

-1 Comments to San Diego Air Pollution Control District regarding Carlsbad Energy Center

DOCKET

07-AFC-6

DATE Jan 06 2009

RECD. Jan 06 2009

Mr. Moore,

Thank you for the notice information and discussions. To recap my understanding of our conversation and restate some of my concerns.

I am hereby requesting a public Hearing regarding Carlsbad Energy Center.

I object to the District closing its public comment days before the CEC Air Quality workshop. I hereby request an extension of the Public comment period. It is inappropriate for a responsible agency to close its record prior to the lead agency. The air district would be deprived the opportunity to benefit from the Air Quality information derived from the CEC and the public would be precluded from informed participation in the air districts process. The Warren Alquist Act, CAA and your rules set time limits for your determinations. Because this proceeding is not following those time limits public participation is being undermined. As we discussed, You informed me that the application was deemed complete on Sept. 17 2007. The FDOC was due in 180 days from that date. The FDOC was apparently published 435 days later. I contend that the application has expired and must be resubmitted or rejected.

The extended time period creates a number of problems. Are we trying to comply with rules of 2007, 2008 or 2009. The following excerpt from the PDOC demonstrates an example of the problem.

“Preproject actual emissions are based on actual emissions occurring over the 5-year period preceding the receipt of the application. Rule 20.1(d)(2)(i)(B) requires the actual emissions to be averaged over the total operational time period within the five-year period if a representative two-year operating time period does not exist. Since the Application for Certification (AFC) for this CECP was submitted to the CEC in 2007, the preceding five years in consideration for actual emission reduction estimates are 2002, 2003, 2004, 2005, and 2006. “

According to table 5a 2002 CO emissions were 494.5 tons/py 2006 CO emission were 110 tons/py. That is 450% higher in 2002. If 2007 and 2008 were used for comparison a completely different conclusion could be reached. 2002 emissions are not contemporaneous. Because these calculations were used for PSD analysis and the tolerances are so close claiming PSD permit exemption (within 1/10th of a ton in

several cases) it is inappropriate to use outdated information. Please provide 2007 and 2008 "actual emission" figures for the facility.

"Since the District determined that there was not a representative two-year operating time period for Units 1, 2, and 3 of the Encina Power Station during these five years, the 5-year average of emissions from boilers Units 1, 2, and 3 determines pre-project actual emissions for those units."

How did the District make this determination? Because this also greatly skews the figures. If the District had used 2005 and 2006 as "representative" the credit would be a fraction of that given.

In the case of NO_x, the emissions are based on CEMS data. For the other pollutants, emissions are based on the annual District emission inventory, except that PM₁₀, PM_{2.5}, and total particulate (PM) emissions were adjusted from the inventory values based on EPA's AP-42 emission factors,

Can you explain why NO_x emissions are based on CEMS data and other pollutant are not? Can you provide CEMS data for all pollutants?

It would appear that the Phasing of bringing the units online would attempt to serve to preclude PSD significance ignoring the cumulative impact.

Table 5e – Phase I Contemporaneous Emission Increases

Demonstrates CO to increase 99.9 ton/py one tenth of a ton less then the threshold

Table 5c – Contemporaneous Emission Increases

*Also demonstrates NO₂ at 39.9tons/py one tenth of a ton below the threshold. The document further justifies this with a definition of a district rule **20.1(c)(33)** .*

The District should consider the following guidance documents from the EPA and consolidate the permits into one for complete review.

Answers to Frequently Asked Questions Regarding NSR and PSD

Q 13. What is a "Sham" permit?

A A Sham permit is when a source pursues a permit limit on the potential to emit (PTE) for a proposed project in order to limit the source to minor source levels as a means of circumventing the requirements of NSR....Another circumstance which may

occur is when a major project is broken up into several smaller minor projects in order to avoid NSR requirements....Sham is defined as counterfeit, untrue, or fake.

<http://www.epa.state.il.us/air/new-source-review/new-source-review-part-1.html>

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY Office of Air
Quality Planning and Standards Research Triangle Park, North Carolina 27711
September 18, 1989

MEMORANDUM

SUBJECT: Request for Clarification of Policy Regarding the "Net Emissions Increase"

“...of course, attempts by applicants to avoid PSD review by splitting a modification into two or more minor modifications constitutes circumvention of the PSD requirements. Two or more related minor changes over a short period of time should be studied for possible circumvention.”

<http://www.epa.gov/region07/programs/artd/air/nsr/nsrmemos/request.pdf>

The PDOC states

“Rule 20.1(c)(33) – Major Modification

Major modification is defined as a physical or operational change which results in a contemporaneous emissions increase for a pollutant or its precursors for which the District does not attain the federal ambient air quality standards at an existing major stationary source for that Pollutant.”

But the district rule states:

(33) "**Major Modification**" means a physical or operational change which results, ***or may result***, in a contemporaneous emissions increase at an existing major stationary source which source is major for the pollutant for which there is a contemporaneous emissions increase, equal to or greater than any of the emission rates listed in Table 20.1 - 5.”

(Emphasis added)

It appears that “may result” is the operative statement. Within 1/10 of one ton particularly when using outdated data as a basis certainly may result in an exceeding the threshold. The document is unclear as to if it is a major modification or

considered a new source also any existing PSD or Title V are not disclosed or analyzed.

The document ignores the effects of CO2. California has clearly identified CO2/greenhouse gas as a pollutant in CEQA, AB32, SB368 and California Attorney Generals arguments with the EPA also Massachusetts v. Environmental Protection Agency, 127 S.Ct.1438 (2007) Environmental Appeals Board of the United States Environmental Protection agency

IN RE DESERET POWER ELECTRIC COOPERATIVE PSD Appeal No. 07-03. and others and the District should also recognize it as such and require BACT and mitigation.

Pursuant to District Rule 20.5 the FDOC review is functionally equivalent to an Authority to Construct review 20.5 (f) Within 180 days of accepting an AFC as complete, the Air Pollution Control Officer shall make a preliminary decision on: (1) whether the proposed power plant meets the requirements of all applicable District regulations

The time period for approval has expired it should require a new application based upon current emission, meteorological and regulatory review.

Emissions during startups and shutdown are significantly higher than during steady state operation. Page 5 of 56

The worst case is based on the 1460 startups since the number of startups per turbine is limited to 1460 by proposed permit conditions. Appendix B 16 of 19

The applicant agreed to accept emission limits, as necessary, on the single combustion turbine and emergency water pump combined and Units 1, 2, and 3 to limit emissions below the PSD modification thresholds and, in the case of NOx, limit emissions to a level consistent with the emission offsets provided (see below). Consistent with the necessary shakedown period for the CTG/STG system (not to exceed 180 days), the actual emission reductions need not occur until the end of shakedown period for the first turbine to reach full commercial operation (i.e., before that time emissions from the three existing utility boilers are not limited). Therefore, the emission limits for Units 1, 2, and 3 do not apply until the end of the 180-day shakedown period for Phase I.

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at low loads the fuel may not be premixed with air (diffusion flame mode) to maintain

combustion stability. In both these situations, the NO_x, CO, VOCs can be much higher than in the lean premix combustion mode. It is, therefore, not technologically feasible, to achieve the BACT emission levels applicable to normal operations in such situations. Startups and shutdowns are abnormal operating conditions that are discussed above.

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Allowing increased emissions during startup and shutdown is inconsistent with the following recent decision which is incorporated into these comments.

Sierra Club v. Environmental Protection Agency, No. 02-1135 (D.C. Cir. 12/19/2008) (D.C. Cir., 2008)

**Rule 20.1(c)(16), 40 CFR §52.21, and 40 CFR Appendix S to Part 51–
Contemporaneous Emission Increase**

Contemporaneous emission increase is defined in Rule 20.1 (c)(16) as the sum of emission increases from new or modified emission units occurring at a stationary source within the calendar year in which the subject emission units is expected to “commence operation” and the preceding four calendar years

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Rule 20.1(c)(16) does not address when the actual emission reductions must occur relative to the initial startup of new or modified equipment. However, for replacement units, up to 180 days from the initial startup of new equipment is allowed before the actual emission reduction must be effective in federal implementations of PSD regulations [40 CFR §52.21(b)(3)(ii) and (viii)] and nonattainment NSR regulations [40 CFR Appendix S to Part 51 II.a.6.ii. and vi.] to allow a reasonable shakedown period for the new equipment.

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The following district rule would seem to require offsets before startup not 180 days after. The PDOC is incomplete because it does not identify all of the offsets therefore the public is precluded from commenting on the applicability of the offsets.

Emission offsets shall be in effect and enforceable at the time of startup of the emission unit requiring the offsets. Emission offsets must be federally enforceable if the source is major for the pollutant for which offsets are being provided. If interpollutant offsets are being provided, the offsets must be federally

enforceable if the pollutant they are offsetting is major.
20.1(D)(5)(iii)

The District has preliminarily concluded that BACT for the emergency fire pump engine is purchase of an engine certified to the most stringent federal emission standard for fire pump engines (i.e., a 2009 or later model year engine).
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This appears to be a unique BACT determination without a basis.

“Meteorological data used for EPA’s Aermid Prime model consisted of the following data for the 2003 through 2005 time period. The data was processed by the District using EPA’s Aermet meteorological data processor (Version 06341) to produce Aermid ready Files.”

APPENDIX A 2

This data is outdated and should be revised.

“Worst case background concentrations were determined from the review of 3 years (2004-2006) of monitoring data taken from the District’s Camp Pendleton, Escondido or San Diego monitoring stations, whichever was available for a specific criteria pollutant and deemed to be most representative of air quality in the facility area. Table 4-1 summarizes the worst case background concentrations.

APPENDIX A 3

This data is outdated and should be revised and the basis for using a variety of distant monitoring sites instead of 1 year of local monitoring is unclear.

“TABLE 4-4 MODELED MAXIMUM PROPOSED PROJECT IMPACTS

For PM10, background concentrations already exceed the annual and 24 hour California standard. Since the background is already in exceedance of the annual standard no additional violations can be due to facility operations. Additionally the 0.1 µg/m³ predicted annual impact is well below PSD significant impact levels shown in Table 4-5. Predicted impacts less than SILs are normally considered to not significantly affect compliance with Federal Ambient Air

Quality Standards regardless of the background level. Specifically in non-attainment areas, project impacts less than the SILs are deemed to not significantly cause or contribute to violations of the Federal Ambient Air Quality Standard. This can be considered the case for California Ambient Air Quality Standards as well.

Since the initial modeling estimated maximum 24 Hour PM10 impacts of approximately 1.2 $\mu\text{g}/\text{m}^3$, additional AERMOD modeling could be performed for all days in the 2004-2006 period that 24 Hour PM10 background concentrations were between 49 $\mu\text{g}/\text{m}^3$ and 50 $\mu\text{g}/\text{m}^3$ (California Standard) to determine whether additional violations would result from facility operations. There were no monitoring days that concentrations were measured within this range (highest monitored value less than the California Standard was 44 $\mu\text{g}/\text{m}^3$. Therefore it can be concluded that facility operations would not cause or contribute to additional violations of the California 24 Hour Ambient Air Quality Standard for PM10.”

This logic is inconsistent with the CEC Preliminary Staff Analysis(PSA). The PSA and comments by the CEC to The District are hereby incorporated into these comments by reference.

20.3 (iii) Air Quality Impact Analysis (AQIA)

Notwithstanding the emission threshold requirements of Subsection (d)(2), the applicant shall perform an AQIA as prescribed in Subsection (d)(2) for those pollutants for which, pursuant to Subsection (d)(3)(i), Subsection (d)(3) applies. In conducting the AQIA, projected growth calculated pursuant to (d)(3)(v)(A) shall be taken into account. The Air Pollution Control Officer shall comply with the public comment and notice provisions of Subsection (d)(4) and with the following:

20.3 (v) Additional Impacts Analyses

The analyses required by Subsections (d)(3)(v)(A) through (C) shall include the impacts of total emissions which exceed a non-criteria emissions significance level.

(A) Growth Analysis The applicant shall prepare a growth analysis containing all of the following:

- (1) an assessment of the availability of residential, commercial, and industrial services in the area surrounding the stationary source,
- (2) a projection of the growth in residential, industrial and commercial sources, construction related activities, and permanent and

temporary mobile sources which will result from the construction of the new major stationary source or major modification, including any secondary emissions associated with the construction,
(3) an estimate of the emission of all pollutants from the projected growth, and
(4) a determination of the air quality impacts occurring due to the combined emissions from the projected growth and the stationary source's emissions increase.

Compliance with the above rule was not sufficiently demonstrated

The District is unaware of any demonstrations that alternative technologies for control of NO_x such as the XONON™ catalytic combustors or EMx™ (SCONOX) catalyst system can achieve NO_x emission levels lower than the combination of dry ultra low-NO_x combustors and SCR on large (greater than 50 MW) natural-gas-fired combustion turbines.

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Sconox would be superior because it does not utilize ammonia that is a storage hazard and detriment to humans and endangered species when emitted

“40CFR Part 72- Subpart C – Acid Rain Permit Applications

This subpart requires any source with an affected unit to submit a complete Acid Rain permit application by the applicable deadline. Requirement for submittal of Acid Rain Program application will be included in the proposed Authority to Construct for the combustion turbines of this project”

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The public can not effectively comment on the acid rain implications without the an application.

“PARTICULATE EMISSION RELATING TO THE USE OF RECLAIMED WATER FOR EVAPORATIVE COOLING

The proposed Siemens turbines have inlet air filters located upstream of the evaporative coolers. The evaporative cooler is turned on only during normal operation when ambient temperature is higher than 60°F. The particulate emission factor of 9.5 lbs/hr provided by the turbine vendor includes anticipated particulate matter from the evaporative cooler parameters. Therefore, no further particulate emissions from the evaporative cooler are included in the emission calculation.”

There is no demonstration that the turbine manufacturer considered the use of reclaimed water. The energy use or reduced efficiency to reclaim the water should be considered in the analysis. .

The health risk analysis is based upon a series of assumptions by the applicant that do not necessarily represent actual operating conditions or the permitted full hour of startup.

“Because turbine loads and release parameters change during the startup hour the applicant submitted an analysis of startup and shutdown impacts based on a 4-phase startup/shutdown hour. The startup phases are:

Phase 1. The first 12 minutes of the startup, which includes accelerating the turbine to full speed with no load and then subsequently ramping the turbine generator electrical output to the final load, which the applicant assumed was 100% of maximum load.

Phase 2. The period from the end of the power ramp until the turbine achieves its BACT limits, which is proposed to take 10 minutes in a typical startup.

Phase 3. Operation at the final load until the end of the hour or shutdown (31 minutes or 38 minutes with no shutdown). The final load was assumed to be 100% by the applicant.

Phase 4. The shutdown time period, which is proposed to be 7 minutes, typically, by the applicant.

The applicant assumed that Phases 1 and 4 could be represented by the steady state operating conditions for 50% load. For the commissioning mode, the turbine was also assumed to be operating at 50% load

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Modeling Procedures

For startup and shutdown emissions the major refinement was to look at the potential impact of low stack exhaust temperatures during the first few minutes of a cold start, which could increase the emission impacts. The District was unable to directly obtain any information on the stack exhaust temperature during a startup of the proposed turbine. Based on the fact that the turbine is proposed, under normal circumstances, to achieve its BACT limits within 22 minutes of ignition. The stack exhaust temperature

was assumed to rise linearly from ambient (68 °F) to its normal operating temperature in 22 minutes. For shutdowns, the minimum stack exhaust temperature was assumed to be the exhaust temperature at 50% load.

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The stack rise assumption is without basis.

The turbine load was assumed to be 0% for first 5 minutes and then to rise at a rate of 30 MW per minute until the final operating load for the remainder of the startup hour was reached. This startup scenario was based on a presentation given by the turbine manufacturer¹.

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Even though the turbine is projected to achieve its BACT limits in 22 minutes, the applicant has requested a 60 minute startup period. Therefore, in all cases, the final load was assumed to be 50% of the maximum load for the remainder of the hour (or until shutdown) as a worst case analysis. A load of 50% was considered to be the worst case because: (1) this is the point of maximum fuel heat inputs at loads low enough for the much higher startup emission factors to be representative and (2) it is the point of minimum stack exhaust temperature at steady state conditions, based on manufacturer supplied data.

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The arbitrary use of a 50% load as opposed to 40% or some lower figure makes the results unreliable.

Palomar has been operating long enough to obtain more complete analysis

“As indicated many of these emission factors were derived from a source test. The source test was performed during the first hour of a cold start of a natural gas-fired GE 7FA gas turbine at the Palomar Energy Center. This is a combined-cycle turbine with ultra-low-NO_x combustors. The turbine was equipped with a CO oxidation catalyst. During the first hour of the startup, the turbine tested was operating at very low loads (0–18%). Although the oxidation catalyst control efficiency was not quantified during the test it is assumed the catalyst was operating at reduced efficiency during a large portion of the hour because of the low temperatures in the heat recovery steam generator where the catalyst is located.

The District only considers these emission factors to be potentially applicable at loads below the point where the ultra-low-NOx combustors are no longer operating in the low-NOx mode (typically 40-60% of maximum load).”6 of 19

NSR REFORM RULES REGARDING NET EMISSION INCREASE CHANGES, PALS, CLEAN UNITS PROVISIONS AND PCP EXCLUSIONS FINALIZED are incorporated into these comments by reference.

<http://www.air-comp.com/Articles/NSR%20Reform%20Rules%20Regarding%20Net%20Emission%20Increase%20Changes,%20PALS.html>

Commissioning Emission Factors

“Commissioning operations involve a wide-range of loads and add-on emission control effectiveness. During the early part of commissioning the oxidation catalyst is not typically installed and the turbine is operated at loads of 50% or less. In the absence of any other information, the District considers the startup and shutdown emission factors applicable to commissioning operations at loads of 50% or less.”
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If the District is “absent” information it should obtain the needed information

TABLE 4-2 NORMAL OPERATION AIR QUALITY MODELING RESULTS FOR NEW EQUIPMENT

Claims that Particulate matter increases are:

“Not applicable, because emissions are not elevated above normal operation levels during startups/shutdowns”

This is inconsistent with operations of other plants that have higher PM emissions during startup.

The public notice provided did not serve to inform the public of the effects on air quality.

Sincerely

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**BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV**

APPLICATION FOR CERTIFICATION
FOR THE *CARLSBAD ENERGY CENTER*
PROJECT

Docket No. 07-AFC-6
PROOF OF SERVICE
(Revised 9/10/2008)

INSTRUCTIONS: All parties shall 1) send an original signed document plus 12 copies OR 2) mail one original signed copy AND e-mail the document to the web address below, AND 3) all parties shall also send a printed OR electronic copy of the documents that shall include a proof of service declaration to each of the individuals on the proof of service:

CALIFORNIA ENERGY COMMISSION
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DECLARATION OF SERVICE

I, _____, declare that on _____, I deposited copies of the attached _____, in the United States mail at _____ with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.

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I declare under penalty of perjury that the foregoing is true and correct.
