



IN REPLY REFER TO:

United States Department of the Interior

NATIONAL PARK SERVICE

Air Resources Division
P.O. Box 25287
Denver, CO 80225



April 26, 2012

Anne Arnold
U.S. Environmental Protection Agency
EPA New England Regional Office
Office of Ecosystem Protection
Air Quality Planning Unit
5 Post Office Square - Suite 100 (Mail Code OEPO5-2)
Boston, Massachusetts 02109-3912

EPA Docket ID Number EPA-R01-OAR-2008-0559

Dear Ms. Arnold:

The National Park Service (NPS) has reviewed the Environmental Protection Agency's (EPA) proposed "Approval and Promulgation of Air Quality Implementation Plans; New Hampshire; Regional Haze." NPS, in consultation with the U.S. Fish and Wildlife Service, commented in September 2008, June 2009, and December 2010, on New Hampshire Department of Environmental Services' (NHDES) regional haze plan and determinations of Best Available Retrofit Technology (BART).

As in our previous comments, we maintain that the BART modeling and interpretation did not follow EPA's BART modeling guidelines and the methods recommended by the MANE-VU states and the Federal Land Managers. Since only one year of meteorological data was modeled, NHDES should have used the 20% best natural background visibility conditions in the modeling and reported the maximum visibility impact at the Class I areas due to the source's baseline emissions and emissions control options. In NHDES's August 2011 revision, the BART modeling was partially corrected to use natural background visibility, but still incorrectly reports the visibility impact for the 20% worst days and the 20% best days rather than the single day with maximum visibility impact. While correcting the modeling results may not change the BART control decisions, EPA should not propose to approve methods and interpretations that are not consistent with the correct applications by the other MANE-VU states and states in other regions. We recommend that NHDES and EPA correctly report the maximum visibility impact from the BART units for baseline emissions and emissions control options.

Our enclosed comments address the BART determinations for Public Service New Hampshire's (PSNH) Merrimack Station Unit MK2 and Newington Station Unit NT1. We agree with the BART determination for Newington, but believe that for Merrimack Station, EPA and NHDES should have considered combustion controls in addition to the existing Selective Catalytic Reduction system, for greater reduction of nitrogen oxides emissions. We also believe that a Reasonable Progress four-factor analysis should have been completed for Merrimack Station Unit MK1.

The reasonable progress goals that NHDES set for the two Class I areas in New Hampshire are based on full implementation of the MANE-VU "Ask", a set of emission reduction strategies endorsed by all the MANE-VU states in 2007. The MANE-VU Ask included intended future emissions reductions beyond the existing state and federal requirements and relied on states to take further action to make the reductions enforceable. NHDES is not proposing emission reductions sufficient to meet the MANE-VU Ask, which is the basis for the reasonable progress goals for the Class I areas in NH.

In state-to-state consultation, NHDES requested that states with contributions to the Class I areas that are less than New Hampshire's contribution make additional emissions reductions to benefit New Hampshire Class I areas. EPA, in proposing to approve other Eastern and Midwestern states' implementation plans, has cited New Hampshire's consultation requests and measured the emissions reductions being implemented by MANE-VU and southern states against the MANE-VU Ask. Where states have not implemented a low sulfur fuel strategy, EPA has determined whether other proposed sulfur dioxide (SO₂) emissions reductions by electric utility and industrial sources will result in SO₂ reductions that are equivalent to the overall MANE-VU Ask.

Consistency across states is important in implementing the regional haze rule. The Federal Land Managers disagree with EPA's proposal to approve New Hampshire's plan to do less than the MANE-VU Ask, and recommend that EPA disapprove the New Hampshire plan because it does not meet the reasonable progress goals set by New Hampshire.

We appreciate the opportunity to work closely with NHDES and EPA to improve visibility in our Class I national parks and wilderness 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

Enclosure

cc:

Robert Scott, Director
Air Resources Division
New Hampshire Department of Environmental Services
29 Hazen Drive; PO Box 95
Concord, New Hampshire 03302-0095

Anne McWilliams
U.S. EPA Region 1
5 Post Office Square
OEP05-2
Boston, Massachusetts 02109-3912

National Park Service (NPS)
BART and Reasonable Progress Review Comments
Public Service New Hampshire (PSNH) Merrimack Station
April 26, 2012

PSNH Merrimack Station has two coal-fired steam-generating boilers that operate nearly full time to meet baseload electric demand. Unit MK2, the only BART-eligible unit, is a wet-bottom, cyclone-type boiler with a heat input rating of 3,473 mmBtu/hr and an electrical output of 320 MW. Installed in 1968, this generating unit is equipped with selective catalytic reduction (SCR) to remove oxides of nitrogen (NO_x) formed during the combustion process. Two electrostatic precipitators (ESPs) operate in series to capture particulate matter (PM). Also, a scrubber system that reduces sulfur dioxide (SO₂) emissions went into operation in October of 2011. According to EPA's Clean Air Markets (CAM) database, in 2011, emissions from Unit #2 were: 14,290 tpy SO₂ (@ 1.92 lb/mmBtu) and 1,951 tpy NO_x (@ 0.27 lb/mmBtu).

BART for SO₂

New Hampshire law¹ requires PSNH Merrimack Station to install and operate a scrubber system for both Unit MK1 and Unit MK2 by July 1, 2013. While the primary intent of this law is to reduce mercury (Hg) emissions from the company's coal-fired power plants, a major co-benefit is SO₂ removal. Pursuant to this statutory obligation, New Hampshire issued a permit to PSNH on March 9, 2009, for the construction of a wet, limestone-based FGD system to control mercury and SO₂ emissions at Merrimack Station. The permit requires an SO₂ control level of at least 90 percent for Unit MK2. The specific language of the permit states as follows:

Beginning on July 1, 2013,...SO₂ emissions shall be controlled to 10 percent of the uncontrolled SO₂ emission rate (90 percent SO₂ removal)... The Owner shall submit a report no later than December 31, 2014 that includes the calendar month average SO₂ emission rates at the inlet and outlet of the FGD and the corresponding calendar month average emissions reductions during the preceding 12 months of operation,...DES will use this data to establish the maximum sustainable rate of SO₂ emissions reductions for MK2. The maximum sustainable rate is the highest rate of reductions that can be achieved 100 percent of the time...This established rate shall be incorporated as a permit condition for MK2. Under no circumstances shall the SO₂ removal efficiency for MK2 be less than 90 percent.

This plant must also meet general regulations for coal-burning devices that limit the sulfur content of the coal (input) to 2.0 pounds per million BTU gross heat content averaged over any consecutive 3-month period, and 2.8 pounds per million BTU gross heat content at any time. Since 2002, the facility has operated well within these fuel limits. More specifically, PSNH has worked to control coal sulfur content to reduce SO₂ emissions and minimize the purchase of SO₂ allowances. Because the particular boiler design does not permit the burning of straight low-sulfur coal, the company blends coals to bring average sulfur content to a level that is consistent with sustainable boiler operations. PSNH must also meet a fleet-wide SO₂ emissions cap of 55,150 tons/year

¹ RSA 125-O:11-18, [Multiple Pollutant Reduction Program, Mercury Emissions](#)

effective for all electrical generating units at its Merrimack, Newington, and Schiller Stations.

The effect of the Hg/SO₂ control requirements cannot be determined yet because the scrubber system has only been operational for a few months, but it has the potential to reduce facility-wide SO₂ emissions to less than 4,000 tons per year (tpy). If only the presumptive BART limits (0.15 lb/mmBtu output or 95% control) had been implemented on MK2, plant-wide SO₂ emissions would be about 12,000 tpy (based upon 2010 emissions and heat input data). We agree with EPA's conclusion that the proposed BART emission limits for SO₂ are "reasonable."

BART Analysis for NO_x

We believe that NHDES erred in the first step of the BART process in which it is required to "identify all available retrofit emissions control techniques." NHDES should have reviewed the addition of combustion controls to the existing Selective Catalytic Reduction (SCR) system. Review of Advanced Separated Overfire Air (ASOFA) would demonstrate cost effective additional NO_x emissions reductions.

In its initial (2008) analysis, NHDES states that:

The BART statute specifically states that if a facility is already using the most stringent controls for a pollutant, then no further control consideration needs to be made. PSNH Merrimack Station currently operates an SCR system that reduces NO_x emissions by 85%. SCR is the most effective control option for NO_x emissions and thus no other options will be considered as BART.

In its most-recent (2011) analysis, NHDES states that:

Because of the current boiler design, the only NO_x emission control technology options available and potentially applicable to Unit MK2 are selective non-catalytic reduction and selective catalytic reduction.

Merrimack MK2 is unusual in that it has no combustion controls to reduce NO_x. Our review of CAM data found that, in 2011, 71 coal-fired cyclone boilers (including Merrimack MK2) were in operation. Of the 29 of those boilers equipped with SCR, all but six (including Merrimack MK2) were also equipped with combustion controls to reduce the amount of NO_x to be treated by the downstream SCR.

We have reviewed four other coal/lignite-fired cyclone boilers (Kincaid in IL and Leland Olds #2 and Milton R. Young #1 & #2 in ND) that are subject to BART. The Kincaid EGU is already equipped with overfire air (and SCR), and the three cyclone boilers in ND will install Advanced Separated Overfire Air (ASOFA) and Selective Non-Catalytic Reduction as BART. EPA has approved the ND BART proposals and proposed to approve the Kincaid BART proposal.

The BART analyses for the ND EGUs are especially informative:

- Leland Olds #2 is a 440 MW cyclone boiler burning ND lignite. In its BART analysis, ND determined that ASOFA could reduce NO_x emissions by 28% (down to 0.482 lb/mmBtu).

- Milton R. Young #1 is a 257 MW cyclone boiler burning ND lignite. In its BART analysis, ND determined that ASOFA could reduce NO_x emissions by 39.5% (down to 0.513 lb/mmBtu).
- Milton R. Young #2 is a 477 MW cyclone boiler burning ND lignite. In its BART analysis, ND determined that ASOFA could reduce NO_x emissions by 37.7% (down to 0.489 lb/mmBtu).

NHDES states that, “Data available from the period of 1993 to early 1995, prior to operation of the SCR, provide a baseline for uncontrolled NO_x emissions in the range of 2.0 to 2.5 lb/MMBtu” and that “this information indicates that Unit MK2 achieves a control level that exceeds 85 percent most of the time and frequently surpasses 90 percent.” We believe that, if ASOFA were installed on MK2 and achieved a one-third reduction in the uncontrolled NO_x (down to 1.6 lb/mmBtu, for example), an 85% reduction by the existing SCR (with the addition of ASOFA) would reduce NO_x rates to 0.24 lb/mmBtu instead of the 0.30 lb/mmBtu 30-day rolling average limit proposed by NHDES. The presumptive BART limit for this boiler is 0.10 lb/mmBtu. NHDES has estimated that a 25% NO_x reduction would provide 0.5 cumulative deciviews of visibility improvement at Acadia National Park, Great Gulf Wilderness Area, and Lye Brook Wilderness Area. EPA should evaluate the costs and benefits of installing combustion controls (e.g., ASOFA) at Merrimack MK2, just as most SCR-equipped cyclone boilers around the US have already done.

BART for PM

While we commend NHDES for reducing its limit on Total Suspended Particulate to 0.08 lb/mmBtu, the data presented by NHDES indicates that the ESPs achieved 0.019 lb TSP/mmBtu in 2002. Although the existing ESPs may represent BART, NHDES should establish a federally-enforceable permit limit that reflects the actual capabilities of the units.

Reasonable Progress

Unit MK1 is a cyclone-type boiler with a heat input rating of 1,238 mmBtu. Because it was installed in 1960, it is not BART-eligible. Nevertheless, because it is one of the 167 stacks identified by MANE–VU as a top contributor to visibility impairment in any of the MANE–VU Class I areas, MK1 should have been subject to analysis under the Reasonable Progress (RP) provisions of the Regional Haze Rule. MK1 is equipped with SCR and ESPs, as well as the new Hg/SO₂ scrubber system that it shares with MK2. According to the CAM database, in 2011, emissions from Unit #1 were: 8,102 tpy SO₂ (@ 2.4 lb/mmBtu) and 1,001 tpy NO_x (@ 0.295 lb/mmBtu).

EPA states in its FR Notice:

New Hampshire relied on emission reductions from a number of ongoing and expected air pollution control programs as part of the State’s long term strategy. For electrical generating units (EGUs), New Hampshire’s Regulation Chapter Env-A 3200, NO_x Budget Trading Program which limits ozone season NO_x emissions on all fossil-fuel fired EGUs greater than 15 MW to 0.15 lb/MMBtu. However, a unit can meet this limit via NO_x credits.

CAM data indicates that MK1 is not meeting the 0.15 lb/mmBtu “target.” Since New Hampshire is not included in the NO_x State Implementation Plan Call, the Clean Air Interstate Rule, or the Cross State Air Pollution Rule, we are not aware of any NO_x trading approach that NH DES is relying to meet the 0.15 lb/mm Btu target. In the absence of any discussion by NH DES or EPA regarding additional control of emissions from MK1, we can only state that a four-factor RP analysis is required, and we believe it is likely that we would have similar comments regarding SO₂ and NO_x emissions from MK1 as we do for MK2.

National Park Service (NPS)
BART Review Comments
Public Service New Hampshire (PSNH) Newington Station Unit NT1
April 26, 2012

Unit NT1 is the sole electrical generating unit at PSNH Newington Station. It operates at irregular times, principally during periods of peak electric demand. Power is derived from an oil- and/or natural-gas-fired steam-generating boiler with a heat input rating of 4,350 mmBtu/hr and an electrical output of 400 MW. Installed in 1968, the boiler is equipped with Low-NO_x burners, an overfire air system, and water injection to minimize the formation of oxides of nitrogen (NO_x) during the combustion process. The facility also has an electrostatic precipitator to capture particulate matter (PM) in the flue gases. Partial control of SO₂ emissions is provided by sulfur content limits on the fuel oil. According to EPA's Clean Air Markets (CAM) database, in 2002, which was the basis of the New Hampshire Department of Environmental Services (NHDES) BART analysis, emissions from Unit #1 were: 5,226 tpy SO₂ (@ 1.08 lb/mmBtu) and 943 tpy NO_x (@ 0.18 lb/mmBtu). Newington NT1's base case visibility impacts in deciviews (dv) are: 1.22 dv at Acadia National Park, 0.99 dv at Great Gulf Wilderness Area, and 0.28 dv at Lye Brook Wilderness Area. According to the CAM database, in 2011, emissions from Unit #1 were: 304 tpy SO₂ (@ .325 lb/mmBtu) and 118 tpy NO_x (@ 0.094 lb/mmBtu).

BART for SO₂

NHDES in its 2011 BART proposal stated:

In recognition of the dual-fuel capability of Unit NT1, NHDES has developed for this facility a requirement by rule establishing a new sulfur dioxide emission limitation of 0.50 lb/MMBtu applicable to any fuel type or mix. The recently adopted rule will allow the facility the flexibility to burn natural gas and/or fuel oil in any feasible ratio, depending on market conditions.

New Hampshire's new rule will cause a substantial reduction in SO₂ emissions from Unit NT1 regardless of fuel type while rendering unnecessary any need to speculate on the direction of relative fuel supplies and prices. For the first regional haze progress report, due no later than December 17, 2012, NHDES will review fuel usage, fuel supplies, fuel prices, and plant utilization/capacity factors to determine whether the fuel sulfur limitation described above is still appropriate as BART control for Unit NT1. Should the review indicate a different BART control level, the facility's Title V operating permit will be amended as necessary before its expiration date of March 31, 2012, fifteen months prior to the effective date of proposed BART control measures. The use of low- or ultra-low-sulfur residual fuel oil will be reconsidered as part of this review. Looking beyond 2012, a possible further reduction in the sulfur content of fuel oil burned at this facility would be consistent with MANE-VU's plan to reduce sulfur levels to 0.25-0.5% for all residual fuel oils throughout the region by 2018.

We agree with the NHDES approach that use of lower-sulfur fuels is BART for this EGU and a review of that determination is appropriate in December, 2012.

BART for NO_x

NHDES in its 2011 BART proposal stated:

[R]eviewed emissions data for Unit NT1 for the period from 2003 to 2005, when more than 99 percent of the gross heat input came from residual fuel oil. Monthly average NO_x emissions ranged between 0.21 and 0.30 lb/mmBtu. These values compare favorably with the facility's NO_x RACT limit of 0.25 lb/mmBtu, daily average, when burning natural gas and 0.35 lb/mmBtu, daily average, when burning fuel oil. However, the extent of the data record is insufficient to demonstrate that the facility could sustainably meet more restrictive emission limits than these. The current NO_x RACT limitations for Unit NT1 are therefore considered to represent BART control levels.

We agree that the reduced capacity utilization makes it difficult today to justify additional technology retrofits to reduce NO_x emissions at this facility. EPA states that the facility's existing permit limits NO_x emission to a daily average of 0.35 lb/mmBtu when burning oil and 0.25 lb/mmBtu when burning a combination of oil and gas. Our review of CAM data from 1/1/11 to 4/17/12 found that the unit had exclusively burned natural gas and the maximum daily emission rate was 0.21 lb/mmBtu.

BART for PM

NHDES states:

The single available stack test on this unit indicates that the ESP yields controlled TSP emission rates in the vicinity of 0.06 lb/mmBtu versus a currently permitted rate of 0.22 lb/mmBtu. The extent of the data record is insufficient to support consideration of a BART performance level more restrictive than the existing permit limit. The facility's Title V operating permit requires that a compliance stack test for PM emissions be performed on Unit NT1 before the permit expires on March 31, 2012. NHDES will review the stack test results to ascertain the unit's performance and incorporate any new limit into a permit amendment by the permit expiration date, as appropriate.

We agree with the NHDES approach and request that the results of the stack test and permit renewal process described above be entered into the docket.