



IN REPLY REFER TO:

United States Department of the Interior
NATIONAL PARK SERVICE
Air Resources Division
P.O. Box 25287
Denver, CO 80225



N3615 (2350)

February 6, 2012

Carl Daly, Director
Air Program
U.S. Environmental Protection Agency Region 8
Mailcode 8P-AR
1595 Wynkoop Street
Denver, Colorado 80202-1129

EPA Docket ID: EPA-R08-OAR-2011-0870

Dear Mr. Daly:

The National Park Service (NPS) has reviewed the Environmental Protection Agency's (EPA's) proposed "Approval and Promulgation of Implementation Plans; South Dakota; Regional Haze State Implementation Plan" (SIP).

We commend South Dakota Department of Environment and Natural Resources' (DENR) determination that semi-dry flue gas desulfurization and selective catalytic reduction are the Best Available Retrofit Technology for sulfur dioxide and nitrogen oxides emissions, respectively, from Otter Tail Power Company, Big Stone Unit 1.

DENR conducted a limited four-factor analysis to determine if additional controls were reasonable for three facilities, including Dacotah Cement Kilns #4 and #5. We disagree with EPA's and DENR's reliance on a 2003 Prevention of Significant Deterioration (PSD) permit review for Dacotah Cement Kiln #6 to determine that post-combustion controls were not technically feasible. In a letter dated August 17, 2011, we recommended that DENR evaluate controls for Kiln #6. In its review of Pete Lien and Sons lime plant, DENR reviewed the BACT/RACT/LAER Clearinghouse to determine if post-combustion controls had been installed since a 2008 PSD decision. It is inconsistent that DENR did not do the same for Dacotah Cement Kiln #6. In our enclosed technical comments we demonstrate that SNCR should have been considered as a technically feasible control option for Dacotah Cement Kiln #6 and that visibility benefits should have been modeled for potential controls on Kilns #4, 5, and 6.

We appreciate the opportunity to work closely with the State of South Dakota and EPA Region 8 to make progress toward achieving natural visibility conditions at our National Parks and Wilderness Areas. For further information regarding our comments, please contact Don Shepherd at (303) 969-2075.

Sincerely,

A handwritten signature in black ink, appearing to be 'SJ', with a long horizontal line extending to the right.

Susan Johnson
Acting Chief, Policy, Planning and Permit Review Branch

Enclosure

cc:

Brian Gustafson, Director
Air Quality
South Dakota Department for Environment and Natural Resources
523 E. Capitol Ave.
Pierre, South Dakota 57501

National Park Service Comments on Dacotah Cement
February 6, 2012

Reasonable Progress Goals

Visibility improvement at Badlands and Wind Cave National Park is not projected to meet the uniform rate of progress by 2018. South Dakota Department of Environment and Natural Resources (DENR) and /or EPA should have conducted a four factor analysis for Dacotah Cement consistent with the requirements of Section 40 CFR308(d)(1)(i) (A) of the Regional Haze Rule. We disagree with DENR's conclusion and EPA's approval that Dacotah Cement need not control nitrogen oxide emissions (NO_x) from kilns #4, 5, and 6, as part of the Regional Haze State Implementation Plan.

According to EPA Region 8:

South Dakota's reasonable progress goals for Badlands for 2018 for the 20% worst days represent a 0.84 deciviews improvement over baseline and its reasonable progress goals for Wind Cave for 2018 represent a 0.56 deciviews improvement over baseline. South Dakota's reasonable progress goals establish a slower rate of progress than the uniform rate of progress. South Dakota has calculated that under the rate of progress represented by its reasonable progress goals, South Dakota would attain natural visibility conditions in the year 2265 for Badlands and 2236 for Wind Cave, or 201 and 172 years, respectively, beyond 2064.

EPA Region 8 also recently stated in another state analysis that, "Because the reasonable progress goals fall short of the uniform rate of progress, North Dakota must demonstrate that its reasonable progress goals and rejection of reasonable progress controls is reasonable, based on the four factors. 40 CFR 51.308(d)(1)(ii)."¹ We ask that EPA Region 8 apply the same standard to South Dakota.

In its review of DENR's Reasonable Progress analysis, EPA shows in its Table 13 that Dacotah Cement (Dacotah) has, by far, the highest ratio of SO₂ + NO_x emissions to distance (Q/d) of any of the five sources evaluated—the Dacotah Cement Q/d in Table 13 is 68. South Dakota modeled the baseline visibility impacts from Kilns 4 and 5 combined—0.32 deciviews at Badlands and 0.46 at Wind Cave. EPA also reports that the DENR conducted a four-factor Reasonable Progress analysis for those five sources, except for kiln #6 at the Dacotah Cement facility. EPA states that DENR "declined" to conduct a four-factor analysis for Dacotah's kiln #6.

If Q/d were calculated for Dacotah's kiln #6 alone (using emissions data from EPA's Table 15), its value of 48 (or 62 if one uses the 51 km distance we use) would be essentially double that of the next highest source (Ben French power plant) which was evaluated. And, if Q/d for kiln #6 is 48, then Q/d for kiln #4 + kiln #5 is 20. While neither DENR nor EPA modeled kiln #6, we can estimate its impacts, based on the ratio of its emissions relative to kilns #4 + #5, to be at least twice the impacts of kilns #4 + #5.² So, if the baseline visibility impacts from kilns #4 and #5 combined are 0.32 deciviews at Badlands and 0.46 at Wind Cave, then it is likely that the

¹Federal Register /Vol. 76, No. 183 /Wednesday, September 21, 2011 / Proposed Rules

² In using the Q/d approach, equal weight is given to SO₂ and NO_x.

baseline impacts from kiln #6 are at least double those values. We believe that Dacotah's kiln #6 is clearly the most significant of the sources that should have been evaluated under the Reasonable Progress provisions of the Regional Haze Rule.

As noted by EPA, "The National Park Service commented that South Dakota's reasonable progress analysis should also include Kiln #6 at GCC Dacotah as the National Park Service believes [Selective Non-Catalytic Reduction] SNCR technology is a feasible control option for cement kilns."³ We are disappointed that DENR/EPA has rejected our request, and submit the following comments to support our position.

Background: NPS January, 2003 PSD Comments

The following are excerpts from our January 2003 comments to DENR regarding a November 2001 PSD application.

The GCC Dacotah Cement (Dacotah) facility is located in southwestern South Dakota, 55 km northwest of Badlands National Park (NP), and 51 km north of Wind Cave NP. Both of these areas are designated as Class I under the Clean Air Act (although only the Wilderness portion of Badlands NP receives this designation), and are administered by the National Park Service (NPS). Dacotah was modified in the mid-90s without obtaining the necessary PSD permit, so a retroactive permit process was initiated by Dacotah with a November 2001 PSD application. Emission increases from the facility are described in Table 1 and would be controlled by fabric filters (baghouses) for particulate matter less than ten microns in diameter (PM₁₀), inherent neutralization of acid gases by alkaline dust in the flue gas to control sulfur dioxide (SO₂), and staged-combustion and Low-NO_x burners to control nitrogen oxides (NO_x).

Table 1. Proposed Emissions and Increases

Pollutant	Emission Increase (tons per year)	Permit Limit (tons per year)
PM₁₀	35	162
SO₂	387	885
NO_x	1144	2267

Best Available Control Technology (BACT)

NO_x: Dacotah proposed staged combustion and low-NO_x burners at an emissions rate of 5.5-lb NO_x per ton of clinker. Dacotah cited the design of its kiln and inherent retrofit difficulties as justifying the relatively high NO_x emissions. DENR has noted that this falls within the range of 0.9-7.0 lb/ton cited by EPA's "NO_x Control Technologies for the Cement Industry" dated 9/19/00, and above the 2.9-4.5 lb/ton range found in the RBLC. That document also points out that Selective Non-Catalytic Reduction (SNCR) is in current use on 18 cement kilns in Europe. In March 2000, the European Integrated Pollution Prevention and Control (IPPC) Bureau issued a report on Best Available Techniques (BAT) for European kilns. The IPPC report concluded

³ August 17, 2011 letter from NPS, John Bunyak to DENR, Rick Boddicker.

that BAT for reducing NO_x emissions is a combination of general primary measures, primary measures to control NO_x emissions, staged combustion, and SNCR. The BAT level associated with these technologies is 0.4-1.0 lb/ton. If Dacotah were to meet even the upper end of the European guidelines for the kiln, emissions would be reduced by over 60% or 1,400 tpy.

Dacotah appears to have dismissed SNCR on the basis that it would not be very effective on a kiln with staged combustion and could contribute ammonia to the production of a detached visible plume (common to many cement kilns). However, the fact that Dacotah's design tends to produce greater NO_x emissions indicates that more analysis should be directed toward remedying that condition, and further evaluation of SNCR is warranted. For example, Dacotah should investigate the analysis that led to the permitting of a kiln at Continental Cement in Missouri with SNCR. As noted in our discussion on SO₂ control, it becomes incumbent upon Dacotah to show why it could not employ the same SNCR technology as is being required by Missouri. Dacotah should also discuss application of SNCR with reputable vendors and provide their responses. If SNCR is determined to be technically feasible at Dacotah, then Dacotah needs to move on to an analysis of economic and environmental feasibility.

Single-Source Visibility Analysis: The Class I visibility analysis was conducted using CALPUFF in its refined mode. The results are shown in Table 2 below. (The NPS' triggers for concern are 5% and 10% change in extinction.)

Table 2. Dacotah's Visibility Analysis

Class I Area	Day > 5% Change	Days > 10% Change	Max. % Change
Badlands	6	2	15.97
Wind Cave	2	0	7.05

Visibility Analyses: The visible haze analyses for the two parks were performed using the concentrations from the NPS' CALPUFF analyses. The receptors for Wind Cave NP were the ones supplied by Dacotah. The receptors for Badlands NP included only those in the Class I Wilderness area. The impacts to Wind Cave NP and Badlands NP are shown in Table 4 below. Based on the guidance found in the FLM's FLAG document, the NPS requests that Dacotah perform a cumulative visibility analysis to assess the impacts at Wind Cave NP because of the repeated exceedances of FLAG's 5% threshold.

Table 4. NPS Visibility Analysis

Class I Area	Day > 5% Change	Days > 10% Change	Max. % Change
Badlands	1	1	12.15
Wind Cave	6	1	12.7

(End of excerpts.)

We believe that the PSD permit was issued on 4/10/03 and included the 2267 tpy NO_x limit based upon staged combustion and an emission factor of 5.5 lb NO_x per ton of clinker. DENR considered SNCR to be technically feasible for kiln #6 in its "Statement of Basis" in support of the 2003 PSD permit, but rejected SNCR as BACT due to concerns about accidental release of ammonia and ammonia slip.

Reasonable Progress Analysis

On August 17, 2011, we commented to SD DENR that:

As part of the reasonable progress analysis, DENR completed a four factor analysis of potential controls for the wet kilns #4 and #5 at the Dakotah Cement plant. We recommend that the reasonable progress analysis should also evaluate controls for the larger kiln #6. As discussed in our January 27, 2003, comments to DENR on the Prevention of Significant Deterioration Permit for Dakotah Cement kiln #6, we believe that Selective Non-catalytic Reduction technology is a feasible option for cement kilns.

In its September 19, 2011 SIP amendments, DENR provided a four-factor analysis (discussed later) of reducing NO_x and SO₂ from Dakotah's kilns #4 & #5, but did not mention kiln #6.

In its December 8, 2011, Proposal, EPA reported that:

South Dakota declined to conduct a four-factor analysis for GCC Dakotah Kiln 6. In addressing a concern raised by the National Park Service during the public comment period for the GCC Dakotah Cement Plant, South Dakota provided an explanation in an email to EPA regarding its decision not to include GCC Dakotah's Kiln 6 in its four-factor analysis for the facility and specifically, not to impose SNCR controls on that unit.⁴ As the State explained, GCC Dakotah submitted a PSD air quality application for an upgrade to Kiln 6 in November 2001. In issuing the PSD permit in 2003, South Dakota determined NO_x BACT for Kiln 6 was the installation of staged combustion with a thermal efficient inline low-NO_x calciner complimented by a LNB with indirect firing in the kiln; South Dakota found that SNCR was not technically feasible for Kiln 6. GCC Dakotah installed the required NO_x BACT controls.

Based on the baseline visibility impacts, the State concluded that visibility benefits from controls at Ben French and GCC Dakotah would be small. Given the small benefits, the State concluded that additional controls during this planning period would not be warranted to achieve reasonable progress. The State did not include a discussion of its four-factor analyses in explaining the basis for its conclusion that additional controls are unwarranted but instead based its determination on the modeling of baseline visibility impacts.

EPA is also proposing to approve the State's determination that no additional NO_x or SO₂ controls are required on Kiln 6. During this planning period, it is reasonable for the State to rely on the relatively recent NO_x and SO₂ BACT determinations in the 2003 PSD permit for Kiln 6. However, during the next planning period, the State should reconsider these determinations.

We have several concerns with EPA's proposed action.

⁴ Email from Rick Boddicker, DENR to Gail Fallon, EPA Region 8 (October 11, 2011). This email is included in the docket.

First, As EPA notes, “South Dakota declined to conduct a four-factor analysis for GCC Dacotah Kiln 6.” A state cannot simply “decline” to conduct an analysis without good reason and without providing an explanation for the public record. EPA further states that,

In addressing a concern raised by the National Park Service during the public comment period for the GCC Dacotah Cement Plant, South Dakota provided an explanation in an email to EPA regarding its decision not to include GCC Dacotah’s Kiln 6 in its four-factor analysis for the facility and specifically, not to impose SNCR controls on that unit.

DENR’s e-mail to EPA Region 8 does not satisfy EPA’s BART Guidelines which state:

If you disagree with public comments asserting that the technology is available, you should provide an explanation for the public record as to the basis for your conclusion.

NPS’ August 17, 2011, comments were to DENR, not to EPA, and the response to our comments should have been made available in the DENR public record, not via an email between DENR and EPA as a result of a request from EPA.

Furthermore, EPA’s statement cited below is incorrect:

In issuing the PSD permit in 2003, South Dakota determined NO_x BACT for Kiln 6 was the installation of staged combustion with a thermal efficient inline low-NO_x calciner complimented by a LNB with indirect firing in the kiln; South Dakota found that **SNCR was not technically feasible** for Kiln 6. **(emphasis added)**

As noted above, **DENR considered SNCR to be technically feasible for kiln #6** in its “Statement of Basis” in support of the 2003 PSD permit, but rejected SNCR as BACT due to concerns about accidental release of ammonia and ammonia slip.

Next, EPA erroneously introduces the concept that additional controls are not required if visibility benefits are small:

Based on the baseline visibility impacts, the State concluded that **visibility benefits from controls** at Ben French and GCC Dacotah **would be small**. Given the small benefits, the State concluded that additional controls during this planning period would not be warranted to achieve reasonable progress. **The State did not include a discussion of its four-factor analyses in explaining the basis for its conclusion that additional controls are unwarranted but instead based its determination on the modeling of baseline visibility impacts. (emphasis added)**

The benefits of adding SNCR to kiln #6 have not been modeled by DENR, either in the PSD or Regional Haze processes, therefore it is not appropriate to conclude that the benefits are small. Based on modeled impacts of kilns #4 + #5, we have already estimated that kiln #6 may be a significant contributor to visibility impairment, and we shall show later in our comments that the amount of visibility improvement reasonable for kiln #6 is similar to that being required by Colorado for Holcim Cement under its Reasonable Progress program. The PSD modeling analyses for kiln #6 indicate that just the **increased** emissions alone from kiln #6 would be near the threshold for a significant contribution to visibility impairment at Wind Cave and/or Badlands national parks (Table 2 cited above). It is reasonable to suspect that, if all of the emissions from kiln #6 were modeled, it might well be shown to be a significant contributor.

Regardless of what a modeling analysis of kiln #6 might show, EPA again erred by allowing DENR to substitute a fifth factor, visibility improvement, for the established four-factor⁵ process for evaluating Reasonable Progress.

Finally, EPA is proposing to allow Dacotah, which modified its kiln #6 without the necessary PSD permit in the 1990s, to continue operation without additional NO_x controls until those controls are even re-evaluated in 2018:

EPA is also proposing to approve the State's determination that no additional NO_x or SO₂ controls are required on Kiln 6. During this planning period, it is reasonable for the State to rely on the relatively recent NO_x and SO₂ BACT determinations in the 2003 PSD permit for Kiln 6. However, during the next planning period, the State should reconsider these determinations.

In contrast, in the four factor analysis of the Pete Lien and Sons lime plant, EPA reports that DENR reviewed EPA's RACT/BACT/LAER Clearinghouse to determine if any new rotary lime kilns had been permitted with more stringent post-combustion controls since the 2008 PSD decision that SNCR and SCR were technically infeasible for Pete Lien and Sons. It is inconsistent for the State to not also review more recent permit requirements after the 2003 PSD decision for Dacotah Cement kiln #6.

We question EPA's assertion that a nine-year-old BACT determination is "recent". EPA's position also contradicts the BART Guidelines which state:

Because a new technology may become available at various points in time during the BART analysis process, we believe that guidelines are needed on when a technology must be considered. For example, a technology may become available during the public comment period on the State's rule development process. Likewise, it is possible that new technologies may become available after the close of the State's public comment period and before submittal of the SIP to EPA, or during EPA's review process on the SIP submittal. In order to provide certainty in the process, **all technologies should be considered if available before the close of the State's public comment period.** You need not consider technologies that become available after this date.

It is not necessary for a commenter to inform the State that a technology has become available—it is the State's responsibility to stay abreast of relevant control technologies and to determine if an evolving technology⁶ has recently become available for a given source category. We are providing documentation to EPA showing how application of SNCR to preheater/precalciner kilns such as Dacotah's kiln #6 has evolved from "questionable" to "well-established" over the

⁵ In determining the measures necessary to make reasonable progress, states must take into account the following four factors and demonstrate how they were taken into consideration in selecting reasonable progress goals for a Class I area:

Costs of Compliance,
Time Necessary for Compliance,
Energy and Non-Air Quality Environmental Impacts of Compliance, and
Remaining Useful Life of any Potentially Affected Sources.
CAA 169A(g)(1) and 40 CFR308(d)(1)(i)(A).

⁶ "The oldest existing, full-scale SNCR installation on a cement kiln presently operating in the United States is located at Hercules Cement in Stockertown, PA. This SNCR system uses a 19% ammonium hydroxide solution (AHS) and was installed in 2001 on kiln #3 (a PH/PC kiln)." Alternative Control Techniques Document Update – NO_x Emissions from New Cement Kilns EPA-453/R-07-006 November 2007

period since DENR rejected SNCR in its 2003 BACT determination⁷ and prior to the close of the States' first RH SIP public comment period in 2010. (Please note that all of the supporting information we have provided pre-dates the close of DENR's 2010 public hearing and was presumably available to DENR at that time.) Additionally, we advised DENR in our August 17, 2011 comments⁸ to the State's public hearing on August 18, 2011⁹ that "...we believe that Selective Non-catalytic Reduction technology is a feasible option..." We do not believe that DENR's October 11, 2011 email to EPA "provide(s) an explanation for the public record as to the basis for your conclusion" as described in the BART Guidelines because it was not made part of DENR's public record and appears to simply be a re-statement of DENR's outdated 2003 BACT determination:¹⁰

During the 2011 public notice period for the revisions to South Dakota's Regional Haze program, the National Park Service submitted a comment requesting DENR consider in its reasonable progress analysis the use of a selective non-catalytic reduction technology for the Kiln #6 at GCC Dacotah as it outlined in its January 2003 comments on GCC Dacotah's Prevention of Significant Deterioration permit. Since a BACT analysis and Best Available Retrofit Technology (BART) review is similar, DENR determined that it was unnecessary to reconsider Kiln #6 for reasonable progress and presented its previous BACT decision at the hearing for the Regional Haze program.

Because DENR "declined to conduct a four-factor analysis for GCC Dacotah Kiln 6," because kiln #6 may contribute significantly to visibility impairment at one or more Class I areas, and because DENR is proposing that the Uniform Rate of Progress cannot be met¹¹ at Wind Cave and Badlands national parks, we believe that a proper four-factor analysis is imperative now, not ten years from now. According to EPA's BART Guidelines:

What do we mean by "available" technology?

1. The typical stages for bringing a control technology concept to reality as a commercial product are:
 - concept stage;
 - research and patenting;
 - bench scale or laboratory testing;

⁷ DENR considered SNCR to be technically feasible for kiln #6 in its "Statement of Basis" in support of the 2003 PSD permit. DENR rejected SNCR as BACT due to concerns about accidental release of ammonia and ammonia slip.

⁸ On August 17, 2011, we commented to SD DENR that, "As part of the reasonable progress analysis, DENR completed a four factor analysis of potential controls for the wet kilns #4 and #5 at the Dakotah Cement plant. We recommend that the reasonable progress analysis should also evaluate controls for the larger kiln #6. As discussed in our January 27, 2003, comments to DENR on the Prevention of Significant Deterioration Permit for Dakotah Cement kiln #6, we believe that Selective Non-catalytic Reduction technology is a feasible option for cement kilns." We are not aware of any response to our comments.

⁹ Under 40 CFR 51.308(i)(2), South Dakota was obligated to provide National Park Service with an opportunity for consultation, in person and at least 60 days prior to holding a public hearing on the Regional Haze SIP. South Dakota sent a draft of its Regional Haze SIP to the National Park Service and other FLMs on January 15, 2010. South Dakota held a public hearing in front of the Board of Minerals and Environment on September 15, 2010. In July 2011, South Dakota provided the FLMs and others a draft of proposed amendments to the Regional Haze SIP. The FLMs provided comments to South Dakota's amended submittal. The State held another public hearing on August 18, 2011.

¹⁰ Email from Rick Boddicker, DENR to Gail Fallon, EPA Region 8 (October 11, 2011).

¹¹ "Because the reasonable progress goals fall short of the uniform rate of progress, North Dakota must demonstrate that its reasonable progress goals and rejection of reasonable progress controls is reasonable, based on the four factors. 40 CFR 51.308(d)(1)(ii)." Federal Register /Vol. 76, No. 183 /Wednesday, September 21, 2011 / Proposed Rules

- pilot scale testing;
- licensing and commercial demonstration; and
- commercial sales.

2. A control technique is considered available, within the context presented above, if it has reached the stage of licensing and commercial availability. Similarly, we do not expect a source owner to conduct extended trials to learn how to apply a technology on a totally new and dissimilar source type. Consequently, you would not consider technologies in the pilot scale testing stages of development as “available” for purposes of BART review.

3. Commercial availability by itself, however, is not necessarily a sufficient basis for concluding a technology to be applicable and therefore technically feasible. Technical feasibility, as determined in Step 2, also means a control option may reasonably be deployed on or “applicable” to the source type under consideration.

The information we have provided clearly demonstrates that SNCR is “available.”

According to EPA’s BART Guidelines:

What do we mean by “applicable” technology?

You need to exercise technical judgment in determining whether a control alternative is applicable to the source type under consideration. In general, a commercially available control option will be presumed applicable if it has been used on the same or a similar source type. Absent a showing of this type, you evaluate technical feasibility by examining the physical and chemical characteristics of the pollutant-bearing gas stream, and comparing them to the gas stream characteristics of the source types to which the technology had been applied previously. Deployment of the control technology on a new or existing source with similar gas stream characteristics is generally a sufficient basis for concluding the technology is technically feasible barring a demonstration to the contrary...

The Portland Cement Association reports¹² that:

Preheater and precalciner kilns provide accessible regions between the kiln inlet and bottom cyclone where the gas temperatures are within the SNCR window. The majority of the cost of an SNCR system is the annual cost of the reagent (as opposed to the capital cost). Permits issued in the 2005-2006 timeframe limit NO_x to 1.95 lb /ton clinker (30-day average) to be achieved through the use of a low-NO_x calciner and SNCR, as necessary. Several cement plants across the U.S. have investigated SNCR and performed tests. There are now several commercial installations of SNCR and plans for additional ones. At this point, all of the SNCR installations in the U.S. are for preheater/precalciner systems. Most of these use ammonia water as the reagent.

For preheater/precalciner kilns, EPA says, “On average, SNCR achieves approximately a 35% reduction at an NSR of 0.5 and a 63% reduction at an NSR of 1.0.”¹³ EPA has proposed¹⁴ a revised NSPS including a requirement that “1.50 pounds of nitrogen oxide (NO_x) per ton of clinker on a 30- day rolling average if construction, reconstruction, or modification of the kiln commences after June 16, 2008... We expect that all new kilns will be required to install SNCR

¹² Summary of Control Techniques for Nitrogen Oxide by Zephyr Environmental Corporation ©Portland Cement Association 2008

¹³ Alternative Control Techniques Document Update – NO_x Emissions from New Cement Kilns EPA-453/R-07-006 November 2007

¹⁴ Federal Register /Vol. 73, No. 116 /Monday, June 16, 2008 / Proposed Rules

systems to meet the 1.5 lb/ton of clinker NO_x limit.” Florida proposed that EPA lower the limit to 1.0 lb/ton of clinker.¹⁵

In addition to the information we have provided which shows that SNCR has become routinely applied to preheater/precalciner cement kilns since DENR’s 2003 BACT determination, we searched EPA’s RACT/BACT/LAER Clearinghouse for permits issued to similar facilities over that period. We found three entries for Portland cement plants, all of which were preheater/precalciners and all of which included SNCR to reduce NO_x to 2 – 3/lb/ton of clinker, approximately half the rate allowed by DENR.

Please recall that the reasons DENR rejected SNCR as BACT were due to concerns about accidental release of ammonia and ammonia slip. Assuming that Dacotah exercises reasonable caution in its operation and maintenance duties, there is no reason to believe that these issues present any more of a problem at Dacotah than at the numerous other facilities successfully using ammonia in the operation of SNCR (and SCR).

Based upon the information presented above, we believe that a proper four-factor analysis, as required by the BART Guidelines, may find that SNCR is “reasonable” for Dacotah’s kiln #6. Because we recognize that each kiln is different, and that the success of SNCR is highly dependent upon variables specific to each kiln, we recommend that the four-factor analysis include recommendations by at least two reputable SNCR vendors with experience in the cement industry.

Under section *H. FLM Coordination* of its December 8, 2011 notice, EPA states:

Badlands and Wind Cave are both managed by the National Park Service, the FLM for these South Dakota Class I areas. Although the FLMs are very active in participating in the regional planning organizations, the Regional Haze Rule grants the FLMs a special role in the review of the regional haze SIPs, summarized in section II.H, above. The FLMs and the state environmental agencies are our partners in the regional haze process.

40 CFR 51.308(i)(3) requires that South Dakota provide in its Regional Haze SIP a description of how it addressed any comments provided by the FLMs. The FLMs communicated to the State (and EPA) their concerns on the January 15, 2010 draft Regional Haze SIP. South Dakota responded to the FLM’s comments and concerns in Appendix D of the Regional Haze SIP. The National Park Service commented on the Regional Haze SIP amendment regarding its concerns pertaining to a reasonable progress four-factor analysis to evaluate controls at GCC Dacotah’s Kiln 6 and additional consultation with Nebraska on Gerald Gentleman Station. South Dakota provided us with its rationale on GCC Dacotah’s Kiln 6 which we discussed in section III.D.2. above.

We are proposing that the State complied with the requirements of 40 CFR 51.308(i).

While we appreciate the cooperation shown by EPA and DENR in this effort, we do not believe that DENR has met the requirement of 40 CFR 51.308(i)(3) to “provide in its Regional Haze SIP a description of how it addressed any comments provided by the FLMs.” Additionally, we do not

¹⁵ September 29, 2008 SUBMITTED BY ELECTRONIC UPLOAD to Docket ID Number: EPA-HQ-OAR-2007-0877

see in the proposed SIP any response to our August 17, 2011 comments regarding Dacotah's kiln #6.

GCC Dacotah Kilns 4 and 5

EPA's Cost of Compliance Tables 16 and 17 show the cost of compliance for the control technologies evaluated for each of the reasonable progress sources. DENR used EPA's November 2007 "Alternative Control Techniques Document Update – NO_x Emissions from New Cement Kilns", EPA-453/R-07-006 to estimate the cost of a SNCR system even though this document was developed for the review of dry kilns and not wet kiln. That document reports that, "For SNCR's, cost effectiveness ranged from \$330 to \$5,200/t NO_x controlled [in 2005 \$], with a mean and median of \$1,700 and \$1,200, respectively." DENR estimated \$3,100 - \$4,200/ton for kiln #4 and \$5,600 - \$7,600/ton for kiln #5 (in 2007 \$).¹⁶ DENR provided no explanation as to why its estimates for SNCR on kilns #4 & #5 were so much higher than average, and why the kiln #5 estimates exceed even the high end of EPA's range of estimates. DENR and EPA should explain why these estimates are valid.

EPA Region 8 is on record saying that \$3,100/ton is reasonable in some cases,¹⁷ while EPA Region 9 has stated that a cost effectiveness of \$6,000/ton can be acceptable.¹⁸ However, in this case, EPA is saying that any cost is excessive (even though it admits that some are "reasonable") because of its assumption that visibility benefits would be small:

EPA is proposing to approve the State's conclusion that no additional NO_x controls for Kilns 4 and 5 are reasonable for this planning period. For Kiln 4, the cost effectiveness values range from \$456 per ton for LNB to \$7,309 per ton for SCR. For Kiln 5 the cost effectiveness values range

¹⁶ EPA's 2005 cost numbers were updated to 2007 cost numbers by using a 3% annual inflationary rate. The "Cost per Ton" column is based on the "Annual Cost" divided by the "Reductions." In deriving its 2005 cost estimates, EPA applied the Chemical Engineering Plant Cost Index (CEPCI). If DNER had applied the CEPCI to its estimates, it would have instead increased costs by 12%. Finally, the CEPCI increased by 11% between 2005 and 2009 and by 18% between 2005 and 2010.

¹⁷ In our BART analysis for NO_x at **Milton R. Young Station 1**, we considered SNCR + ASOFA and SCR + ASOFA... We have concluded that SNCR + ASOFA and SCR + ASOFA are both cost effective control technologies and that both would provide substantial visibility benefits. SNCR + ASOFA has a cost effectiveness value of \$687 per ton. While SCR + ASOFA is more expensive than SNCR + ASOFA, it has a cost effectiveness value of **\$2,569 per ton** of NO_x emissions reduced. This is well within the range of values we have considered reasonable for BART and that states other than North Dakota have considered reasonable for BART. Even with more frequent catalyst replacement, SCR would still be cost effective even at the high end of the range (**\$2,783 per ton**) allowing for the most frequent catalyst replacement of one layer per year and allowing for the questionable costs of lost power generation revenue in TESCO Scenario 4. We also analyzed the SCR costs assuming the same baseline emissions of 9,032 tons per year used by North Dakota and determined that the high-end cost effectiveness value, assuming the most frequent catalyst replacement frequency, would be about **\$3,115 per ton** of NO_x reduced. All of these cost effectiveness values are well within the range of values that North Dakota considered reasonable in several of its NO_x BART determinations, where predicted visibility improvement was considerably lower. **Approval and Promulgation of Implementation Plans; North Dakota; Regional Haze State Implementation Plan; Federal Implementation Plan for Interstate Transport of Pollution Affecting Visibility and Regional Haze**

¹⁸ EPA considers its revised cost-effectiveness estimates of **\$2,515 - \$3,163/ton** of NO_x removed to be more accurate and representative of the actual cost of compliance. However, even if EPA had decided to accept APS's worst-case cost estimates of **\$4,887 - \$6,170/ton** of NO_x removed, EPA considers that estimate to be cost effective for the purpose of proposing an 80% reduction in NO_x, achievable by installing and operating SCR as BART at FCPP. **Source Specific Federal Implementation Plan for Implementing Best Available Retrofit Technology for Four Corners Power Plant: Navajo Nation**

from \$832 per ton for LNB to \$13,345 per ton for SCR. **Some of these costs are reasonable.** However, South Dakota modeled the baseline visibility impacts from Kilns 4 and 5 combined—0.32 deciviews at Badlands and 0.46 at Wind Cave—and any visibility benefits that would result from additional NO_x controls alone would be significantly less than these values. We therefore propose to find that South Dakota reasonably rejected additional NO_x controls during this planning period.

If EPA is basing its decision that lack of visibility benefits trumps a four-factor analysis for a situation in which the Uniform Rate of Progress is far from being met, it should, at least, conduct a valid modeling analysis to estimate the actual benefits on which it is basing its decision. For example, if SNCR were to reduce visibility impacts at Wind Cave and Badlands national parks by a total of 0.3 dv¹⁹ at an annual cost of \$2 million, the cost per deciview would be about \$7 million, which is less than half the \$18 million/dv average for NO_x control costs being proposed under the Regional Haze program.

Level Playing Field

Lastly, we have reviewed BART/Reasonable Progress proposals, excluding South Dakota, for seven cement kilns (see attached electronic file) outside the eastern ozone non-attainment region²⁰ and every one is adding SNCR under the Regional Haze program.²¹ It is likely that Dacotah Cement is a significant contributor to visibility impairment at Wind Cave and Badlands national parks. Dacotah Cement should not be given a competitive advantage over other cement facilities that are also subject to the Regional Haze program requirements.

Conclusions & Recommendations

The South Dakota SIP would attain natural visibility conditions in the year 2265 for Badlands and 2236 for Wind Cave, or 201 and 172 years, respectively, beyond 2064. Because the reasonable progress goals fall short of the uniform rate of progress, South Dakota must demonstrate that its reasonable progress goals and rejection of reasonable progress controls is reasonable, and based on the four factors. 40 CFR 51.308(d)(1)(ii). Instead DENR has committed procedural and technical errors in its analysis of Dacotah Cement.

South Dakota has rejected the results of the required four-factor analyses which show that additional controls are reasonable on Dacotah Cement kilns #4 and #5, and has declined to even

¹⁹ Colorado estimated that addition of SNCR at the Holcim cement plant would achieve a 0.3 dv improvement at an annual cost of \$2.5 million under its reasonable progress requirement.

²⁰ Some eastern states have, or will, require SNCR in order to address ozone non-attainment. For example, Maryland's proposed regional Haze SIP states, "Holcim (St Lawrence Cement) is required to install SNCR in order to comply with the Maryland ozone transport limit. Maryland considers the current controls and the future installation of SNCR as sufficient and considers them BART for this facility."

²¹ For example, Colorado is requiring Holcim Cement to reduce NO_x emissions by 45% under its reasonable Progress program. Colorado's modeling indicated the 98th percentile visibility impact of 0.814 delta deciview at Great Sand Dunes National Park. Based upon South Dakota's modeling of Dacotah Cement's smaller kilns #4 and #5, it is likely that the total impact of the plant, had kiln #6 been included, would have been similar to (or greater than) Holcim in Colorado.

conduct a four-factor analysis for kiln #6. EPA should conduct a valid four-factor analysis (which includes an up-to-date review of SNCR) for all three kilns at Dacotah Cement.

If DENR and EPA are to consider the visibility benefits of reducing emissions at Dacotah Cement, in conjunction with (not to the exclusion of) a four-factor analysis, they should conduct a valid modeling analysis of the cumulative benefits of those reductions and relate those benefits to what has become the national norm (\$18 million/dv).

Dacotah Cement modified its kiln #6 in 1993 without the necessary PSD permit, which it obtained in 2003 with no requirement for additional controls. It should not be allowed to operate until 2018 and beyond (as proposed by EPA) without current state-of-the-art emission controls, or even any evaluation of its emission controls, while it continues to affect visibility at Wind Cave and Badlands national parks. Furthermore, Dacotah Cement should not be given a competitive advantage over other cement facilities that are subject to the Regional Haze program requirements.