

August 24, 2007

N3615 (2350)

| | |
|-----------------|-------------|
| DOCKET | |
| 06-AFC-7 | |
| DATE | AUG 24 2007 |
| RECD. | AUG 27 2007 |

Rick Martin, Air Pollution Control Officer
North Coast Unified Air Quality Management District
2300 Myrtle Avenue
Eureka, California 95501

Dear Mr. Martin:

We have reviewed the Class I Impact Analysis report prepared by Sierra Research for the Humboldt Bay Repowering Project (HBRP) located near Eureka, California. We have also reviewed the California Air Resources Board draft engineering evaluation which contains the Best Available Control Technology (BACT) analysis for HBRP. The HBRP facility is located approximately 42 kilometers (km) south of Redwood National Park, a Class I air quality area administered by the National Park Service (NPS). The HBRP is a major modification and will include the installation of 10 new Wartsila Model 18V50DF engine/generator sets, with a total capacity of about 163 MW. The new equipment replaces two natural gas-fired steam boilers (50 MW each) and two distillate oil peaking combustion turbines (15 MW each). The new engines are intended to operate primarily on natural gas, but have the capability of using ultra-low sulfur diesel fuel when natural gas delivery is disrupted. It is estimated that diesel fuel could be used for up to 50 hours per year of operation (down from original estimate of 800 hours per year). The HBRP replacement of the existing boilers and turbines will cause an emission reduction of approximately 573 tons per year (TPY) of nitrogen oxide (NO_x), and an increase in emissions of sulfur dioxide (SO₂) of 0.8 TPY, and 158 TPY of particulate matter less than 10 microns (PM₁₀)/particulate matter less than 2.5 microns (PM_{2.5}).

We have the following comments concerning the Sierra Research Class I Impact Analysis and the proposed BACT analysis.

Air Quality Analysis

The Sierra Research report assessed plume impacts at Redwood National Park using VISCREEN modeling analysis and Class I increment, visibility and acid deposition impacts using CALPUFF modeling analysis.

Upon our review of the VISCREEN plume analysis performed for HBRP and its potential plume impacts to Redwood National Park we find that the analysis incorrectly subtracted the **impacts** of the existing sources that are to be retired from the **impacts** of the proposed new sources. The addition or subtraction of impacts is inappropriate for discrete plume analyses and does not allow us to properly determine potential plume impacts of the new sources emissions at Redwood National Park.

Based on new information we received on August 1, 2007, from Sierra Research and further review of computer files of the modeling analysis, we re-modeled the plume impacts of the new sources alone. We applied the emission rates (56.92 lb/hr of NO_x, 4.03 lb/hr of SO_x, and 42.75 lb/hr of speciated PM) for the ten new engines provided by Sierra Research. We based our modeling on the Level 2 VISCREEN file named HUMNEWG2.SUM (natural gas firing scenario) which was used by Sierra Research in their analysis. In their modeling they conducted a VISCREEN Level 2 analysis where the 1% worst-case meteorological data were applied as per the recommendations found in the EPA Workbook for Plume Visual Impact Screening and Analysis (EPA-450/4-88-015 September 1988). The 1% worst case meteorological data were determined to be "F" atmospheric stability and a wind speed of 3 meters per second. The impact under these meteorological conditions was calculated to be a Delta E (change in color) against a terrain background of 3.675 which is above the impact threshold (Delta E of 2.0). The plume contrast impact under these meteorological conditions is (-0.038) which is below the contrast impact threshold (an absolute value of 0.05). We followed additional guidance found in the EPA VISCREEN Workbook, specifically the section "ACCOUNTING FOR COMPLEX TERRAIN", where in complex terrain "the worst-case" stability class should be shifted one category to a less stable atmospheric condition. Therefore, considering the intervening terrain between the HBRP site and Redwood National Park, we ran the analysis applying "E" atmospheric stability at a wind speed of 3 meters per second. The results of this analysis indicate impacts below the VISCREEN Delta E and contrast thresholds with a Delta E of 1.986 and a contrast of 0.015. We therefore do not anticipate any perceptible plume impacts at Redwood National Park. Our VISCREEN analysis is enclosed. Please note that we only consider plume impacts **inside** the Class I area and not **outside** the Class I area. Because the North Coast Unified Air Quality Management District will limit oil firing to only 50 hours per year, we do not request that Sierra Research conduct a VISCREEN analysis for emissions from oil firing.

Considering the emission reductions associated with the units being shut down, the total amount of annual emissions of NO_x, SO₂ and PM₁₀/PM_{2.5} from the new engines, and the distance to Redwood National Park, we will not ask Sierra Research to conduct a re-analysis with the EPA CALPUFF refined model. However, for future uniform haze modeling analyses, the use of the CALPUFF-Lite model, used by Sierra Research in this case, is no longer an accepted modeling method. CALPUFF-Lite is currently not listed as an approved modeling procedure in the EPA Air Quality Modeling Guidelines (40 CFR 51, Appendix W).

BACT Analysis

According to the ambient air quality impact analysis submitted by the applicant, the HBRP combined PM impacts exceed the state 24-hr and annual PM₁₀ standards and the federal 24-hr PM_{2.5} standard. Because of the poor local air quality and in consideration of projected impacts which would exacerbate the non-attainment problem as well as impact visibility at Redwood National Park, it seems that a more rigorous BACT analysis is warranted. The HBRP draft permit proposes to limit PM₁₀ to 0.21 g/bhp-hr when burning diesel fuel. The North Coast Unified Air Quality Management District (NCUAQMD)

has identified other internal combustion engines burning diesel fuel and using Diesel Particulate Filters (DPF) to reduce PM₁₀ emissions to as low as 0.0116 g/bhp-hr (Kings County). Please consider that when addressing non-attainment issues and potential visibility impacts at Redwood National Park, the assertion by the applicant that DPFs "could be cost-prohibitive" is not an adequate justification to eliminate that proven technology in this case. If NCUAQMD does allow economic factors to be considered in this case, then it should require DPFs as BACT, unless HBRP demonstrates that this control technology is not feasible at Humboldt Bay.

Please note that our comments pertain to the HBRP Class I air quality impact analysis and BACT analysis. It is possible that additional emission reductions may be required at the Humboldt Bay facility in the future under the Reasonable Progress requirement of the Regional Haze Rule.

Thank you for involving us in the review of HBRP Class I impact analysis and BACT analysis. Please contact me at (303) 969-2817 if you have any questions regarding our comments concerning HBRP.

Sincerely,

Dee Morse
Environmental Protection Specialist

Enclosure

cc:

Nancy Matthews
Sierra Research
1801 J Street
Sacramento, CA 95814

bcc:

PWRO: Judy Rocchio
REDW: Steve Chaney, Terry Hofstra
USFS: Trent Procter, Suraj Ahuja
ARS: Howard Gebhart
ARD-DEN: Chris Shaver, Permit Review Group
ARD-DEN:DMorse:dwm:7/25/07:x2817:projectfile#2894:Humboldt Bay 8-07Ltr.Doc