United States Department of the Interior

NATIONAL PARK SERVICE
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IN REPLY REFER TO:

March 5, 2013

N3615 (2350)

Gregory Nudd
U. S. EPA, Region 9
Air Planning Office, Air Division
75 Hawthorne Street
San Francisco, California 94105

EPA Docket ID: EPA-R09-OAR-2012-0904

Dear Mr. Nudd:

The National Park Service (NPS) has reviewed the Environmental Protection Agency (EPA)'s proposed "Partial Approval and Disapproval of Air Quality Implementation Plans; Arizona; Regional Haze and Visibility Impacts of Transport, Ozone, and Fine Particulates" published in the Federal Register on December 21, 2012. Our comments on EPA's proposals for Best Available Retrofit Technology (BART) and Reasonable Progress (RP) are enclosed.

In evaluating source contributions to visibility impairment, EPA compared the visibility monitoring data between the 2000-2004 baseline period and 2005-2010. Organic carbon, sulfate, and coarse mass are the dominant pollutants contributing to haze at the Class I areas in Arizona. EPA observed that at several sites, on the 20% worst visibility days, organic carbon has decreased and sulfate has increased. As discussed in the 2011 report from the IMPROVE monitoring network[1], this trend is likely due to lower fire activity in 2005-2010 compared to the baseline period. Wildfires and prescribed fires are major sources of organic and elemental carbon and are highly variable year to year. In years with high fire activity, organic carbon will be the major contributor to haze on the 20% worst days. When fire activity is low, sulfate and other pollutants will have larger contributions to haze on the 20% worst days. The increase in sulfate on the 20% worst days can be explained, however, it is evidence that additional

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[1] Spatial and Seasonal Patterns and Temporal Variability of Haze and its Constituents in the United States: Report V June 2011, Chapter 9 – Regional Haze Rule Progress Tracking Metrics http://vista.cira.colostate.edu/improve/Publications/Reports/2011/2011.htm

consideration of control measures for sulfur dioxide emissions is warranted under the reasonable progress analyses.

EPA proposes to disapprove Arizona Department of Environmental Quality's (ADEQ) long term strategy and reasonable progress goals in part because the regional air quality modeling used to set the goals did not include all the emissions reductions that we now know will be implemented. In similar situations for other states, EPA has viewed the reasonable progress goals as the minimum visibility improvement from known and expected emissions reductions and has assumed that additional emissions reductions will allow even greater visibility improvement. In the case of Arizona, because visibility is projected to degrade slightly at two of the Class I areas due to increases in fine soil, we agree with EPA that further evaluation of the future growth and feasible controls for area sources is warranted. And as discussed in our specific comments on BART and RP, we believe that additional emissions reductions are warranted at Cholla, Springerville, and Sundt (Unit 4) power plants. These reductions should also be considered in the context of RP goals for the 20% worst visibility days.

We appreciate the opportunity to work closely with EPA Region 9 and Arizona to improve visibility in our Class I areas. For further information regarding our comments, please contact Pat Brewer at (303) 969-2153.

Sincerely,

Susan Johnson
Chief, Policy, Planning and Permit Review Branch

Enclosures

cc: Eric Massey, Director
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National Park Service Comments on EPA Review of Arizona Department of Environmental Quality (ADEQ) Determinations of Best Available Retrofit Technology (BART) and Reasonable Progress (RP)

March 6, 2013

BART

Tucson Electric Power (TEP)—Sundt (formerly Irvington) Generating Station

We agree with EPA that "…even accepting ADEQ's determination that TEP Sundt Unit I4 was ''reconstructed'' after August 7, 1977, the Unit remains BART-eligible because it did not go through NSR/PSD permitting." In our December 2010 comments to AZ DEQ, we noted that, "The clear intent of EPA's BART Guidelines is to exempt a source that has gone through New Source Review (NSR) from a "second hit" by going through BART. Because TEP Unit I4 did not go through NSR, that exemption does not apply."

We considered the cost factors of a BART analysis. Units 3 + 4 were modeled together by WRAP, which predicted a maximum 98th percentile impact of 4.35 dv at the western unit of Saguaro National Park (16 km to the east of the plant) in 2003. At that time, Q/d for these two units was 942, of which 571 is attributed to Unit 4. WRAP modeled Unit 4 emissions of SO2 as 9,407 tpy and of NO_X as 5,146 tpy. It is therefore likely that Unit #4 was responsible for the majority of the impact modeled by WRAP, and thus caused visibility impairment at Saguaro National Park.

Unit #4 can burn coal and natural gas. During 2010 and 2011 when a large amount of coal was burned, average emissions were about 2,000 tpy SO_2 (0.72 lb/mmBtu) and 1,300 tpy NO_X (0.44 lb/mmBtu). There are no SO_2 controls, and NO_X controls consist of Low-NO_x Burners and Over-Fire Air (LNB+OFA): PM is controlled by a baghouse. Our modeling analysis (described in Appendix A.1.) has confirmed that Unit #4 is subject to BART. We estimate that Unit #4 currently causes visibility impairment with a 2.9 dv impact, and contributes to impairment 122 – 151 days per year at Saguaro NP. Furthermore, there are nine Class I areas within 300 km of Sundt, which supports the need for a current thorough analysis.

We applied the IPM model in a manner similar to that used by EPA for evaluating Flue Gas Desulfurization (FGD) systems at Springerville. Our estimated capital cost for a new FGD is $92 million and the annual cost is $11.3 million. The 98%-efficient wet scrubber would remove about 2,400 tons of SO_2 per year with cost-effectiveness of $4,721 per ton. Compared to costs typically accepted by most states and by EPA, this cost is reasonable. (Our analyses can be found in Appendix A.2.)

For Selective Catalytic Reduction (SCR), we used an approach similar to that used by EPA Region 8 at Colstrip in Montana.[1] We estimate that addition of SCR would result in a capital cost of $29 million and an annual cost of $3.6 million. SCR operating at 0.05 lb/mmBtu would remove 1,252 tons/year with cost-effectiveness of $2,852/ton, which is typically considered reasonable. (Our analyses can be found in Appendix A.3.)

Chemical Lime—Nelson Plant

EPA proposes to approve Arizona's decision to set 0.5 dv as the threshold for determining whether sources are subject-to-BART. However, given that the modeled average 98th percentile high impact of one BART-eligible source, Chemical Lime's Nelson Plant (CLN), is within 0.002 dv of 0.5 dv, EPA is also seeking comment on whether it was unreasonable for ADEQ to set a threshold of 0.5 dv.

ADEQ has used the same contribution threshold as other states, and we agree that the threshold is appropriate. However, we suggest that EPA may be asking the wrong question. EPA states that:

> The visibility modeling performed by Chemical Lime indicates that the average 98th percentile impact from the Nelson Lime Plant is below 0.5 dv at the most affected Class I area. However the 98th percentile impact for a single year, 2003, exceeds 0.5 dv. ADEQ based its BART-exemption determination on the 3-year average of 98th percentile impact. When the 2003 value is averaged with the 2001 and 2002 values, the facility's visibility impact is below the exemption threshold of 0.5 dv. This interpretation of the 0.5 dv threshold differs from the interpretation used in a similar type of analysis, namely the Prevention of Significant Deterioration (PSD) Class I visibility analysis.

The facility's impact is not below 0.5 dv because, when rounded to the same number of significant figures, its impact equals 0.5 dv. EPA correctly notes that, "Typically, the PSD-style method has been used to determine if a source exceeds the BART threshold." In fact, we know of no other state which has used AZ DEQ's averaging approach.

EPA addressed this issue[2] in its "Q & A's for Source by Source BART rule of July 6, 2005":

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[1] EPA Region 8: "We relied on a number of resources to assess the cost of compliance for the control technologies under consideration. In accordance with the BART Guidelines (70 FR 39166), and in order to maintain and improve consistency, in all cases we sought to align our cost methodologies with the EPA CCM. However, to ensure that our methods also reflect the most recent cost levels seen in the marketplace, we also relied on a set of cost calculations developed for the Integrated Planning Model (IPM) version 4.10. These IPM cost calculations are based on databases of actual control project costs and account for project specifics such as coal type, boiler type, and reduction efficiency. The IPM cost calculations reflect the recent increase in costs in the five years proceeding 2009 that is largely attributed to international competition. Finally, our costs were also informed by cost analyses submitted by the sources, including in some cases vendor data."

[2] Is the 98th percentile value assumed to be the 8th highest value from each year or from all modeled years lumped together? Is it for all receptors together or the 8th high at each receptor and then the highest from that group? Does it also apply to the "cause" test, not just the contribute test? (e.g. you may have 2 days above 1 ddv, but then the 8th and beyond are all below 0.5 ddv).

> The highest modeled delta-deciview value for each day of the simulation from all modeled receptors should be determined. Depending on the yearly distribution of the results, the most conservative 98 % impact may come from the maximum 8th highest value for each of the three years or the 22nd highest value for all years combined (if three years of data and 365 values for each year are calculated). The State may wish to use both methods and determine the impact based on the higher value.

We agree with EPA's conclusion:

> EPA proposes to determine that it was not reasonable for the State to find the Nelson Lime Plant is not subject to BART. Therefore, we propose to disapprove the State's determination and find that Nelson Lime Plant is subject to BART.

Our reasoning, however, is different from EPA's and is based on modeling of all visibility-impairing emissions from CLN. WRAP modeling showed a 0.92 dv impact at Grand Canyon National Park in 2003, which would normally mean that CLN is subject to BART. Instead, ADEQ allowed the company to remodel only the SO_2, NO_X, and filterable PM_{10} emissions. In the September 21, 2007 new modeling analysis by CLN, while they correctly estimated the condensable PM_{10} emissions in their Table A-4, "Speciated PM Emissions," they did not include them in its Table A-3, "Modeled Emissions."

We modeled the same emissions as CLN, but included condensable PM_{10} emissions. We also modeled using the 20% best of natural background days, which is the same approach used by EPA R9 in its 7/20/2012 proposed rule for AZ BART sources.[3] We do not believe that it is appropriate to average annual modeling results, as CLN did, to determine BART applicability. States across the country have followed EPA and Federal Land Manager recommendations[4] that the 8th highest value for any year as the criteria for determining if a source is subject to BART. Our results, shown below (and included in Appendix B), demonstrate that CLN is subject to BART.

CLN	98th % DELTA DV	Number of days with Delta-Deciview => 0.5
2001	0.464	6
2002	0.703	16
2003	0.885	31

EPA also seeks comments on whether there are cost effective pollution controls at CLN. However, in the absence of a complete BART analysis available for review, we are unable to comment upon a facility whose operating parameters and characteristics are unknown to us. When EPA determines that CLN is subject to BART, it should make a complete BART analysis available for public review and comment.

[3]EPA R9: "In this proposal, EPA is relying on…best 20 percent, consistent with initial EPA recommendations for BART assessments."
[4] FLAG report. Federal Land Managers' Air Quality Related Values Work Group http://www.nature.nps.gov/air/Permits/flag/index.cfm

Catalyst Paper

On July 30, 2012, Catalyst Paper publicly announced the permanent closure of the mill in Snowflake, which includes the Unit 2 power boiler. However, Catalyst Paper has not yet canceled its operating permits and therefore still maintains the ability to operate the mill. For this reason, EPA is not proposing to take action on ADEQ's BART determinations for Catalyst Paper. Instead, EPA intends to require that Catalyst Paper notify EPA prior to resuming operation of mill, at which point EPA will review ADEQ's BART determination and, if necessary, propose a FIP. We agree with EPA's approach, provided that any future review will include the opportunity for public and FLM participation.

Miami Smelter and Hayden Smelter

EPA is proposing to disapprove ADEQ's SO_2 BART determination because:

- ADEQ did not provide information demonstrating that NSPS Subpart P meets the requirements for a streamlined BART determination
- ADEQ's analysis did not examine whether acid plants in operation at a copper smelter (either at Miami or at Hayden) have demonstrated an ability to achieve, in practice, better levels of control since the promulgation of NSPS Subpart P.
- ADEQ has not provided any basis for limiting its examination of acid plant performance to only those acid plants operating at copper smelters.
- ADEQ does not specify whether its BART determination would require that all of the BART-subject gas streams at the Miami smelter meet all of the relevant control requirements and emissions standards in Subpart P.
- There is a lack of enforceability and compliance requirements for this BART determination.

However, EPA is also "proposing to approve ADEQ's determination that compliance with NSPS Subpart P constitutes BART for SO2 provided ADEQ or other commenters submit additional information demonstrating that the sulfuric acid plant cannot achieve a lower level of SO2 emissions." EPA cannot reverse its decision to disapprove the AZDEQ SIP and approve ADEQ's determination without providing the information it receives during this public review process for further public review and comment. The very reason that EPA cites for disapproval, i.e., lack of sufficient information, is also reason for allowing the public to review and comment upon any new information obtained during this process

Reasonable Progress for Point Sources of SO_2

While the Reasonable Progress (RP) analysis differs from the BART analysis with respect to the factors evaluated, there is also substantial overlap, and it can be informative to consider relevant BART guidance and examples in conducting the RP analyses.

Arizona Public Service—Cholla Unit 1

EPA has not considered potential SO_2 controls at Cholla Unit 1 because Cholla Unit 1 currently uses lime injection to remove at least 80% of SO_2 as a result of New Source Review (Installation Permit #1247). EPA's Clean Air Markets (CAM) data show that the scrubber was operating at 91% efficiency during 2010 – 2012, and annual SO_2 emissions (0.16 lb/mmBtu) exceeded the presumptive BART limit of 0.15 lb/mmBtu. This facility is about 30 km west of Petrified Forest National Park resulting in a Q/d value of approximately 27 for SO_2 alone, which indicates the need for a thorough analysis. Furthermore, there are 13 Class I areas within 300 km of Cholla, which increases the need for such an analysis.

Based upon current emission rates from CAM, we estimate that Cholla Unit 1 causes visibility impairment with a 98th percentile impact of 1.3 dv at Petrified Forest National Park and contributes to impairment 81 - 97 days/year.[5] Our analysis (described in Appendix C.1.) also indicates that, even after Cholla Units 2 - 4 achieve the emission rates set by EPA in it 12/5/2012 final rule,[6] the facility will continue to cause visibility impairment with an impact of 1.6 dv at Petrified Forest National Park and contribute to impairment 143 - 169 days/year.

EPA did not consider the age of the existing scrubbers. It is our understanding that the scrubber on Unit 1 became operational prior to 1974, and was upgraded in 2007 at a cost of $5.2 million.[7] If the current scrubber is now almost 40 years old, it is likely that it has been fully amortized and is also nearing the end of its useful life, despite the upgrades. (EPA R9 assumed a 20-year life for new scrubbers in its cost analyses.) And, even if EPA R9 were to determine that the scrubbers should be replaced, they would probably continue to operate for another five years while their replacements are under construction. We believe that it is appropriate for EPA to consider the replacement of this aging scrubber, especially one that is not meeting presumptive BART and is installed on a source causing visibility impairment. Even with the 2007 upgrades, a source should not be allowed to prolong the life of less-efficient control technology when more-efficient controls would otherwise be appropriate.

We applied the IPM model as we (and EPA R9) did at Springerville (and our analysis is described in Appendix C.2.). Our estimated capital cost for a new FGD is $85 million and the annual cost is $12.7 million. The 98%-efficient wet scrubber would remove about 9,641 tons of SO_2 per year with cost-effectiveness of $1,320 per ton. Compared to costs typically accepted by most states and by EPA, this cost is very reasonable.

[5] CALPUFF model using 2001 – 2003 meteorology and 2010 – 2012 emissions and use of the 20% best days for background.

[6] Approval, Disapproval and Promulgation of Air Quality Implementation Plans; Arizona; Regional Haze State and Federal Implementation Plans, Final Rule, Federal Register / Vol. 77, No. 234 / Wednesday, December 5, 2012

[7] "Cholla Power Plant & EPA's Regional Haze Rules," Ann Becker (APS), 1/31/2013

If EPA decides against replacement of the scrubber, EPA's BART Guidelines recommend that additional scrubber upgrades be evaluated. For example, EPA Region 8 determined that upgrading the existing scrubbers at Colstrip Units 1 and 2 by adding a scrubber module is BART. Tucson Electric Power added scrubber modules to Units 1 and 2 at its Springerville facility. We have found several other examples (Coal Creek Units1 and 2, Allen King, Laramie River Units 1 and 2, M.R. Young Unit2, Naughton Unit 3, Sherburne County Units 1 and 2) of upgrades to wet scrubbers to meet BART requirements, and additional upgrades therefore should be considered for Cholla Unit 1.

For Selective Catalytic Reduction (SCR), we used an approach similar to that used by EPA Region 8 at Colstrip in Montana. (Our analysis is described in Appendix C.3.) We estimate that addition of SCR would result in a capital cost of $33 million and an annual cost of $4 million. SCR operating at 0.05 lb/mmBtu would remove 841 tons of NO_X annually with a cost-effectiveness of $4,800/ton, which is typically considered reasonable.

Tucson Electric Power—Springerville Units 1 and 2

TEP Springerville Units 1 and 2 did not go through Prevention of Significant Deterioration (PSD) review because AZ DEQ determined that construction commenced during the brief window between BART-eligibility and PSD-eligibility. On November 9, 2001, the Grand Canyon Trust (Trust) filed a lawsuit alleging that TEP was operating the existing units at Springerville without a proper PSD permit. On February 13, 2002, EPA R9 wrote a letter to AZ DEQ alleging that "…Units 1 and 2 were constructed and operating without a valid PSD permit…"A consent decree on the Springerville litigation was signed in 2005 that resolved the Trust's federal enforcement action. In return, the owners stipulated that potential SO_2 emissions from Units1 and 2 would be reduced by 85% (90-day rolling average) and limited to 0.27 lb/mmBtu (12-month rolling average) averaged across the two units. As a result of the Trust lawsuit and EPA enforcement action against them, TEP was required to install new Low-NO_x Burners and upgrade the SO_2 scrubbers on Units 1 and 2 by adding an absorber module to each unit. The decree specified that should compliance with the decree conflict with any federal or state law or regulation, the more stringent requirement shall apply.

CAM data show that these scrubbers were operating at 89% efficiency during 2010 – 2012, and annual SO_2 emissions (2,670 tons/year @ 0.21 lb/mmBtu for Unit 1; 2,149 tons/year @ 0.16 lb/mmBtu for Unit 2) exceeded the presumptive BART limit of 0.15 lb/mmBtu.

This facility is about 80 km southeast of Petrified Forest National Park resulting in Q/d values of approximately 27 - 33 for SO_2 alone, which indicates the need for a thorough analysis.[8] Our analysis (described in Appendix D.1.) of impacts on visibility at Petrified Forest NP estimates that Springerville Units 1 and 2 currently cause visibility impairment at 2.1 dv, and contributes to impairment 33 - 41 days/year. The entire Springerville facility has an impact of 2.5 dv and contributes to impairment 39 - 63 days/year at

[8] Q/d values at Mount Baldy Wilderness Area, the nearest Class I area at 50 km, are 43 – 53.

Petrified Forest NP.[9] (Impacts at Gila Wilderness Area are greater, with the maximum facility impact of 3.5 dv and 92 – 114 days/year above 0.5 dv.) Unless EPA requires reduction of current emissions, this facility will continue to cause visibility impairment at Petrified Forest NP. Finally, there are 14 Class I areas within 300 km of Springerville, which supports the need for a thorough analysis.

While it is possible to remove the dry FGD units and replace them with more effective wet FGD units, EPA estimated the incremental cost effectiveness of such an effort to be approximately $17,000 to $22,000/ton, which is a range of values that EPA does not consider cost-effective. EPA considers the facility to be already well-controlled and proposes to find that it is not reasonable to require more stringent SO_2 controls on this facility at this time.

EPA estimated that the average cost-effectiveness of a new wet FGD removing 98% of Springerville Units 1 and 2 SO_2 emissions would be $915/ton and $869/ton, respectively. EPA also estimated that the cost-effectiveness of a new Lime Spray Drier (LSD) removing 97% of Springerville Units1 and 2 SO_2 emissions would be $930/ton and $890/ton, respectively. All of these estimates would typically be assumed to be very cost-effective.

EPA did not consider the age of the existing scrubbers. CAM data indicate that the scrubber on Unit 1 became operational in 1985 and Unit 2 in 1990. If the current scrubbers are now 27 and 22 years old, it is likely that they have been fully amortized and are also nearing the end of their useful lives. (EPA assumed a 20-year life for new scrubbers in its cost analyses.) And, even if EPA were to determine that they should be replaced, they would probably continue to operate for another five years while their replacements are under construction. We believe that it is appropriate for EPA to consider the replacement of this aging scrubber, especially one that is not meeting presumptive BART and is installed on a source causing visibility impairment. Even with the 2005 upgrades, a source should not be allowed to prolong the life of less-efficient control technology when more-efficient controls would otherwise be appropriate.

If EPA decides against replacement of the scrubbers, as noted above, EPA's BART Guidelines recommend that additional scrubber upgrades be evaluated, and we have noted several examples of upgrades to wet scrubbers. Scrubber upgrades therefore should be considered for Springerville Units 1 and 2.

For Selective Catalytic Reduction (SCR), we used an approach described in Appendix D.2. We estimate that addition of SCR to:

- Unit 1 would result in a capital cost of $72 million and an annual cost of $9 million. SCR operating at 0.05 lb/mmBtu would remove 1,727 tons with cost-effectiveness of $5,132/ton

[9] The values result from use of 20% best days for background extinction.

- Unit 2 would result in a capital cost of $76 million and an annual cost of $9 million. SCR operating at 0.05 lb/mmBtu would remove 1,907 tons with cost-effectiveness of $4,913/ton

Our estimated SCR costs should be considered reasonable.

We modeled the effects of the reduced SO_2 and NO_X emissions described above and found three-year average improvements of 0.74 dv at Petrified Forest NP and 0.97 dv at Gila Wilderness Area. Days with impacts greater than 0.5 dv would decrease by 24/yr at Petrified Forest NP and 27/yr at Gila Wilderness Area. Cumulative benefits would be even greater when considered across the 14 Class I areas within 300 km of Springerville.

Tucson Electric Power—Sundt Units 1 – 3

This facility is about 40 km west of Saguaro National Park. These units are all fired with pipeline-quality natural gas, so their SO_2 emissions are low and will remain low. We agree with EPA that it is not reasonable to require more stringent SO_2 controls on this facility at this time.

Douglas Lime

Emissions inventory data indicates that production at the Douglas Lime Plant essentially stopped during the recession. SO_2 emissions from the facility were 1,013 tpy in 2008, 42 tpy in 2009 and 0 tpy in 2010. We agree with EPA that it is not reasonable to require additional controls on this plant at this time, and that this plant should be considered for SO_2 controls in future planning periods, as it may return to its previous levels of emissions.

Reasonable Progress for Point Sources of NO_X

We agree with EPA that:

> Given the slow rate of visibility improvement on the worst days at all Class I areas, a thorough analysis is required before concluding that nothing more can be done to improve visibility. Therefore, EPA proposes to disapprove the State's finding that it is not reasonable to require additional NOX controls on non- BART point sources in Arizona.

EPA's Proposed Action

EPA has a court-ordered schedule for a FIP to address any disapproved elements of the SIP. The consent decree deadlines for this FIP are to propose by March 8, 2013, and take final action by October 15, 2013. We offer our assistance to EPA in that effort.