E expends more than \$1.0 billion to install scrubbers, OG&E will be locked economically into maximizing the use of its coal-fired units for the foreseeable future.

The State of Oklahoma should instead implement the alternative proposal submitted by OG&E in September 23, 2009 to achieve compliance with regional haze targets for the four OG&E units. OG&E's alternative proposal will ultimately achieve the same visibility improvement as set forth in the Revised SIP but in a cost effective manner. OG&E's proposal will also give OG&E the flexibility to generate its power in the future using cleaner energy, such as natural gas and wind, that can be obtained from sources within the State of Oklahoma.

II. Introduction

OG&E submits these comments on the Revised SIP, which was drafted by the Oklahoma Department of Environmental Quality (“ODEQ”) on behalf of the State of Oklahoma. The Revised SIP is fundamentally flawed as it relates to four of OG&E’s coal-fired units located at the Muskogee and Sooner Generating Stations. Use of Dry FGD to control sulfur dioxide (“SO₂”) emissions from the four affected units, as called for in the Revised SIP, is not cost effective and is not the Best Availability Retrofit Technology (“BART”) for these units.

Using first the federally required methodology and, later, a more unit-specific approach, OG&E has demonstrated that the costs of Dry FGD at these units is unreasonably high in light of the low emission reductions achieved. OG&E urges ODEQ to implement OG&E’s alternative proposal for regional haze compliance in the Revised SIP. (OG&E Alternative Regional Haze Proposal (September 23, 2009) ("Alternative Proposal"), attached hereto as Ex. 1.)

OG&E’s proposal will ultimately achieve the same improvement in visibility as Dry FGD and gives the company flexibility to consider innovative ways to address air emissions from these units in the future, including the use of more natural gas and wind derived from sources within Oklahoma.

A. BACKGROUND ON THE REGIONAL HAZE RULE AND BART

Under the authority of the Clean Air Act, the United States Environmental Protection Agency (“EPA”) issued the “Regional Haze Regulations and Guidelines for Best Available Retrofit Technology Determinations” on July 6, 2005 (the “Regional Haze Rule”). 70 Fed. Reg. 39,104 (July 6, 2005). The Regional Haze Rule requires that certain states, including Oklahoma, develop programs to assure “reasonable progress” toward a national goal of preventing any future, and remedying any existing, visibility impairment at nearly 156 federally protected parks

and wilderness areas (called “Class I areas”) over an approximately fifty-year period. 42 U.S.C. § 7491.

The Regional Haze Rule further requires that certain sources of air pollutants install BART to control regulated emissions. 40 C.F.R. § 51.302. Individual states must submit implementation plans to eliminate, by 2064, man-made impacts on visibility in affected Class I Areas from sources within that state. The Revised SIP identifies sources that contribute to visibility impairment in Class I areas, identifies BART for certain of these units, and develops a set of rules for the installation of BART.

Under the Regional Haze Rule, sources that may be required to install BART are those sources: (i) that were in existence between August 7, 1962 and August 7, 1977; (ii) that have the potential to emit 250 tons or more of a visibility-impairing air pollutant; and (iii) whose operations fall within one or more of twenty-six listed categories, including electric power generation. 40 C.F.R. §51.302(c)(4)(iii). OG&E has nine sources located at its Seminole, Horseshoe Lake,¹ Muskogee and Sooner Generating Stations that meet these criteria and were therefore subject to BART review. The four coal-fired units at the Muskogee (Units 4 and 5) and Sooner (Units 1 and 2) Generating Stations are the primary subjects of this comment.

B. OG&E’S MUSKOGEE AND SOONER GENERATING STATIONS

OG&E’s Muskogee Generating Station is located at 5501 Three Forks Road near Muskogee, Oklahoma. This facility has a total of four electric generating units. The two subject units, designated as Units 4 and 5, are nominal coal-fired units. Construction of these units commenced in the early 1970s with Unit 4 coming on line in 1977 and Unit 5 in 1978. Both of these units are dry bottom tangentially-fired pulverized coal boilers and both fire sub-bituminous

¹ As set forth in the Revised SIP, air dispersion modeling showed that the BART-eligible units at the Horseshoe Lake Generating Station, Units 7 and 8, were exempt from BART. OG&E agrees with this assessment.

coal as their primary fuel. Units 4 and 5 are equipped with electrostatic precipitators ("ESPs") for particulate control.

OG&E's Sooner Generating Station is located at 10800 County Road 230 near Red Rock, Oklahoma. The Sooner station includes two nominal coal-fired units designated as Units 1 and 2. Both of these units began construction in the mid-1970s with Unit 1 coming on line in 1979 and Unit 2 in 1980. Both of these units are dry bottom tangentially-fired pulverized coal boilers. Like the Muskogee units, these units fire sub-bituminous coal as their primary fuel and both are equipped with electrostatic precipitators for particulate control.

C. OG&E'S COMMENTS ON THE REVISED SIP

As a preliminary matter, BART evaluations conducted for affected units at OG&E's Muskogee, Seminole and Sooner Generating Stations address three types of emissions that have the potential to affect visibility—nitrogen oxide ("NO_x"), sulfur dioxide ("SO₂"), and particulate matter ("PM"). The Revised SIP contains a number of requirements that address emissions of these substances from the various OG&E facilities, but not all of these requirements are the subject of this comment.

OG&E agrees with the Revised SIP on several points. First and with respect to NO_x emissions, ODEQ concludes in the Revised SIP that the installation of low NO_x combustion technology to minimize the creation of NO_x during combustion is BART for affected units at the Muskogee, Seminole and Sooner Generating Stations. (Revised SIP, App. 6-4 at lxiv, cxxx, clxvi.) Second and with respect to SO₂ emissions associated with the three natural gas-fired boilers at the Seminole Generating Station (Units 1, 2 and 3), ODEQ concludes that "[b]ecause the units fire natural gas, emissions of sulfur dioxide (SO₂) and particulate matter (PM) are minimal. There are no SO₂ or PM post-combustion control technologies with a practical application to natural-gas fired boilers. BART is good combustion practices." (*Id.*, App. 6-4 at

cxi.) Third, and with respect to SO₂ emissions associated with the four coal-fired boilers at the Muskogee (Units 4 and 5) and Sooner (Units 1 and 2) Generating Stations, ODEQ determined that wet flue gas desulfurization technology was even more costly than Dry FGD, would achieve minimal incremental visibility reductions and was therefore not BART for these units. (*Id.*, App. 6-4 at lxxv, clxviii.) OG&E agrees with the Revised SIP on these points.

The Revised SIP, however, also concludes that SO₂ from four coal-fired units at the Muskogee (Units 4 and 5) and Sooner (Units 1 and 2) Generating Stations impair visibility at Class I areas and that BART for these units is the installation of Dry FGD. While OG&E does not dispute that these units are subject to BART, Dry FGD is not a cost effective control option and is therefore not BART for these units. As set forth below, the data shows that Dry FGD is extremely expensive and use of this technology on the four affected units will yield low actual emission reductions and minimal overall visibility improvement.

In addition to OG&E's comments with respect to Dry FGD, OG&E also has comments, among others, with respect to the following items: (i) PM emissions for the four affected units at the Muskogee and Sooner Generating Stations in the absence of Dry FGD; (ii) ODEQ's inclusion in the Revised SIP of a presumptive limit of 0.10 lbs/mmBTU for SO₂ control at the Muskogee and Sooner units; and (iii) ODEQ's use of an incorrect measure of baseline emissions when calculating cost effectiveness at Seminole Generating Station and recent changes in its assessment of modeled visibility impacts.

III. BART Evaluations Show that Dry FGD is Not Cost Effective and Therefore is Not BART for the Four Coal-Fired Units at Muskogee and Sooner

BART evaluations show that Dry FGD is not cost effective and is not BART for SO₂ control at the four coal-fired units located at OG&E's Muskogee (Units 4 and 5) and Sooner (Units 1 and 2) Generating Stations. As detailed below, cost effectiveness must be considered in

any BART determination and EPA requires that the cost effectiveness analysis be done in accordance with the methodology set forth in Appendix Y to 40 C.F.R. Part 51.

OG&E conducted BART evaluations in May 2008 (the "May 2008 BART Evaluations") and in September 2009 (the "September 2009 BART Evaluations") using EPA's required methodology. (*See* Muskogee Generating Station Best Available Retrofit Technology Evaluation (May 6, 2008)²; Sooner Generating Station Best Available Retrofit Technology Evaluation (May 9, 2008)³; Best Available Retrofit Technology Determination Report for Sooner/Muskogee Generating Stations (Sept. 17, 2009), attached hereto as Ex. 2.) Using the proper baseline for emissions, these evaluations show that Dry FGD on the Muskogee and Sooner units will cost in excess of \$10,000 per ton of SO₂ removed. (Ex. 2.)

Even when OG&E revised its cost calculation methodology in December 2009 to address ODEQ's comments regarding unit-specific costs associated with Dry FGD, the revised evaluations show that this technology is expected to cost at least \$6,300 per ton of SO₂ removed. (December 2009 Budget Cost Estimates, attached hereto as Ex. 3.) Either way, these costs are unreasonable and far exceed the EPA estimated cost for this technology.⁴

² Available at http://www.deq.state.ok.us/aqdnew/permitting/applications/2005-271-TVR_M-1/index.htm (last visited on December 14, 2009).

³ Available at http://www.deq.state.ok.us/aqdnew/permitting/applications/2003-274-TVR_M-2/index.htm (last visited on December 14, 2009).

⁴ In its original draft SIP, circulated on October 5, 2009, ODEQ acknowledged a "maximum cost of \$5,000 per ton of SO₂ or NO_x emissions reduced as the upper limit of cost effectiveness" when assessing reasonable progress for Wichita Mountains. (*Draft Regional Haze Implementation Plan*, State of Oklahoma at 102 (Oct. 5, 2009).) OG&E's estimated costs for Dry FGD at all four affected units are well above this threshold regardless of whether such costs were calculated using EPA's OAQPS Cost Control Manual or whether they were calculated using the more recent unit-specific approach. Moreover, even as to the \$5,000 threshold, ODEQ has never explained how it arrived at that number, especially in light of EPA's prior guidance on this issue identifying much lower expectations for costs.

A. ODEQ MUST CONSIDER COST EFFECTIVENESS IN ITS BART DETERMINATION

Before making a BART determination, ODEQ must consider the cost effectiveness of any proposed control technology. Section 169A of the Clean Air Act requires that states determine the appropriate level of BART control by considering: (i) the costs of compliance; (ii) the energy and non-air quality environmental impacts of compliance; (iii) any existing pollution control technology in use at the source; (iv) the remaining useful life of the source; and (v) the degree of improvement in visibility that may reasonably be expected as a result of such technology. The implementing EPA rule is identical. *See* 40 C.F.R. § 51.308(e)(1)(ii).

EPA's "Guidelines for BART Determinations Under the Regional Haze Rule" are set forth in Appendix Y to 40 C.F.R. Part 51 ("Appendix Y"). The purpose of these Guidelines is to help states "identify those sources that must comply with the BART requirement and . . . determine the level of control technology that represents BART for each source." 69 Fed. Reg. 25,184, 25186 (May 5, 2004). Appendix Y sets out the five basic steps to a BART analysis: (1) identify all available retrofit control technologies; (2) eliminate technically infeasible options; (3) evaluate control effectiveness of remaining control technologies; (4) evaluate impacts and document the results; and (5) evaluate visibility impacts. 40 C.F.R. Pt. 51, App. Y(II)(A).

Step four in the BART analysis establishes the methods to be used in evaluating cost impacts. *Id.* These methods specifically require a cost effectiveness calculation using estimates based on EPA's Office of Air Quality Planning and Standards ("OAQPS") Cost Control Manual "where possible" so that states can "maintain and improve consistency" in making BART determinations. 40 C.F.R. Pt. 51, App. Y(IV)(D); 70 Fed. Reg. at 39,166. EPA recently affirmed the use of the OAQPS Cost Control Manual for these purposes, stating that: "[t]he Air Pollution Cost Control Manual provides guidance and methodologies for developing accurate and consistent estimates of cost for air pollution control devices." 74 Fed. Reg. 44313, 44318

(August 28, 2009). Oklahoma incorporates Appendix Y into its visibility protection standards. See OAC §§ 252:2-100-8-73; 252:100-8-75.

Not only does Appendix Y establish Guidelines for cost effectiveness determinations, it also sets forth “presumptive” BART limits for electrical generating units based on their type and size. 40 C.F.R. Pt. 51, App. Y (IV)(E)(4). EPA established presumptive BART for the coal-fired units at Muskogee and Sooner as 95% SO₂ removal or an emission rate of 0.15 pounds of SO₂ emissions per million BTUs of heat input (0.15 lb/mmBTU). This presumptive emission rate can be achieved with the installation of Dry FGD. For units that are the size of OG&E’s, EPA estimates that sources could install Dry FGD at an average cost of \$919 per ton of SO₂ removed annually with an estimated cost range from \$400 to \$2,000 per ton of SO₂ removed annually, and that this would be cost effective under the BART analysis.⁵ See 70 Fed. Reg. at 39,132. For OG&E’s units, however, the cost of achieving the presumptive rate using Dry FGD is at least seven times greater than EPA’s projected average cost of installing these controls.

B. BART EVALUATIONS CONDUCTED IN MAY 2008 AND SEPTEMBER 2009 IN ACCORDANCE WITH APPENDIX Y SHOW THAT DRY FGD IS NOT COST EFFECTIVE

In accordance with Appendix Y, OG&E followed the Cost Control Manual when evaluating the cost effectiveness of Dry FGD in May 2008 and September 2009. In those evaluations, OG&E clearly demonstrated that Dry FGD is not a cost effective option for controlling SO₂ emissions at the Sooner and Muskogee Generating Stations. ODEQ’s own cost estimates for OG&E’s units in the Revised SIP are arbitrary and capricious because they rely on general data, such as industry magazines and qualified studies, instead of EPA’s Cost Control Manual or even unit-specific information presented by OG&E.

⁵ The emission limit of 0.10 lb/mmBTU for SO₂ included in the Revised SIP is significantly more stringent than the presumptive limit established for these units by EPA and is not justified. The presumptive limit for these units should be 0.15 lbs/mmBTU and this is the subject of the additional comment below in Section VI.

As mentioned above, EPA's Cost Control Manual identifies the procedures and data necessary to calculate the cost effectiveness of control technologies on the basis of dollars per ton of pollutant removed. Pursuant to Appendix Y, annual emissions resulting from the use of a particular control device are subtracted from baseline emissions to calculate tons of pollutant controlled per year. *See, e.g.*, OAQPS Cost Control Manual at 2-34 through 2-37. Under EPA's Cost Control Manual, total annual cost is calculated by adding annual operation and maintenance costs to the annualized capital cost of an option with capital costs consisting of direct costs + indirect costs (including capital recovery costs) – recovery credits. *See* OAQPS Cost Control Manual at 2-7. In developing its costs for the Muskogee and Sooner units, OG&E followed the procedures established in the Cost Control Manual and also relied on detailed engineering estimates, vendor quotations for similar projects and equipment, and data from Sargent and Lundy's internal cost database.⁶

1. The May 2008 BART Evaluations

The May 2008 BART Evaluation for Muskogee Units 4 and 5 estimated that the average cost effectiveness of Dry FGD at these units was \$4,554 per ton of SO₂ removed. (May 2008 BART Evaluation for the Muskogee Generating Station at 51.) These estimated costs are nearly five times the average cost projected by EPA for this technology and over twice as much as the upper limit of EPA's projected cost range. The May 2008 BART Evaluation was performed in accordance with the requirements of Appendix Y and used the emission factors and cost

⁶ It has been suggested in meetings with EPA and ODEQ that the use of this database is somehow questionable because the confidentiality of the information it contains prevents its examination by the agencies and the public. As OG&E explains in these comments, numerous public sources of information corroborate the estimates derived from the database. In contrast, at a meeting with OG&E on November 3, 2009 and in a subsequent letter dated December 9, 2009, EPA representatives mentioned the existence of a recent government survey that developed average cost effectiveness information for BART evaluations. As shown in Exhibit 4 of these comments, OG&E made several requests to obtain this survey. To date, the survey has not been provided, nor has any explanation of the EPA's inability to provide the survey been given.

estimates set forth in EPA's OAQPS Cost Control Manual. The annual cost of Dry FGD at Muskogee was estimated to be \$142,600,600 for both units. (*Id.*) Dry FGD was estimated to cost approximately \$111,900,000 per deciview ("dv") of improvement. (*Id.* at 55.)

The May 2008 BART Evaluation for Sooner Units 1 and 2 estimated the annual cost of Dry FGD to be \$4,797 per ton of SO₂ removed for both units. (May 2008 BART Evaluation for Sooner Generating Station at 49.) These estimated costs are five times the average costs projected by EPA for this technology and over twice as much as the upper limit of EPA's projected cost range. This BART Evaluation was done in accordance with the requirements prescribed by EPA in Appendix Y and used the emission factors and cost estimates set forth in EPA's OAQPS Cost Control Manual. The annual cost of Dry FGD at Sooner was estimated to be \$147,045,200 for both units. (*Id.*) The cost effectiveness of Dry FGD there was estimated to be \$125,700,000 per dv of improvement. (*Id.* at 54.)

2. The September 2009 BART Evaluations

On September 18, 2009, OG&E submitted the revised BART Evaluations for the affected units at Muskogee and Sooner. (September 2009 BART Evaluations, Ex. 2.) These evaluations showed average cost effectiveness for Dry FGD to be in the range of \$9,842 to \$10,004 per ton of SO₂ removed at Muskogee and \$9,625 to \$10,843 per ton of SO₂ removed at Sooner. (*Id.*) The revised evaluations use actual emissions data to establish an emissions baseline for cost effectiveness calculations in accordance with a determination that had recently been made by EPA. *See* 74 Fed. Reg. at 44,321. In August 2009 and in connection with EPA's review of the cost effectiveness analyses for the Salt River Project ("SRP") Navajo Generating Station in Arizona, EPA found that SRP's use of "the same 24-hour average actual emission rate from the highest emitting day used for its modeling inputs" was incorrect. *Id.* EPA revised SRP's

calculations accordingly “by starting with baseline emission rates for NO_x averaged over 2004–2006” *Id.* EPA’s determination in the SRP context is in line with the agency’s requirement that baseline emissions “represent a realistic depiction of anticipated annual emissions for the source.” 70 Fed. Reg. at 39,167.

Using actual baseline emissions instead of the highest modeled baseline emissions in the BART Evaluation calculation leads to a more accurate—and higher—cost effectiveness estimate for the four coal-fired units at Muskogee and Sooner. In the May 2008 BART Evaluations for both Muskogee and Sooner, the baseline emissions were developed from the visibility model that uses the highest 24-hour block emissions reported during the baseline period pursuant to the Acid Rain Program. As pointed out by EPA, however, using this methodology to calculate baseline annual emissions for BART cost effectiveness overestimates actual emissions and does not provide a realistic estimate of anticipated annual emissions from each source. In the September 2009 BART Evaluations, OG&E instead used its actual annual baseline emissions for 2004-2006.

The cost per ton of SO₂ removal at Muskogee is high primarily due to OG&E’s use of sub-bituminous coal as its main fuel source for Units 4 and 5. This low-sulfur coal (0.20-0.37%) already has a low potential for uncontrolled SO₂ emissions (0.50-0.86 lb/mmBTU). For Unit 4, the average actual annual baseline emissions of SO₂ was determined to be 9,113 tons per year, with an average SO₂ emission rate of 0.507 lb/mmBtu. For Unit 5, the average actual annual baseline emissions of SO₂ was determined to be 9,006 tons per year, with an average SO₂ emission rate of 0.514 lb/mmBtu. This compares with the visibility model values of 17,282 and 18,362 tons per year, respectively, used for these units in the 2008 report. The combination of relatively low baseline SO₂ emissions, low baseline visibility impacts (less than 1.5 Δ-dv at all

Class I areas), and the distance to the Class I areas all contribute to the high cost effectiveness values associated with these units.

OG&E also utilizes sub-bituminous coal as its primary fuel source for Units 1 and 2 at the Sooner Generating Station. The average actual annual baseline emissions of SO₂ for Unit 1 was determined to be 9,394 tons per year, with an average SO₂ emission rate of 0.509 lb/mmBtu. The average actual annual baseline emissions of SO₂ for Unit 2 was 8,570 tons per year, with an average SO₂ emission rate of 0.516 lb/mmBtu. This compares with the visibility model values of 17,344 tons per year used for both of these units in the 2008 report. The low baseline emissions of SO₂ at Sooner Units 1 and 2, coupled with the high annualized capital cost for Dry FGD, causes the cost effectiveness values for these units to be high in much the same way it did for the Muskogee units.

Using Appendix Y and the actual emissions baseline endorsed by EPA results in cost effectiveness values for Dry FGD at OG&E's Muskogee and Sooner units of approximately \$10,000/ton. This is more than ten times the average cost expected by EPA for this technology and nearly five times as much as the upper limit of EPA's expected cost range.

3. ODEQ Cost Effectiveness Determinations Are Arbitrary and Capricious

ODEQ acknowledges in the Revised SIP that OG&E's cost estimation methodology generally follows EPA's Cost Control Manual. (*See* Revised SIP, Appendix 6-4 at xlvi, clii.) ODEQ also acknowledges the recent guidance from EPA clarifying that sources should use actual annual baseline emissions, rather than peak 24-hour emissions from visibility monitoring. (*See id.* at 77-78.) Nonetheless, ODEQ has rejected OG&E's estimates of the cost effectiveness of Dry FGD in favor of its own estimates, which are arbitrary and capricious.

ODEQ inappropriately relies on data from a 2003 National Lime Association Report, entitled "*Economics of Lime and Limestone for Control of Sulfur Dioxide*," and an article in Power Magazine, to estimate the capital costs of Dry FGD for OG&E's units. (See Revised SIP, App. 6-4 at xlix, cliii.) However, neither resource was designed for use in developing budgetary cost estimates for particular units. (See *Abstract: Economics of Lime and Limestone for Control of Sulfur Dioxide* at 1.)⁷ As more specifically detailed in Section 2.5 of the December 2009 Budget Cost Estimate, the National Lime Association Report was not intended to provide the basis for a project-specific capital cost estimate. Rather, the purpose of the report is to "compare costs of leading lime and limestone-based flue gas desulfurization (FGD) processes utilized by power generating plants in the United States." (*Id.*) Moreover, the 2003 National Lime Association Report is too outdated to provide useful data for estimating costs in 2009 or beyond. Likewise, the Power Magazine article that ODEQ relies on provides only average cost information but does not provide any information on cost distribution about the average. (See *Update: What's That Scrubber Going to Cost?* at 2.) The article explicitly states that that "average total installed costs reported by the survey respondents were expected to have wide variation . . ."⁸

Even more importantly, ODEQ's reliance on such materials completely disregards the requirements of Appendix Y, which requires states to use EPA's Cost Control Manual in making BART determinations "where possible." 70 Fed. Reg. at 39,104. OG&E's estimates, on the other hand, were developed in accordance with EPA's Cost Control Manual, as tailored specifically to the affected units. It is arbitrary and capricious for ODEQ to disregard these

⁷ Available at <http://www.lime.org/FGD/DePriest503.pdf> (last visited on December 14, 2009).

⁸ Available at http://www.powermag.com/environmental/Update-Whats-That-Scrubber-Going-to-Cost_1743.html (last visited on December 14, 2009).

estimates and instead rely on general information in industry reports and magazine articles in support of its BART determination for the four affected units.

4. The Federal Land Manager's Cost Effectiveness Estimates Are Similarly Flawed

Comments on the Revised SIP submitted by the Federal Land Managers ("FLM") on December 4, 2009 are similarly flawed. (*See* U.S. Fish and Wildlife Service ("USFWS") and National Park Service ("NPS") Comments Regarding Oklahoma Draft Regional Haze SIP ("FLM Comments") (Dec. 4, 2009).) The FLM inappropriately relies on a 2007 National Lime Association Report and the same Power Magazine article in support of its unfounded assertions that Dry FGD is cost effective for OG&E's affected units. (*Id.* at Attach., 2.) The FLM's reliance on this material is also arbitrary and capricious and also disregards Appendix Y.

Like the 2003 National Lime Association Report relied on by ODEQ, the 2007 National Lime Association Report that FLM cites was not intended to provide information for the cost of Dry FGD at any particular unit. Indeed, the author of that report explicitly "cautions the reader that the costs provided herein are not indicative of any cost you may actually achieve." (*FGD Technology Evaluation: Dry Lime v. Wet Limestone FGD* at 2 (March 2007).)⁹ The Power Magazine article that FLM relies on is likewise inappropriate for the reasons discussed above.

Not only does the FLM inappropriately rely on generalized data instead of EPA-required methodology in reaching its own cost effectiveness numbers, but it also makes unsupportable assertions about the data provided by OG&E. In particular, the FLM argues that: (i) construction costs will be lower in 2012 than they were from 2007-2008; (ii) Dry FGD will be able to achieve a higher reduction efficiency than OG&E recognizes; and (iii) OG&E should

⁹ Available at <http://www.lime.org/FGD/FGDTechEvalDryLimevWetLimestoneFGD11311001.pdf> (last visited on December 14, 2009).

consider whether FGD can be implemented without replacing the existing ESPs with a fabric filter to save money. (FLM Comments at Attach., 2-4.) Each of these arguments is problematic.

First, FLM's conclusion that future construction costs will be lower in 2012 is based exclusively on speculation about generalized trends in construction prices. In support of this assertion, FLM makes the unsubstantiated claim that "[a]ll of the reasons that caused [FGD] construction costs to dramatically escalate in the 2007-2008 period are abating." (*Id.* at Attach., 1.) OG&E has developed unit-specific cost estimates that account for fluctuating costs of various FGD components. These estimates, which are based on actual data, show that scrubbers are not cost effective.

Second, the removal efficiency presented by FLM is not achievable because FLM has failed to account for the already-low sulfur content of OG&E's fuel. The guaranteed efficiency of Dry FGD depends on inlet sulfur and the lowest SO₂ emission (floor) that will be guaranteed by the FGD supplier. FGD suppliers typically have not guaranteed below 94% SO₂ removal efficiency, or 0.08 lb/mmBtu, whichever is achieved first, at existing units. The low sulfur coal used by OG&E makes the lb/mmBtu value the applicable guarantee value. OG&E used 0.10 lb/mmBtu as the floor for a retrofit application to encompass all FGD suppliers with an additional margin of 0.02 lb/mmBtu to overcome system upsets and changes of atomizers. These were appropriate measures for estimating the removal efficiency of Dry FGD at OG&E's units, and they demonstrate that the removal efficiency presented by FLM is not achievable.¹⁰ Dry FGD suppliers will not guarantee the removal efficiency suggested by FLM.

Third, the use of a baghouse downstream of a Dry FGD system has several advantages over using the existing ESPs in conjunction with a Dry FGD, as suggested by FLM.

¹⁰ As discussed later in these comments, OG&E believes the appropriate SO₂ emission rate under BART for a facility that is required to install a scrubber is 0.15 lb/mmBTU.

Specifically, a Dry FGD/baghouse combination would remove more sulfur and reduce more emissions of HC1 and HF than Dry FGD with the existing ESPs. A new baghouse also could be completely installed without any tie-in outage. The modifications needed to tie in the existing ESPs, on the other hand, would need to take place during an outage, which would increase tie-in outage duration and increase power replacement costs. Adding Dry FGD upstream of the existing ESP would have yet another disadvantage—the amount of dust loading would increase in the ESP and the character of the dust would change, raising concerns about whether Sooner and Muskogee could continue to meet emissions limits for particulate matter without major ESP modifications.

5. The U.S. Forest Service Lacks Support for its Comment Regarding Visibility Improvement Cost Effectiveness at OG&E's Units

The U.S. Forest Service recently submitted comments on the Revised SIP asserting that "[a]ll Class I areas within 300 km should be used in the cost analysis to determine the cost per deciview of visibility improvement." (Comment Letter from N. Wagoner and J. Henry (Dec. 10, 2009).)¹¹ According to the Forest Service, OG&E "did not consider all four Class I areas where the Muskogee and Sooner Generating Stations are causing or contributing to visibility impairment." (*Id.*) The FLM also made this same point in its comments. (*See* FLM Comments, at Attach., 3.) In both cases, the comments are flawed.

As an initial matter, OG&E's units do not cause or contribute to visibility at "all four Class I areas" within 300 km, as the Forest Service suggests in its comments. EPA has determined that an individual source will be considered to "cause visibility impairment" if emissions from the source result in a change in visibility, measured as a change in dv's, that is

¹¹ The Forest Service's comments are available on ODEQ's website at the following address: http://www.deq.state.ok.us/aqdnew/RulesAndPlanning/Regional_Haze/us001.pdf. The copy available online appears to be incomplete. These responses to the Service's comment are based upon OG&E's interpretation of the incomplete copy that is available online.

greater than or equal to 1.0 dv on the visibility in a Class I area. *See* 70 Fed. Reg. at 39,120. An individual source is considered to “contribute to visibility impairment” if its emissions result in a dv impairment of greater than or equal to 0.5 dv in a Class I area. *Id.*

OG&E conducted visibility impact modeling to determine the baseline predicted maximum 98th percentile dv improvement impact from the Muskogee and Sooner units. This modeling showed that the Muskogee Station exceeded the 0.5 dv threshold only for the Upper Buffalo, Caney Creek, and Wichita Mountains Class I Areas. (May 2008 BART Evaluation, Muskogee Generating Station, at 4.) The maximum predicted visibility impact associated with the Sooner Station exceeded the 0.5 dv threshold only at the Wichita Mountains Class I Area. (May 2008 BART Evaluation, Sooner Generating Station, at 2.)

OG&E calculated average visibility improvement cost effectiveness (in dollars per dv per year) for its Muskogee units using the modeled visibility improvement from Dry FGD at the Caney Creek Wilderness Area. (*See* May 2008 BART Evaluation, Muskogee, Table 4-10.) OG&E relied on the Caney Creek improvement estimates because modeling indicated that the largest dv improvement from scrubbing would occur at Caney Creek. (*Id.*) When calculating average visibility improvement cost effectiveness for the Sooner units, OG&E relied on estimates for the nearest Class I area, and the only Class I area where Sooner units cause an impact equal to or greater than 0.5 dv—the Wichita Mountains Area.

Providing separate estimates for other Class I areas would not change the ultimate conclusion that scrubbers are not cost effective for the Muskogee units. Furthermore, the Forest Service and the FLM fail to cite any regulation directing OG&E to combine the visibility improvements at numerous Class I areas when calculating average visibility improvement cost effectiveness for its units. There is no such requirement. In fact, BART Guidelines specifically

allow for sources to analyze visibility improvement for the highest-impacted Class I area only. 40 C.F.R. pt. 51 App. Y(IV)(D)(5) ("If the highest modeled effects are observed at the nearest Class I area, you may choose not to analyze the other Class I areas any further . . ."). Other facilities have recognized this and calculated visibility improvement cost effectiveness in a manner that is consistent with OG&E's methodology. (*See, e.g., Revised BART Analysis for GGS, 44* (noting that incremental visibility impairment improvement costs were calculated "based on a modeled improvement of visibility impairment . . . at the worst-base Class I area, which is the Badlands of South Dakota").)¹²

C. ADDITIONAL COST ESTIMATES USING MORE SITE-SPECIFIC INFORMATION ALSO SHOW DRY FGD IS NOT COST EFFECTIVE

Neither EPA nor ODEQ questioned OG&E's methodology or its use of EPA's Cost Control Manual between the time OG&E submitted its 2008 reports and the time it filed revised emissions baseline information in September 2009. It was only after EPA and ODEQ recognized that OG&E's BART evaluations clearly showed that scrubbers were not cost effective that they asked for vendor quotations and other information to validate the 2008 cost estimates. Although OG&E's May 2008 and September 2009 BART Evaluations are valid and consistent with EPA requirements, OG&E agreed (at significant cost) to commission a detailed engineering study to provide site-specific budget cost estimates for installing scrubbers at the four affected units. (December 2009 Budget Cost Estimates, Ex. 3.) These revised cost estimates address ODEQ's and EPA's concerns that the Cost Control Manual's factors overstate the actual costs of Dry FGD at the Muskogee and Sooner units and confirm that Dry FGD is not a cost effective control technology on these units.

¹² Even if visibility improvements at all Class I areas were included when calculating costs per dv improvement, scrubbers still would not cost effective on a dollars-per-dv basis. This is because OG&E's facilities are relatively distant from the relevant Class I areas, compared to other facilities, and the costs of scrubbers are high. (*See Dec. 2009 Budget Cost Estimates, Ex. 3 at 15.*)

The December 2009 Budget Cost Estimates again show that Dry FGD is not cost effective. Costs range from \$6,348 to \$7,147 per ton of SO₂ removed for Sooner Units 1 and 2 and from \$7,221 to \$7,324 per ton of SO₂ removed for Muskogee Units 4 and 5.¹³ (Ex. 3 at 12.) For Sooner, the total capital costs of installing Dry FGD at Units 1 and 2 is estimated to be \$584,589,400. (*Id.* at 4.) The combined annual cost of Dry FGD for both units at Sooner is estimated at \$93,664,600 with an average estimated cost of \$80,055,214 per dv of improvement. (*Id.* at 15.) For Muskogee, the total capital costs of Dry FGD are expected to be similar to the Sooner estimates. Total annual costs of Dry FGD at Muskogee are estimated at \$100,280,200 for both units. (*Id.*) Even as revised using a unit-specific approach, the estimated costs per ton of Dry FGD at these units are roughly seven times the average cost estimated by EPA for this technology and three times higher than the upper range of EPA's estimates.

The December 2009 Budget Cost Estimates were established using an approach whereby OG&E considered over seven hundred individual cost factors associated with the installation of Dry FGD at each of the affected units, ranging from the cost of the foundation for a lime storage silo to projected overtime for laborers. Operation and maintenance costs as well as administrative costs associated with Dry FGD were re-calculated using this approach as well. As more specifically set forth in the December 2009 Budget Cost Estimates, OG&E developed its estimates for each of these factors using project-specific vendor quotations and through the performance of preliminary project engineering. In addition, the December 2009 Budget Cost Estimates are based on current and projected capital cost estimates and also take into account

¹³ Although OG&E believes that the Muskogee capital estimates are accurate, a complete estimate for these units had not been completed as of the date of this comment. OG&E is working with Sargent & Lundy to develop cost estimates for Muskogee in the same level of detail as it did for Sooner. OG&E will provide those estimates to ODEQ once they are available.

changed economic conditions since the original estimates were made in May 2008.¹⁴ Even as revised using a unit-specific calculation methodology, the calculations establish that Dry FGD is not BART for the affected units at OG&E's Muskogee and Sooner Generating Stations.

IV. OG&E's Cost Effectiveness Estimates Are Consistent With Other BART Submittals

Comparing OG&E's cost effectiveness estimates for Dry FGD to those of other, similarly situated facilities reveals that OG&E's estimates are correct and that there are numerous differences between OG&E's BART-affected units and those of other facilities. As noted, the basic equation for calculating average annual cost effectiveness is to divide the total annual cost of a given control technology by the tons per year ("TPY") of SO₂ removed through the use of that technology (Total Annual Cost / TPY Removed). In this calculation, a higher number for TPY removed lowers the cost per ton of SO₂ removed, thereby improving cost effectiveness. Moreover, unique and facility-specific conditions can lead to differences in the total annual costs portion of the cost effectiveness equation.

OG&E's estimates of the costs per ton of installing Dry FGD at Sooner and Muskogee Generating Stations are higher than those of facilities operated by other companies. This is so largely because a variety of factors combine to increase the TPY removed from Dry FGD at other facilities well beyond the TPY removed at OG&E's units. Furthermore, the total annual costs estimated by OG&E in its BART Evaluations and subsequent site-specific budget cost estimate were appropriate for OG&E's units and are consistent with similar estimates for other

¹⁴ Although OG&E's December 2009 Budget Cost Estimates reflect ODEQ's (and the FLM's) assumption that the costs associated with installing Dry FGD have decreased since 2008, construction costs are difficult to predict. For example, on November 25, 2009, American Municipal Power Inc. announced that it was suspending development of a coal-fired generating station in Ohio based on a recent and unexpected 37% increase in engineering, procurement and construction costs associated with the project. *See* http://www.cleveland.com/business/index.ssf/2009/11/american_municipal_power_will.html (last visited on December 15, 2009). Furthermore, if a revised CAIR regulation is released in 2010, the Dry FGD market could see escalations based on increased market demand.

facilities. Like other facilities' estimates, the OG&E estimates were based on the OAQPS Cost Control Manual. Even as supplemented with the site-specific Budget Cost Estimates in December 2009, OG&E's Evaluations show the costs of Dry FGD per ton of SO₂ reduced at OG&E's units far exceed the costs per ton accepted by other facilities.

A. DRY FGD RESULTS IN LOWER TPY REMOVED FOR OG&E'S UNITS COMPARED TO OTHER FACILITIES WITH LOWER COSTS PER TON

At least four factors affect any calculation of TPY removed through the use of a particular control technology on an electric generating unit: (1) the size of the unit; (2) the sulfur content of its fuel; (3) the unit's actual SO₂-emitting history; and (4) the measure used for calculating the unit's baseline annual emissions. Units with larger MW ratings and heat input capacities burn more coal per hour, which means there is more SO₂ to remove through the use of Dry FGD at those units. The same is true for the next two factors—more SO₂ is produced from the combustion of coal with higher sulfur content, and a unit's dispatch requirements will determine how often it operates and thus how much SO₂ is actually emitted. Finally, using an emissions baseline that overstates actual baseline emissions also will overestimate the TPY removed from Dry FGD.

In OG&E's case, all four factors contribute to the TPY removed from scrubbing at Sooner and Muskogee being roughly 35% to 75% lower than the estimated TPY removed through scrubbing at other facilities. Exhibit 5 shows how some of these factors relate to the TPY removed and the cost effectiveness of Dry FGD for OG&E's units, as compared with White Bluff Units 1 and 2, Nebraska City Station ("NCS") Unit 1, Gerald Gentleman Station ("GGS") Units 1 and 2, Boardman Power Plant Unit 2, and AEP's Northeastern Power Plant. In preparing Exhibit 5, OG&E selected facilities that were of roughly the same size as OG&E's units and that do not already use scrubbers as an existing control technology.

The first factor affecting TPY removed is the size of a unit. Compared to OG&E's units, all of the other facilities shown in Exhibit 5 except Northeastern burn more coal per hour as evidenced by their higher MW ratings and heat input capacities. Not surprisingly, these other facilities also have higher estimates of the TPY removed from Dry FGD.¹⁵

The second factor affecting TPY removed is the sulfur content of the fuel utilized by a unit. The facilities shown in Exhibit 5 use coal with higher sulfur content than the coal used by OG&E. OG&E uses coal with a sulfur content ranging from 0.5 to 0.86 lb/mmBtu (0.20 - 0.37% sulfur by weight). White Bluff, for example, used a much higher sulfur content for its coal—2.0 lb/mmBtu for Dry FGD (0.87% sulfur by weight). (*See Revised BART Analysis for the White Bluff Steam Electric Station (Aug. 2008), at 3-5.*) Using fuel with higher sulfur content contributes to more TPY removed.

The third factor contributing to higher TPY removed at other facilities is higher utilization. In its BART analyses, OG&E used actual, measured SO₂ emissions from its units to estimate TPY removed and, ultimately, the cost effectiveness of Dry FGD. These emissions necessarily reflect the actual dispatch requirements for a unit over the course of an entire year, including outages for repair and maintenance. NCS Unit 1 and GGS, on the other hand, assumed 100% utilization when calculating TPY removed even though the BART determinations for NCS Unit 1 and GGS expressly note that a capacity factor of 100% overstates TPY removed. (*See Revised BART Analysis for GGS at 15 (Table 3); BART Analysis for NCS 1 at 12 (Table 2).*)¹⁶

¹⁵ Note that any differences in assumed control efficiency for Dry FGD are not large enough to significantly affect the overall cost effectiveness comparison for OG&E. The FLM, for example, recently recommended that a BART limit of 0.065 lb/mmBtu should be assumed for scrubbing at OG&E's Muskogee units, rather than 0.10 lb/mmBtu as assumed by OG&E, on the grounds that Dry FGD can achieve a higher control efficiency than OG&E recognizes. As noted above, the control efficiency recommended by FLM is not appropriate for OG&E's units. Even if it were, however, the difference between 0.10 lb/mmBtu and 0.065 lb/mmBtu would account for just a few additional TPY removed at OG&E's units. Even with the FLM's limit, Dry FGD would still result in much lower TPY removed for OG&E's units and much higher costs per ton compared to other facilities.

¹⁶ Available at <http://www.deq.state.ne.us/AirDivis.nsf/Pages/Haze> (last visited on December 14, 2009).

Finally, using the wrong measure of baseline emissions can overstate TPY removed, thereby leading to unrealistically low estimates of cost per ton removed. As explained above, federal regulations and EPA's own practice establish that cost-effectiveness should be based on actual emissions. In the preamble to the BART Guidelines at Appendix Y, 40 C.F.R. Pt. 51, EPA explained that a "baseline emissions rate should represent a realistic depiction of anticipated annual emissions for the source." 70 Fed. Reg. at 39,167. Therefore, EPA noted that "in general, . . . you will estimate the anticipated annual emissions based upon actual emissions from a baseline period." *Id.* EPA recently again made this point when revising cost effectiveness calculations for the SRP's Navajo Generating Station to incorporate baseline emission rates averaged over a three year period. *See* 74 Fed. Reg. at 44,321.

In addition to these differences and contrary to EPA's regulations and clearly stated practice, all of the facilities shown in Exhibit 5 relied on some type of inflated measure of baseline emissions. OG&E also made this error in its original BART Evaluations for Sooner and Muskogee in May 2008. OG&E has since corrected the error by submitting the revised September 2009 BART Evaluations that rely on average actual emissions from the baseline period (as did EPA for the Navajo Generating Station). Other facilities have not made this same adjustment.

Overall, it makes sense that OG&E's estimates of the TPY removed from scrubbing are significantly less than the estimates developed for other facilities with larger units that are running harder, burning higher sulfur-content coal and using inflated measures of baseline emissions. The higher estimates of TPY removed at those other facilities also drives down their estimates of the cost per ton of Dry FGD.

B. IN ITS MAY 2008 AND SEPTEMBER 2009 BART EVALUATIONS, OG&E FOLLOWED THE SAME GENERAL APPROACH FOR ESTIMATING THE TOTAL ANNUAL COSTS OF DRY FGD AS OTHER FACILITIES

The May 2008 BART Evaluations contain reasonable estimates of the total annual cost of Dry FGD at Muskogee and Sooner. The same is true of the September 2009 BART Evaluations, which also reflect the appropriate measure of baseline emissions. As described previously, OG&E developed its cost estimates based on the EPA Cost Control Manual, engineering estimates, vendor quotes from similar projects and equipment, and Sargent and Lundy's internal cost database. Data was selected from these sources based on its appropriateness for use in estimating OG&E's costs for Dry FGD.

Other facilities used this same basic approach to estimate the total annual costs of installing and operating Dry FGD on their BART-eligible units. (*See, e.g.*, BART Analysis for NCS Unit 1 at 7-8 (Aug. 2007) (estimates were generally based on data from EPA's Cost Control Manual, with supplemental information provided from 2003 vendor-supplied quotations and general engineering estimates)¹⁷; Revised BART Analysis for GGS at 8-9 (Feb. 2008) (estimates based on EPA's data as refined through site-specific conceptual layouts and vendor budgetary quotes for major equipment costs).)¹⁸

Neither EPA nor ODEQ has suggested that OG&E's methodology in calculating cost effectiveness based on EPA's Cost Control Manual was incorrect. Instead, ODEQ has made the more general assertion that OG&E's costs seem high in comparison to the cost estimates offered by other facilities. (*See* Revised SIP, Appendix 6-4 at xlix, cliii.) These general assertions serve

¹⁷ Available at [http://www.deq.state.ne.us/AirDivis.nsf/23e5e39594c064ee852564ae004fa010/c03ae6a45b1e105286257443006512d5/\\$FILE/BART%20Analysis%20for%20NCS%20Unit%201.pdf](http://www.deq.state.ne.us/AirDivis.nsf/23e5e39594c064ee852564ae004fa010/c03ae6a45b1e105286257443006512d5/$FILE/BART%20Analysis%20for%20NCS%20Unit%201.pdf) (last visited December 15, 2009).

¹⁸ Available at [http://www.deq.state.ne.us/AirDivis.nsf/23e5e39594c064ee852564ae004fa010/c03ae6a45b1e105286257443006512d5/\\$FILE/Revised%20BART%20Analysis%20for%20GGS%20Units%201%20and%202.pdf](http://www.deq.state.ne.us/AirDivis.nsf/23e5e39594c064ee852564ae004fa010/c03ae6a45b1e105286257443006512d5/$FILE/Revised%20BART%20Analysis%20for%20GGS%20Units%201%20and%202.pdf) (last visited on December 15, 2009).

little purpose. As shown in Exhibit 5, OG&E's total annual costs from its May 2008 Evaluations are only \$3,000,000 to \$6,000,000 higher than the estimated total annual costs of installing and operating Dry FGD on Units 1 and 2 at White Bluff. This difference can be accounted for through the combination of a variety of source-specific factors. It is clear that the costs projected by OG&E for its units are in the same general range as the costs actually projected at other facilities. As shown by the site-specific budget cost estimates, variations in the total annual cost of as much as 25% will not change the cost effectiveness determination.

C. NEW SITE-SPECIFIC BUDGET COST ESTIMATES VALIDATE THE CONCLUSION THAT SCRUBBERS ARE NOT COST EFFECTIVE.

To address comments from ODEQ and EPA, OG&E obtained the site-specific Budget Cost Estimates in December 2009. (Ex. 3.) Those estimates depart significantly from the methods in EPA's Cost Control Manual for determining costs associated with projected operations at the four coal-fired units at Sooner and Muskogee Generating Stations. While OG&E believes that ODEQ and EPA lacked any basis to require OG&E to depart from the published methodology for calculating costs, the site-specific Budget Cost Estimates nonetheless confirm that Dry FGD is not a cost effective option for OG&E's units. Exhibit 5 shows the costs per ton of Dry FGD are still significantly higher than the costs per ton accepted by other facilities. According to the site-specific estimates, the costs per ton of Dry FGD at OG&E's units exceed the costs per ton of Dry FGD at the other facilities shown in Exhibit 5 by roughly \$3,000 - \$5,000 per ton.

V. **OG&E's Alternative Proposal Offers a Cost Effective and Better Way to Achieve the Same SO₂ Emission Reductions**

In September 2009, OG&E offered a cost effective Alternative Proposal to achieve compliance with the Regional Haze Rule as it relates to the four coal-fired units at OG&E's Muskogee and Sooner Generating Stations. (Ex. 1.) The Alternative Proposal offers a cost effective approach to achieving the same level of emission reductions as would the installation of Dry FGD. Moreover, OG&E's September 2009 Proposal gives the company the flexibility to implement innovative technologies to control emissions from these units and meet future air standards. For these reasons, ODEQ should adopt OG&E's September 2009 Alternative Proposal in the Revised SIP.

A. OG&E'S ALTERNATIVE PROPOSAL

On September 23, 2009, OG&E submitted its Alternative Proposal for achieving "reasonable progress" in Oklahoma under the Regional Haze Rule. (Ex. 1) This proposal, which would be implemented in three steps, is based on incremental lowering of SO₂ emissions from the four affected units at the Muskogee and Sooner Generating Stations. Upon implementation of the first step, the affected units would not "cause" a visibility impact in a Class I area. Upon implementation of the second step, the units would not "contribute" to such an impact. Ultimately, OG&E proposes to lower its SO₂ emissions to achieve the same level of visibility improvement as would be achieved by the installation of Dry FGD. OG&E believes that, if adopted, this proposal would demonstrate compliance with the Regional Haze Rule in a cost effective manner.

As more specifically detailed in Exhibit 1, the three steps that OG&E proposes to achieve these emission reductions are as follows:

1. OG&E proposes to limit its SO₂ emissions to levels such that operation of the affected units will not "cause" a visibility impact in a Class I area beginning on the earlier of

January 1, 2016, or four years after SIP approval. By this time, OG&E would limit SO₂ emissions from all four affected coal-fired units to 0.65 lb/mmBtu on a 30-day rolling average basis and 0.55 lb/mmBtu on a 365-day rolling average. In addition, OG&E would accept enforceable annual SO₂ emission limits from the Sooner and Muskogee units (combined) as set forth in the table below. These limits represent an emissions decrease from emissions used in the visibility model of up to 46% for Sooner and of up to 65% for Muskogee.

	Muskogee 4 and 5 Combined Annual SO ₂ Limit (tons/year)	Sooner 1 and 2 Combined Annual SO ₂ Limit (tons/year)
Year 1	18,096	19,736
Year 2	16,635	19,318
Year 3	15,174	18,900
Year 4	13,713	18,482
Year 5	12,252	18,064

2. OG&E proposes to limit its emissions consistent with modeled emission impacts that do not cause or “contribute to” visibility impairment in a Class I Area beginning on the earlier of January 1, 2021, or nine years after SIP approval. By this time, OG&E would limit SO₂ emissions from the combined units at Sooner and Muskogee to 17,646 and 12,064 tons per year, respectively. These limits represent an emissions decrease of 48% for Sooner and 66% for Muskogee compared to the emissions used for visibility modeling. OG&E would also continue the SO₂ rolling average emission rates.

3. Beginning on the earlier of January 1, 2026, or fourteen years after SIP approval, OG&E would limit annual SO₂ emissions from the combined units at Sooner and Muskogee to 6,000 tons per year and 4,400¹⁹ tons per year, respectively. This limit represents an

¹⁹ The limit of 4,400 tons per year is a slight increase over the limit of 4,000 tons per year included in the September 2009 Alternative BART Proposal. The limit originally stated in the proposal was not consistent with the emission rate suggested in the May 2008 BART Evaluation for the installation of Dry FGD. The revised limit is consistent with the May 2008 BART Evaluation.

emissions decrease of 82% for Sooner and 88% for Muskogee compared to the emission rates used for visibility modeling—the same limit as would be achieved by installing Dry FGD on all four units.

OG&E's Alternative Proposal also offers the company flexibility for cost effective compliance. OG&E would have the ability to propose alternative emission limits that achieve the same improvement in modeled visibility impacts as the proposed limits. If OG&E believes the emission limits cannot be achieved cost effectively, OG&E could then ask ODEQ to approve alternate limits. In the absence of such explicit approval, however, OG&E would be obligated to comply with the already established limits.

B. OG&E'S ALTERNATIVE PROPOSAL GIVES OG&E FLEXIBILITY TO MEET FUTURE AIR STANDARDS

The approach proposed by OG&E in September 2009 would also give the company flexibility to employ innovative technologies developed over the life of OG&E's compliance obligations to control emissions from the four affected units and to meet future air standards. OG&E's proposal would allow the company the option to reduce SO₂ emissions in a variety of ways, including by the increased use of natural gas and wind generation, the installation of emission controls, or reducing coal combustion. The flexibility offered by this approach will allow OG&E the option to use local sources of energy thereby benefiting the State economy.

OG&E believes that it is prudent to anticipate that state and federal requirements regulating air emissions from coal fired electrical generating stations—including Maximum Achievable Control Technology standards and climate change legislation—will become effective in the next five to ten years. It is likely that these requirements will impact the economic and/or technical feasibility of particular emission controls on the affected units. OG&E's proposal will not only meet the requirements of the Regional Haze Rule for SO₂ emissions, but will give

OG&E the flexibility to employ innovative technology (including the use of alternative fuels) to meet future air requirements with respect to other emissions as well.

In addition, if Dry FGD is required, OG&E anticipates that it will be difficult for the company to obtain a construction permit for the scrubbers under the Prevention of Significant Deterioration (“PSD”) tailoring rule for greenhouse gas emissions. It will take a significant amount of additional power to operate any scrubbers installed at the affected units. This power would be generated by burning additional fuel, which would likely increase greenhouse gas emissions (including CO₂ emissions) from the unit being scrubbed. It is unclear whether EPA would even issue OG&E a PSD permit under the current rules to cover these emissions. OG&E’s alternative proposal does not present this issue.

Moreover, at a time when so much effort and attention in the environmental community is focused on reducing the use of coal, ODEQ’s approach effectively compels OG&E to continue using coal to fuel these units for the foreseeable future. The installation, operation and maintenance of Dry FGD involves such a large capital investment—more than \$1 billion within five years—that OG&E will have no choice but to continue to utilize coal as its primary source of fuel for a long time to come. Currently, OG&E fuels its units at Muskogee and Sooner with coal that is mined in Wyoming and shipped via rail. The State of Oklahoma has excellent resources for generating electricity with natural gas and wind. OG&E should have the flexibility to utilize these local energy sources at its plants in the future, while achieving the same reduction in impact on visibility.

OG&E’s economic interests would arguably be better served by acquiescing to the Revised SIP. Under state law, OG&E would be entitled to charge its customers for its operating costs and capital costs for the scrubbers and to earn a return on the capital costs of the scrubbers.

However, this would require the largest rate increase in history for OG&E's customers. If ODEQ adopts OG&E's alternative proposal, any increased costs associated with using natural gas to generate electricity rather than coal will be recovered by OG&E on a dollar for dollar basis under its various fuel adjustment clauses and OG&E would not earn a return on these additional costs.

VI. Other Comments

A. IF SCRUBBERS ARE NOT REQUIRED, ESP IS BART FOR PARTICULATE MATTER EMISSIONS

The affected units at the Muskogee and Sooner Generating Stations are currently equipped with ESPs, and assuming that scrubbers are not required, the continued use of ESP is BART for PM control at these units. In the Revised SIP, ODEQ concludes that PM emissions are to be controlled by a fabric filter that is "integral to the design of the Dry FGD." For the reasons set forth herein, however, Dry FGD is not BART for these units. In the absence of Dry FGD, ESPs offer a cost effective approach to PM control.

In its May 2008 BART Evaluations for both Muskogee and Sooner, OG&E determined that baghouses would provide only an incremental reduction in PM/PM₁₀ control compared to the existing ESP control systems.²⁰ Even without operation and maintenance costs and using higher baseline emissions, OG&E estimated the total capital costs of a retrofit baghouse system to be \$104,000,000 per unit. Due to the high capital cost and the very low particulate emission reduction over ESP, the cost effectiveness for such a system would be well over \$18,000 per ton of PM removed even without considering operations and maintenance costs. Adjusted to account for EPA's guidance on the use of average baseline emissions, this number would

²⁰ This discussion assumes that scrubbers are not installed. As discussed above, scrubbers would create additional particulate emissions compared to current operations and baghouses would be needed to achieve effective control if scrubbers are installed.

inevitably rise even higher. Accordingly, continued use of ESP for PM control is BART for these units assuming that scrubbers are not required, and currently permitted PM emission limits should apply.

B. THE REVISED SIP SHOULD REFLECT A PRESUMPTIVE LIMIT OF 0.15 LBS/MMBTU FOR SO₂ CONTROL

As discussed above, OG&E has presented an Alternative Proposal for making reasonable progress to address regional haze in a cost effective manner. Even if ODEQ ultimately does not accept that proposal, ODEQ must at least apply the EPA-established BART presumptive emission limit of 0.15 lb/mmBTU—and not its own significantly lower limit of 0.10 lb/mmBTU—for the Muskogee and Sooner units in its Revised SIP. Appendix Y sets forth the “presumptive standards [for these units that] were developed through a formal rulemaking process.” 70 Fed. Reg. at 44,159. EPA has established that states “must require owners and operators of greater than 750 MW power plants to meet these BART emission limits.” 70 Fed. Reg. at 39,131. Indeed, these “presumptive standards are ‘mandatory’ [and] must be applied” unless a source demonstrates that it would not be cost effective to apply these standards. 71 Fed. Reg. at 60,619; *see also* EPA Regulatory Impact Analysis for the Final Clean Air Visibility Rule, EPA-452/R-05-004 (June 2005).

EPA’s perspective on the use of these presumptive limits is informed by Congressional intent. In discussing Section 169A(b)(1) of the Clean Air Act, which required the establishment of presumptive BART, the agency notes: “This statutory requirement clearly requires us to promulgate [presumptive] BART guidelines that the States must follow in establishing BART emission limitations for [over-750MW] power plants. ... [T]he Act indicates that Congress intended the guidelines to be mandatory ... with respect to 750 megawatt powerplants.” 70 Fed. Reg. at 39,108. Hence, the Act’s “unambiguous language leaves little room to dispute that the

[presumptive BART] guidelines EPA is required to promulgate must be used by the states when making BART determinations for this class of sources.” *Id.*

Presumptive limits of 0.15 lb/mmBTU established by EPA apply to each of the four coal-fired units at the Muskogee and Sooner Generating Stations. Accordingly, any BART determination for these units must be evaluated against this benchmark and not against the more stringent 0.10 lb/mmBTU benchmark used by ODEQ in the Revised SIP.²¹

C. OG&E RESERVES THE RIGHT TO COMMENT ON OUTSTANDING ISSUES
CONCERNING THE BART DETERMINATION FOR SEMINOLE AND ODEQ'S
ASSESSMENT OF VISIBILITY IMPACTS AT OG&E FACILITIES

On October 27, 2009, ODEQ issued Draft Permit to Operate No. 2003-400-TVR (M-1) for the Seminole Generating Station ("Draft Permit") along with a Memorandum explaining ODEQ's analysis of the corresponding permit application submitted by OG&E. OG&E submitted comments on the Draft Permit and ODEQ's Memorandum on November 5, 2009. OG&E's comments, attached hereto as Exhibit 6, raise two important issues that have not yet been resolved.

First, the current cost effectiveness estimates for the Seminole Generating Station are based on an incorrect measure of baseline emissions. (Ex. 6 at 21.) The May 2008 BART Evaluation for Seminole calculated baseline emissions according to the highest 24-hour actual emissions reported under the Acid Rain Program, rather than the annual average of actual emissions over the baseline period as required by EPA. As noted, OG&E made this same error

²¹ ODEQ proposed a BART limit of 0.15 lb/mmBTU for AEP/PSO Northeastern Power Station Units 3 and 4 which are also coal-fired. There is no rational basis for applying limits to OG&E's units that are different from the limits proposed for the AEP/PSO Northeastern Power Station units. (Revised SIP at p. 73.) With respect to PM₁₀, the Revised SIP proposes an emission limit of 0.1 lb/mmBTU for the AEP/PSO Northeastern Power Station units in contrast to a proposed emissions rate of 0.015 lb/mmBTU for OG&E's units. OG&E believes that ODEQ does not have any rational basis for proposing different limits for these units. (*Id.*)

in its May 2008 BART Evaluations for Sooner and Muskogee Generating Stations but corrected the error when submitting the September 2009 BART Evaluations.

OG&E has not made a second, revised submission of cost effectiveness estimates for the Seminole Generating Station because ODEQ arrived at a reasonable BART determination for Seminole, notwithstanding the use of an incorrect emissions baseline. Nevertheless, OG&E continues to believe that the BART Determination for Seminole is contrary to EPA's regulations and guidance concerning the appropriate measure of baseline emissions when calculating the cost effectiveness of a control option. BART determinations should be made according to the EPA-required methodology.²²

The second issue raised in connection with ODEQ's Draft Permit for Seminole deals with ODEQ's assessment of visibility impacts from Seminole. In its Memorandum accompanying the Draft Permit, and without prior discussions with OG&E on the topic, ODEQ provided estimates of visibility improvements expressed in Δ -dv and percentages that did not match the estimates in OG&E's May 2008 BART Evaluation. (Ex. 6 at 24.) ODEQ apparently decided at some point to use a different method for averaging modeled visibility impacts over the three-year baseline period based. Further consultation with ODEQ on this point is needed, and OG&E reserves the right to comment on ODEQ's new assessments for Seminole and any of the other facilities for which ODEQ has revised its assessments, once sufficient information on those revisions is made available to OG&E.

D. ODEQ'S ADOPTION OF THE REVISED SIP RAISES QUESTIONS REGARDING COMPLIANCE WITH THE OKLAHOMA ADMINISTRATIVE PROCEDURES ACT

²² The data needed to develop the correct emissions baseline for the Seminole Generating Station is available on EPA's Clean Air Markets webpage at <http://camdataandmaps.epa.gov/gdm/index.cfm?fuseaction=emissions.wizard> (last visited on December 15, 2009).

ODEQ proposes to adopt the Revised SIP for the purpose of implementing the BART rule (OAC 252:100-8, Part 11). *See* Regional Haze Implementation Plan Revision, dated 11/13/09, at 1-3. However, in doing so, ODEQ apparently does not intend to comply with the Oklahoma Administrative Procedures Act (“OAPA”). OG&E urges ODEQ to consider carefully whether its intended process effectively complies with the OAPA in implementing and revising an existing Rule and in prospectively setting policy for the State of Oklahoma that goes beyond determining BART controls for individual facilities. *See, e.g.*, 75 O.S. § 250.3(15); 75 O.S. § 302(D). The procedural requirements of the OAPA are designed to protect the due process rights of citizens who may be affected by agency actions, either through rulemaking procedures or individual proceedings where an affected party may present evidence and argument, and to the extent ODEQ adopts the Revised SIP and imposes the substantial costs on OG&E contemplated therein without the procedural safeguards contemplated by the OAPA, OG&E’s rights would unquestionably be prejudiced. In the event ODEQ desires a specific request for an individual proceeding, OG&E requests such a proceeding prior to the final adoption of Dry FGD as the BART requirement applicable to the Muskogee and Sooner units.

VII. Conclusion

For the reasons set forth above, the State of Oklahoma should modify the Revised SIP by removing the requirement that OG&E install Dry FGD on four coal-fired units at its Muskogee and Sooner Generating Stations. The State should instead adopt the alternative proposal submitted to ODEQ by OG&E on September 23, 2009. The alternative proposal ultimately achieves the same degree of visibility reduction as Dry FGD, is cost effective, and offers OG&E the flexibility to use local, cleaner energy sources to generate electricity in the future.

Respectfully Submitted,

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