

Environmental Law and Justice Clinic

September 16, 2009

By E-Mail and U.S. Mail

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Weyman Lee, P.E.

Senior Air Quality Engineer

Bay Area Air Quality Management District

939 Ellis Street

San Francisco, CA 94109

Re: August 2009 Draft PSD Permit for Russell City Energy Center

Dear Mr. Lee:

We are writing on behalf of Citizens Against Pollution (CAP) to provide supplemental comments on the draft prevention of significant deterioration (PSD) permit for the proposed Russell City Energy Center (RCEC). CAP appreciates that BAAQMD issued an Additional Statement of Basis for the changed draft permit conditions. Earthjustice is submitting a separate letter, also on behalf of CAP, and we are incorporating the comments in that letter by reference.

As before, the draft permit once again fails to meet federal PSD, and therefore BAAQMD should not issue the permit as proposed. In addition to complying with the Clean Air Act's PSD provisions, BAAQMD should take care to ensure compliance with the nonattainment new source review (NSR) requirements. BAAQMD has failed in responding to CAP's comments as to NSR even though BAAQMD has a regulatory responsibility over the Act's NSR requirements. BAAQMD's statement – that any appeal period for challenging the NSR provisions has expired – is irresponsible. The public who will bear the burden of breathing pollution from the proposed power plant deserves a meaningful response, not a legalistic and technical response. BAAQMD should provide a response befitting its role as a public health and regulatory agency with the responsibility over NSR compliance, particularly given that asthma is a serious concern to residents nearby and students at Chabot-Las Positas Community College District, and asthmatics are susceptible to adverse health impacts from exposure to ground-level ozone, a pollutant governed by the NSR provisions.

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I. THE DISTRICT'S BACT ANALYSIS SUFFERS FROM THE FUNDAMENTAL MISTAKE THAT ACHIEVABLE MEANS ACHIEVED LIMITS (WITH OPERATING DATA OVER A LONG TIME, PLUS A LARGE COMPLIANCE MARGIN).

The Supreme Court has noted that in establishing National Ambient Air Quality Standards, the Clean Air Act amendments were intended to be “technology-forcing.” *Train v. Natural Resources Defense Council*, 421 U.S. 60, 91 (1975). The Act’s requirements “are expressly designed to force regulated sources to develop pollution control devices that might at the time appear to be economically or technologically infeasible.” *Union Elec. Co. v. E.P.A.*, 427 U.S. 246, 257 (1976). Consistent with the Act, BACT is thus “principally a technology-forcing measure that is intended to foster rapid adoption of improvements in control technology.” *In re: Columbia Gulf Transmission*, 1989 EPA App. LEXIS 26, *10. *See also In re: Tennessee Valley Auth.*, 2000 EPA App. LEXIS 25, *78-79 (“the program Congress established was particularly aggressive in its pursuit of state-of-the-art technology at newly constructed sources”). Thus, the best *achieved* control technology is not necessarily the best *achievable* technology, and therefore does not constitute BACT.

The proposed emissions are not technology forcing and therefore do not comply with the Act’s BACT requirements. In determining BACT limits, the District improperly relied not only on emissions limits *achieved* at existing facilities but on *maximum* achieved limits. Moreover, the District added a “compliance margin” of unexplained origin on top of those maximum achieved emissions limits. In so doing, BAAQMD rejected realistically *achievable* limits. It is hard to imagine how technological improvements envisioned by BACT requirements would ever be incorporated into new sources, if permitting authorities solely rely on maximum achieved emissions, with a wide compliance margin, to set BACT. The District’s BACT analysis suffers from this defect throughout.

A. CO Limits

BAAQMD examined the permit conditions for several other facilities, and concluded that 2.0 ppm was the “emerging consensus” and seemingly achievable. Additional Statement of Basis for Draft Federal “Prevention of Significant Deterioration” Permit (August 3, 2009) [ASOB] at 47, *available at* http://www.baaqmd.gov/pmt/public_notices/2008/15487/index.htm. This determination was based on already existing facilities, however, and ignores that lower BACT limits for CO have been issued to other similar facilities, such as Kleen Energy Systems and CPV Waren. *Id.* Again, it is improper to rely on an assumption that the lowest achieved limits are the lowest achievable.

BAAQMD justifies ignoring the lower limits in existing permits by explaining that “the mere issuance of a permit [does not establish] that limit as BACT, without some further demonstration that the limit is achievable.” *Id.* BAAQMD states that facilities with lower CO limits are not yet built, and therefore there is no operating data on which to determine achievability. *Id.*

The District has misapprehended its burden. To reject existing limits as BACT, the District must do more: “a permit requiring the application of a certain technology or emission limit to be achieved for such technology usually is sufficient justification to assume the technical feasibility of that technology or emission limit.” New Source Review Workshop Manual (Draft Oct, 1990) [NSR Manual], at B.7. The NSR Manual explains that, where a permit limit has been established elsewhere, a permitting agency must rely on more than simply that there are no operating data to reject the limit:

A demonstration of technical infeasibility should be clearly documented and should show, based on physical, chemical, and engineering principles, that technical difficulties would preclude [implementation].

For example, in cases where the level of control in a permit is not expected to be achieved in practice (e.g., . . . the project was canceled, or every operating source at that permitted level has been physically unable to achieve compliance with the limit), and supporting documentation showing why such limits are not technically feasible is provided, the level of control . . . may be eliminated from further consideration.

NSR Manual at B.7.

The Manual goes on to give other examples of circumstances where a limit higher than has previously been required may be appropriate, *id.* at B.23:

[T]he consideration of a lower level of control for a given technology may be warranted in cases where past decisions involved different source types [or] where the applicant can demonstrate to the satisfaction of the permit agency that other considerations show the need to evaluate the control alternatives at a lower level of effectiveness.

Manufacturers’ data, engineering estimates and the experience of other sources provide the basis for determining achievable limits.

[I]t is presumed that the source can achieve the same emission reduction level as another source unless the applicant demonstrates that there are source-specific factors or other relevant information that provide a technical, economic, energy or environmental justification to do otherwise.

Id. at B.24.

Neither the applicant nor the District has met the burden that is required for a higher limit than that already contained in other permits. If the District could simply reject established permit limits because of lack of operating data, one could never rely on permit limits in proposed projects because operating data necessarily do not exist in those cases. But the regulations and the NSR Manual make clear that such permit limits are to be considered BACT. Thus, the absence of operating data alone is not an adequate justification for rejecting such limits as BACT. That approach indeed makes

sense: BACT is not backward looking, based on operating data of other facilities. It is intended to be technology forcing, focused on the best technology for pollution control.

B. PM Limits

In determining the BACT limit for particulate matter (PM), BAAQMD relied on testing from similar facilities to determine BACT to be 7.5 lb/hr. ASOB at 51. The average PM emissions from these source tests varied from 4.58 lb/hr to 10.65 lb/hr. *Id.* BAAQMD eliminated the highest 5% of the test results, believing them to be anomalies, and based BACT on the remaining 95% of results, but the District does not explain the basis for choosing this percentage. *Id.* Again, neither the applicant nor the District has pointed to any source-specific factors for relying on such a lenient standard. *See* NSR Manual at B.7, B.23-24.

Furthermore, total PM emissions from certain facilities – which were built long ago – were well below the 7.5 lb/hr limit, which the District determines is BACT. *See* “Summary of Filterable PM₁₀” (the spreadsheet referenced in ASOB at 51 n.98). The District has not explained why a newly proposed facility could not meet the lower range of those emissions.

Once again, BACT cannot properly be determined based solely on the operating data of facilities that have been built long ago. In addition, BACT cannot ignore the lowest limit currently achieved by such power plants.

C. GHG Limits

The facility is estimated to emit nearly 2 million metric tons per year of CO₂ equivalents. ASOB at 27. The emission limits for GHGs are set assuming approximately 9% total degradation over the lifetime of the equipment. *Id.* at 28. What is the basis for this large degradation figure?

II. THE DISTRICT’S BACT ANALYSIS FOR STARTUP AND SHUTDOWN DOES NOT COMPLY WITH PSD AND NSR REQUIREMENTS.

A. Startup and Shutdown Emissions Limits Are Backward Looking Rather than Technology Forcing and Therefore Do Not Comply with the Clean Air Act’s BACT Requirements.

As with other limits, in determining startup NO_x limits, BAAQMD improperly relied on *maximum* limits *achieved* at existing facilities and added a compliance margin. In so doing, BAAQMD rejected realistically *achievable* limits set at other facilities.

1. NO_x Limits

Cold Startup Limits

In determining the NO_x startup limits (as NO₂), BAAQMD dismissed limits that have been achieved in fact and are lower than the proposed limit of 480 lbs. per startup

event. The facilities, even those where construction commenced as long ago as 2000, have demonstrated that they can emit as low as 86 pounds. *See* Statement of Basis for Draft Amended Federal “Prevention of Significant Deterioration” Permit (Dec. 8, 2008), [SOB] at 45, *available at* http://www.baaqmd.gov/pmt/public_notices/2008/15487/index.htm. The average emissions per startup event are in the range of 183 to 193 lbs. *See* ASOB at 61. The proposed limit of 480 lbs is in fact the second highest emissions demonstrated at Sutter, which commenced construction in 1999. SOB at 45. In explaining its rejection of lower emissions performance levels in the range, BAAQMD states that a compliance margin is reasonable to “accommodate the variability in emissions among startup events over time.” ASOB at 62. BAAQMD’s analysis, however, makes no effort to determine any cause of such variability, such as practices that might have contributed to the range.

BAAQMD’s analysis does not meet BACT requirements because it fails to demonstrate that there are “source-specific factors or other relevant information that provide a technical, economic, energy or environmental justification” to increase the limit from the emissions levels in the lower range of those that are achieved in fact by other power plants. NSR Manual at B.24 (“Control Techniques with a Wide Range of Emissions Performance Levels”). There is nothing in the SOB or the ASOB that attempts a source-specific explanation other than the unexplained need to provide a compliance margin. BAAQMD fails even to explain why the margin must be so wide, or why BAAQMD could not have set both an average and maximum emissions limit, rather than a limit that is effectively a maximum limit that is generally higher than all of the maximum emissions.¹

Hot Startup Limits

As with cold startup limits, the District ignored average emissions from even the 2000-vintage plants like Delta (25 to 29.8 lbs) to set the proposed limit at 95 lbs. ASOB at 62-63.² Rather, the District relied on maximum emissions and then provided an unexplained margin to set BACT. The proposed limit is thus three times the average NOx emissions. And yet there is no justification provided for this large margin. For all of the reasons that the District failed to comply with BACT requirements as to cold

¹ The data BAAQMD has gathered for cold startup emissions (lbs per startup) from vintage power plants (other than Palomar, which is of more recent vintage) are summarized as follows:

Power Plant	Average Emissions	Maximum Emissions
RECE	-----	480
Palomar	182.8	375 or 437, depending on calculation
Metcalf	185 (low of 86, SOB)	281
Delta	193 (low of 86, SOB)	335
Sutter (271-499, with 480 being the highest)		

² When we refer to commencement of construction dates of other power plants in California, we have drawn that information from the website maintained by the California Energy Commission. *See* http://www.energy.ca.gov/sitingcases/all_projects.html.

startup limits, the District has failed to comply with BACT requirements as to hot startup limits.

2. Use of Auxiliary Boiler

BAAQMD rejects auxiliary boilers as BACT, even though they are demonstrated as feasible since they are used at the Lake Side and Caithness plants, and “data show that using the auxiliary boiler will reduce fuel usage (and consequently emissions) by approximately 18% for warm startups and approximately 31% for cold startups.” ASOB at 69.

BAAQMD’s explanation for rejecting the use of auxiliary boilers is its cost-effectiveness analysis. The analysis does not comply with BACT requirements because it is based on a faulty and baseless assumption about the number of cold startups and warm startups. BAAQMD assumes “an annual operating profile containing 6 cold startups and 100 warmup startups.” ASOB at 69. But there is no limit to startup and shutdown events, and therefore it is unclear how the District derived these numbers. Even assuming that daily NOx and CO limits provide an upper limit to the number of daily startup events, calculations show that CO limits prove to be the more limiting factor. (The maximum daily CO limit divided by the maximum CO emissions from a startup and shutdown event yields 2.8 startup and shutdown events. Assuming 2 startup and shutdown events per day there could be far more than 700 warm startup and shutdowns per year. Since the District’s data show that not all startup events produce the maximum emissions proposed in the draft permit, 700 warm startup and shutdowns are rather conservative as an estimate.)

Thus, the assumption on which BAAQMD relies to calculate the cost-effectiveness is faulty, and the District’s BACT analysis therefore does not meet the BACT requirements of the Act.

3. Flex Plant 10 Technology

BAAQMD claims that Flex Plant 10 technology is inappropriate because it is for peaking to intermediate-duty baseload operations. This claim begs the question. Neither the applicant nor the District has provided a credible startup and shutdown scenario. Various scenarios are possible: from two daily startup and shutdown of varying kinds (cold, warm, or hot); 52 cold starts and 260 hot starts per year; and 365 hot startups and shutdowns per year. See our comments dated February 5, 2009; *see also* CEC Staff Assessment - Part 1 and 2 Combined (June 29, 2007), *available at* <http://www.energy.ca.gov/2007publications/CEC-700-2007-005/CEC-700-2007-005-FSA.PDF>, at 4.1-8. The District has now added another scenario, although without any reference to its source: 6 cold startups and 100 warm startups. ASOB at 69. Unless there is a credible determination of the likely scenario of startup and shutdown events, no one can legitimately evaluate which technology should be applied to achieve the lowest emissions mandated by BACT requirements.

4. Startup and Shutdown Durations

BAAQMD argues that startup and shutdown durations are not subject to BACT requirements. ASOB at 66. On the contrary, such durations should be subject to BACT because they are a “devise or technique” (BAAQMD Regulation 2-2-206) or a method, system, work practice, or operational standard (NSR Manual at B.1-B.2) and therefore are covered in the definition of BACT.

Despite its initial argument that startup and shutdown durations are not subject to BACT, BAAQMD nevertheless has provided a substantive reason for failing to set the durations as permit limits or to set shorter durations. BAAQMD explains that the emissions limits are regardless of the duration of the startup and shutdown events and therefore the duration should not matter.

BAAQMD is right on this matter only if the hourly emissions during a shorter startup duration are higher than the hourly emissions during a longer duration. The District has provided nothing to back up this assumption.³ Indeed, logic would dictate that a longer startup duration means that the limits applicable during normal operations do not apply for that much longer. As the District has acknowledged, “there may be partial or no abatement for NOx and Co for a portion of the startup period.” SOB at 38; *see also* 2007 CEC Staff Report at 4.1-8 (“hourly start-up emissions rates are six, seven and 68 times higher than normal operations for NOx, POC and CO, respectively”). Thus, the District’s assumption that the duration has no impact on the emissions limit is unsupported. (If the District is right, why did the Colusa permit pick the shorter duration?)

In fact, if durations are not set based on what the best technology can achieve, how will the District be able to know when the pollution controls can work at its optimum and therefore the source should comply with limits applicable during non-startup operations?

BAAQMD also states that the shorter startup duration in the Colusa permit does not provide any “hard evidence” on which to conclude that such durations are achievable. ASOB at 67 n.119. BAAQMD states that there are no actual operating data showing that the limits are achievable and that the permitting agency explained that the “limits might not turn out to be achievable,” and if so they will be reevaluated. *Id.* Based on this explanation, BAAQMD fails to set a shorter startup duration. More is necessary to come to that conclusion, according to the NSR Manual. *See* NSR Manual at B.7.

³ The following example illustrates this problem. The first scenario makes the assumption the District makes.

	1st Hr.	2d Hr	3d Hr	Total Emissions
2 hours of startup	$95/2 = 47.5$	$95/2 = 47.5$	16.5	111.5 lbs
3 hours of startup	$95/3 = 31.7$	$95/3 = 31.7$	$95/3 = 31.7$	95 lbs

If, however, the two hours of startup, the emissions are the same as the hourly rates of 31.7 lb, then the total emission equal 70.9 lbs [that is, $31.7+31.7+16.5$], which is less than 95 lbs.

BAAQMD has documented only speculation. BAAQMD has not documented that equipment that meets BACT is physically unable to achieve a shorter startup duration. On the contrary, the NSR Manual dictates that the Colusa permit is sufficient justification to assume the technical feasibility of the shorter duration.

B. CEC's Staff Analysis

The District's protestations to the contrary, the BACT analysis is skewed to retaining the applicant's equipment, which it already has purchased without ever having had a valid PSD permit. The District should in fact review the CEC's staff analysis about the various alternative equipment and explain the differences in the two agencies' positions.

For example, the CEC staff opined that because of high startup emissions, various alternatives be implemented:

Staff found that if the project used the Siemens-Westinghouse Benson Once-Through boiler technology, start-up and shutdown emissions would be significantly reduced Alternatively, some projects have incorporated an auxiliary boiler or solar array to provide steam that can shorten start-up times.

According to a vendor of this technology, the Siemens-Westinghouse, Benson Once-Through or Fast-Start technology can be designed to fit the proposed 501 FD combustion turbines without additional capital costs above that of the standard, off-the-shelf, HRSG that the project owner has proposed. If the project is built with the aforementioned Fast-Start technology, the project start-up NO_x emissions are expected to be reduced . . . to 22 lbs for each cold start-up event, and . . . 28 lbs for hot or warm start-up events. This represents a 95 percent and 88 percent emission reduction of NO_x for cold, and hot or warm start-up events, respectively.

CEC Staff Report at 4.1-8 to 9; *see also* discussion on Palomar.

III. DRY COOLING SHOULD HAVE BEEN CONSIDERED IN THE COOLING TOWER ANALYSIS.

Nowhere does the District analyze whether dry cooling should be considered BACT. The District simply states that the applicant is proposing to use a wet cooling tower system and does not evaluate alternative technologies. As the District's Air Pollution Control Officer has stated, however, either dry cooling or wet/dry cooling would be technically feasible. *See* letter from Jack P. Broadbent to Bruce Wolfe, Executive Officer, San Francisco Bay Regional Water Quality Control Board, dated September 25, 2006 (attached). "[U]nlike dry cooling, wet/dry cooling uses an evaporative cooling process that vents vapor containing fine particulate matter (PM₁₀) to the atmosphere." *Id.* The draft permit fails to meet BACT requirements without the required analysis of alternatives to wet cooling.

**IV. THE DISTRICT SHOULD REDO ANY NONATTAINMENT NSR
REVIEW THAT IS MORE THAN 18 MONTHS OLD.**

The District fails to respond to any comments about non-attainment NSR. The District ought to respond to public comments in a timely fashion. If the District believes that it should respond outside of the PSD process, that would be acceptable to Citizens Against Pollution. But the District must respond.

We look forward to your responses to our comments. Thank you for considering them.

Very truly yours,

/s/ Helen Kang

/s/ Eric Kaplan

Helen Kang
Eric Kaplan
John Harrington
Shufan Sung



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

September 25, 2006

Bruce Wolfe, Executive Officer
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

ALAMEDA COUNTY
Tom Bates
Scott Haggerly
Janet Lockhart
Nate Miley

Subject: **Dry cooling investigation, Mirant Potrero Power Plant NPDES permit, Regional Board Order R2-2006-0032**

CONTRA COSTA COUNTY
Mark DeSaulnier
Mark Ross
(Vice-Chair)
Michael Shimansky
Gayle B. Ulkerna
(Chair)

Dear Mr. Wolfe:

It has come to my attention that the Regional Water Quality Control Board has recently adopted permit conditions that seek to phase out once-through cooling of Potrero Unit 3 unless the facility demonstrates it has no significant impact on San Francisco Bay. These conditions also require an assessment of alternative cooling technology by November 2007. The purpose of this letter is to request that the technology assessment include a thorough analysis of dry cooling. Dry cooling is an alternative to once-through cooling that could protect the Bay while avoiding potential air quality problems.

MARIN COUNTY
Harold C. Brown, Jr.

NAPA COUNTY
Brad Wagenknecht

SAN FRANCISCO COUNTY
Chris Daly
Jake McGoldrick
Gavin Newsom

You may remember, Air District staff commented on this issue in the Bay Conservation and Development Commission review of proposed Potrero Unit 7. The Bay Commission's March 27, 2002 report to the Energy Commission found that either dry cooling or wet/dry cooling would be a feasible alternative to once-through cooling. However, unlike dry cooling, wet/dry cooling uses an evaporative cooling process that vents vapor containing fine particulate matter (PM₁₀) to the atmosphere. Wet/dry cooling for Unit 7 was projected to emit approximately eleven tons of PM₁₀ annually. The new emissions would occur in an area where PM₁₀ exceeds ambient air quality standards. These considerations led the Bay Commission to believe that dry cooling would be preferable to wet/dry cooling.

SAN MATEO COUNTY
Jerry Hill
(Secretary)
Carol Klatt


If you have any questions, please contact Mr. Peter Hess, Deputy Air Pollution Control Officer at (415) 749-4971. Thank you for your consideration of this request.

SANTA CLARA COUNTY
Erin Garner
Yoriko Kishimoto
Liz Kniss
Patrick Kwok

SOLANO COUNTY
John F. Silva

SONOMA COUNTY
Tim Smith
Pamela Tortiatt

Sincerely,


Jack P. Broadbent
Air Pollution Control Officer/ Executive Officer

Jack P. Broadbent
EXECUTIVE OFFICER/APCO

cc: Greg Kanas