

**BEFORE THE ENVIRONMENTAL APPEALS BOARD UNITED  
STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C.**

In re Russell City Energy Center            )  
  )  
Russell City Energy Company, LLC        )  
PSD Permit Application No. 15487        )  
\_\_\_\_\_  )

PSD Appeal No.

**PETITION FOR REVIEW  
OF PREVENTION OF SIGNIFICANT DETERIORATION PERMIT**

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Dated March 22, 2010

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## **INTRODUCTION**

Robert Sarvey, (hereinafter Petitioner) a resident of the City of Tracy, California, petitions for review of the Prevention of Significant Deterioration Permit issued from the Bay Area Air Quality Management District (District) to Russell City Energy Center, LLC. The District is authorized to administer the Prevention of Significant Deterioration permit program under the Clean Air Act pursuant to a delegation of authority by the United States Environmental Protection Agency. The permit authorizes construction of a new 600-megawatt natural gas-fired power plant in the City of Hayward. The District committed numerous procedural and substantive violations of the Clean Air Act in issuing the permit. The Board should remand the permit and require the District to correct these violations.

Robert Sarvey requests oral argument in this matter to assist the Board in its deliberations on the issues. The issues are a source of significant public interest and oral argument would materially assist in their resolution.

## **THRESHOLD PROCEDURAL REQUIREMENTS**

Petitioner satisfies the threshold requirements for filing this Petition for Review of the proposed Prevention of Significant Deterioration (PSD) permit under 40 C.F.R. § 124. Petitioner has standing because he participated in the public comment period on the draft permit.<sup>1</sup> The issues set forth in this petition were raised during the public comment period or are new issues resulting from the Air District's responses to comments, which the District compiled after the comment period closed, and therefore could not reasonably be raised before now. *See* 40 C.F.R. § 124.13.

The petition is timely. The District issued its notice of the final PSD permit on February 4, 2010. There, the District set the permit's effective date as March 22, 2010

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<sup>1</sup> 40 C.F.R. § 124.19(a); Robert Sarvey comments (filed on February 5, 2009 ([http://www.baaqmd.gov/~media/Files/Engineering/Public%20Notices/2009/15487/letters/02-06-09\\_sarvey\\_robert.ashx](http://www.baaqmd.gov/~media/Files/Engineering/Public%20Notices/2009/15487/letters/02-06-09_sarvey_robert.ashx)) and September 16, ([http://www.baaqmd.gov/~media/Files/Engineering/Public%20Notices/2009/15487/letters\\_rev\\_091609/09-16-2009\\_Sarvey\\_Robert.ashx](http://www.baaqmd.gov/~media/Files/Engineering/Public%20Notices/2009/15487/letters_rev_091609/09-16-2009_Sarvey_Robert.ashx)))

and, as 40 C.F.R. § 124.15(b) allows, stated that appeals to the Board would be due then, later than the 30 days normally provided. This Petition for Review is being filed on March 22, 2010, and is therefore timely under 40 C.F.R. sections 124.15(b) and 124.19(a).

### **ISSUES PRESENTED FOR REVIEW**

1. The District failed to provide PSD BACT limits for start up and shut down emissions and the Board should remand the permit back to the District.
2. The District's Best Available Control Technology for Nitrogen Dioxide (NO<sub>2</sub>) determination is defective as it fails to account for the collateral impact of ammonia slip from the use of SCR.
3. The Districts BACT analysis for the Cooling Tower particulate matter emissions fails to consider alternative technologies, work practices, and alternative sources of water to limit the significant impacts from particulate matter emissions from the Cooling Tower.
4. The EAB should consider the new Federal NO<sub>2</sub> Standard when considering Emission limits for the RCEC.
5. The EAB should remand the permit back to the District to include specific penalties for non compliance with permit conditions due to the Districts lax enforcement policies.

### **FACTUAL BACKGROUND**

The Russell City Energy Center is a proposed 600 megawatt natural gas fired combined cycle power plant proposed to be built by Russell City Energy Company, LLC, an affiliate of Calpine Corporation. The Russell City Energy Center (RCEC) is located near Highway 82 in a light industrial area. The RCEC is proposed to include: two gas turbines, two heat recovery steam generators, a single steam turbine, a cooling tower and a diesel fire pump engine. The proposed Russell City facility was initially licensed in 2002 and the District issued an FDOC for the RCEC on March 18, 2002. On November 17, 2006 the project owner filed for an amendment to relocate the project so its permits had to be updated. The CEC and the Air District therefore reinitiated the permitting

process to amend the initial permits to reflect the new location. The District prepared an Amended Determination of Compliance addressing the air quality issues raised by the permit amendment and submitted it to the Energy Commission for use in the licensing proceeding. The Energy Commission completed its CEQA-equivalent review of environmental impacts and ultimately approved the amendment on September 26, 2007.

On November 1, 2007, the Air District issued an amended Authority to Construct, incorporating the Energy Commission's conditions of certification into a District-issued permit, and also issued the amended Federal PSD Permit for the project. The amended Authority to Construct and the amended Federal PSD Permit were issued jointly in the same document, in accordance with the Air District's administrative practice. The Federal PSD Permit was appealed and remanded back to the District because the District failed to comply with the public notice and comment provisions of 40 CFR Section 124.10

The District issued an amended draft PSD permit in December of 2008. Somewhere between December of 2008 and June of 2009 the District reviewed the permitting record and concluded that when the facility was initially permitted in 2002, the District did not issue a final Federal PSD permit along with its state-law Authority to Construct, as is the District's normal practice.<sup>2</sup>

In June of 2009 the District proposed to issue a new Federal PSD Permit not an amended PSD permit for this facility, since no final PSD Permit had yet been issued. The district received 130 comments on the new Federal PSD permit. On February 4, 2010 the District issued the current permit which is to become effective on March 23, 2010 barring an appeal to the EAB.

## STANDARD OF REVIEW

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<sup>2</sup> The District has problems implementing the PSD program. This is just one example. Another example is the Russell City Remand Order issued to the District for not complying with the public notice provisions of 40 CFR 124.1. Another example occurred with the Gateway facility in Antioch where the District knew it had not complied with the public notice provisions of 40 CFR 124.1. <http://www.epa.gov/eab/pmanual.pdf> page 3. Later the district found out that its assumption that it extended the PSD permit with the ATC extension was incorrect. The Gateway Applicant told the District that if the Gateway Facility would be subject to a complete PSD review it would delay the online date and it would be better to begin operation than submit to a complete PSD review: " Gary Rubenstein PG&E's consultant indicated that we expect the permit to be appealed to the EAB by Sarvey anyway He stated the time critical element for PG&E was the commission related conditions, and since the appeal would stay the permit whether it had any merit or not, its not clear that any time would be saved by renouncing the draft permit. Sandy said it would be easier for the EAB to dismiss the appeal without the notice issue. ...Gary noted that under EPA policy once a facility starts up a non major amendment no longer requires PSD review and public notice so if amendments issuance were to be delayed until after startup PSD issues would be moot." <http://www.epa.gov/eab/pmanual.pdf> page 3. The District then delayed issuance of the permit until after the Gateway facility began operation in January of 2009 thereby avoiding PSD review and public comment. Later the USEPA issued a FNOV to Gateway for no PSD permit.

The final PSD permit for RCEC may be set aside if it is based on a clearly erroneous finding of fact or conclusion of law, or involves an important matter of policy or exercise of discretion that warrants review. *See* 40 C.F.R. § 124.19.

## **ARGUMENT**

### **THE BOARD SHOULD REMAND THE PERMIT**

#### A. Start Up and Shut down Best Available Control Technology

Emissions are greater during startups, shutdowns and combustor tuning periods than they are during steady-state operation, the BACT limits established for steady-state operations are not technically feasible during these periods. As these limits are not “achievable” during these operating modes, they are not “Best Available Control Technology” as defined in the Federal PSD Regulations. Therefore, alternate BACT limits must be specified for these modes of operation.

The Air District conducted the additional Top-Down BACT analysis specifically for startups, shutdowns, and tuning periods in the December 18, 2008 Draft Amended PSD Permit. The District identified three potential strategies to reduce startup and shutdown emissions for the proposed RCEC. The three strategies reviewed were work practices to minimize emissions, Once-Through Steam Boiler Technology, and Low-Load “Turn-Down” Technology were examined in the analysis.<sup>3</sup>

The District first examined the low load turndown technology to see if it was feasible to apply to start up and shutdown applications. The District evaluated the GE commercially available turn-down technology called “OpFlex”. The technology had been on the market for some time but the company introduced a variant of the technology aimed at controlling startup emissions in 2006. GE advertised that emissions of NOx can be lowered to less than 25 ppm at low load operation and that “start-up times can be reduced by as much as 30 minutes for a cold start, 15 minutes for a warm restart and 5 minutes for a hot restart.” The District felt it was very promising but without a manufacturer’s guarantee, the District felt it could not conclude with any certainty that

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<sup>3</sup> 12/12/08 Statement of Basis for Proposed Amended PSD Permit Russell City Energy Center page 39

this technology would obtain the predicted reductions in the 2008 draft permit. The District felt that predictions of potential performance were not, by themselves sufficient evidence on which to require the technology as BACT.

To make up for the lack of a manufacturer's guarantee, the District attempted to develop independent objective support for the technology's feasibility as a startup control alternative. To do so, the Air District looked for actual operating data from facilities using GE's OpFlex turn-down technology as a startup emissions control technology. The Air District was able to identify only one facility that had tried to implement OpFlex to control startup emissions, the Palomar Energy Center ("Palomar") in San Diego County. That facility was required to implement drastic startup emissions reductions under a variance proceeding before the Hearing Board of the local Air District, the San Diego Air Pollution Control District. The facility took several steps in order to do so. One of these was to purchase and install an OpFlex system from GE. Another was to adjust its ammonia injection procedures so that ammonia was injected into the SCR system earlier in the startup than recommended by the manufacturer, when the SCR catalyst is at a lower temperature. The operator conducted tests on its turbines and found that earlier ammonia injection was a workable solution. By taking these steps, the facility was able to optimize its operating procedures and bring down its startup emissions. The facility reported encouraging results from the first few months of operating with these new techniques.<sup>4</sup>

In the 2008 Draft Permit the District decided it was not possible to determine based on this limited data what reductions, if any, were attributable to OpFlex and what reductions were attributable to the operational changes the facility was able to make for its specific turbines. Moreover, the district felt that the facility had operated only for a relatively limited period of time with these enhancements, and so it was difficult to determine from the limited data available so far, what improvements can reliably be achieved throughout the life of the facility. The District felt that the Palomar data did not sufficiently demonstrate that there are specific, achievable emissions reductions to be gained simply from using the OpFlex technology itself. Further, the district opined that more data would be needed to understand whether some or all of Palomar's proprietary

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<sup>4</sup> 12/12/08 Statement of Basis for Proposed Amended PSD Permit Russell City Energy Center page 41

approach for reducing emissions from its equipment could be adapted to other facilities.<sup>5</sup> The District then concluded that the OpFlex product was not feasible.

That left two technologies to consider, best work practices and once through boiler technology. The Air District concluded that Flex Plant 10 once-through boiler technology would not be the most appropriate BACT technology because of the loss of efficiency that it would entail. The District limited its review of the boiler technology to the Flex Plant 10 and concluded the newer Flex Plant 30 was unavailable. On August 10, 2009 Siemens received its first order for the Flex Plant 30 which is to be used at the NCPA Lodi Energy Center.<sup>6</sup> The Air District therefore eliminated the flex plant technology as a control option without considering the Flex Plant 30 option. The District then had only one technology left to choose from best work practices as BACT for startups, shutdowns and tuning.

The District then focused its review on BACT emission limits for startup and shutdown. The District started its analysis in a backward fashion by first concluding that by using best work practices, the proposed RCEC would be able to limit cold startups to 6 hours in duration with 480 pounds of NO<sub>2</sub> emissions and 5028 pounds of CO emissions. The District set a BACT limit for warm and hot startups to 3 hours in duration with 125 pounds of NO<sub>2</sub> emissions, and 2,514 pounds of CO emissions. Shutdowns were to be limited to 30 minutes in duration with 40 pounds of NO<sub>2</sub> emissions and 90 pounds of CO emissions. The basis for the proposed limits were the permit limits that were established for the Metcalf Energy Center, as it was the most recent similar facility that the Air District has permitted. The District then analyzed other facilities in the District to determine if they could meet the Metcalf Energy Centers permit limits.

The district first analyzed the Metcalf startup and shutdown emissions and concluded the data showed that maximum NO<sub>2</sub> emissions were up to 70% of the proposed limit and CO emissions were up to 95% of the proposed limit. Instead of adopting the actual start up and shutdown emissions as BACT, as the regulation require, the District rejected the actual emissions as BACT because they didn't provide a large enough compliance margin.

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<sup>5</sup> 12/12/08 Statement of Basis for Proposed Amended PSD Permit Russell City Energy Center page 42

<sup>6</sup> [http://www.siemens.com/press/en/pressrelease/?press=/en/pressrelease/2009/fossil\\_power\\_generation/efp200908076\\_tp.htm](http://www.siemens.com/press/en/pressrelease/?press=/en/pressrelease/2009/fossil_power_generation/efp200908076_tp.htm)



The District next examined the Delta Energy Center Project. Data for the Delta Energy Center showed substantially lower NO<sub>2</sub> emissions than the 480 pound limit proposed by the District for the RCEC. The projects CO emissions were higher than the 5028 pound limit being considered for Russell City. Unlike the proposal for the RCEC the Delta Energy Center had no CO Catalyst. The longest startup was 4.5 hours.<sup>7</sup> The District ultimately adopted a CO emission limit from the Caithness Project as CO BACT. For NO<sub>2</sub> emissions, the Caithness startup limits were all higher than the limits the Air District initially proposed for the Russell City permit. Based on that reasoning, the BAAQMD should have adopted the Delta Energy Center NO<sub>2</sub> emissions as BACT. The highest emissions of NO<sub>2</sub> for the Delta Energy Center over a four year period from May 2004 till June 2008 were 281 pounds per startup 40% less than the RCEC permit.<sup>8</sup>

The District adopted the Cold Start BACT levels contained as permit limits in the Metcalf Energy Center as BACT. The District erroneously concluded that data from other similar facilities (Delta and Metcalf) showed that if the Air District were to impose limits substantially below the Metcalf limits, the proposed facility could face difficulty in complying with them. Even though the Delta Energy Center data demonstrated that its maximum cold start emissions were 281 pounds which provided a 40% compliance margin, the District still failed to adopt lower NO<sub>2</sub> startup emission limits.

For hot and warm startups, the Air District concluded that the proposed RCEC would be able to achieve emissions limitations substantially below those imposed at Metcalf. Calpine had refined its hot and warm startup operations based on its experience with other facilities, and has committed to keeping hot and warm startup emissions below 125 pounds of NO<sub>2</sub>. This emissions level represented a reduction of nearly half from the corresponding Metcalf startup limit, which is 240 pounds.

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<sup>7</sup> Later the district decided start up times were irrelevant to the Federal PSD BACT determination. “At the outset, the Air District notes that startup duration, as opposed to startup emissions, is not technically subject to the BACT requirement. BACT is “an *emission limitation . . . based on the maximum degree of reduction for each pollutant*” achievable by the facility (40 C.F.R. § 52.21(b) (12) (emphasis added)). It is thus a limitation on the amount of pollution emitted, not on the duration of any particular operating mode. As long as a facility can achieve the lowest *emissions* from startups among sources of its type, the facility will satisfy BACT even if it has to take a longer *time* to get to steady-state operating condition. Additional Statement of Basis august 3, 2009 page 66

<sup>8</sup> “For NO<sub>2</sub> emissions, the Caithness startup limits are all higher than the limits the Air District initially proposed for the Russell City permit here. . . . Upon further consideration, the Air District believes that revisiting the proposed Russell City limits for hot and cold startups would be appropriate in light of this new information from Caithness. The Air District is therefore lowering its proposal for the hot startup limit to 891 pounds of CO, based on the limit imposed in the Caithness permit for similar equipment.” Additional Statement of Basis August 3, 2009 page 64 Based on this conclusion it is not clear the BAAQMD understands PSD BACT requirements.

In response to the Districts comments on the lack of information on the Palomar Projects OpFlex system in the December 18, 2008 Draft Statement of Basis Petitioner submitted a Public Record request to the San Diego Air Pollution Control District to obtain additional variance reports on the Palomar Project.<sup>9</sup> Petitioner submitted the variance reports to the BAAQMD in his comments on the 12/12/08 Statement of Basis for Proposed Amended PSD Permit Russell City Energy Center.<sup>10</sup> The four variance reports submitted by the petitioner covered the operation of the Palomar Facility for all of 2007. The variance reports provide the following information:

Recent normal startups following a typical nightly shutdown have resulted in NOx emissions of 28 lbs NOx, and 10 lbs. CO. For NOx, these results are the combination of OpFlex and early ammonia injection. Prior to the OpFlex and early ammonia projects, a typical regular startup would have produced approximately 120 lbs of NOx and 35 lbs of CO. (Note: Startups early in the project life produced highly variable emissions results). All of the CO reduction for recent startups is attributable to the shorter startup allowed by OpFlex, while 45 lbs. of NOx reduction are attributable to early ammonia injection, and 47 lbs. attributable to OpFlex. See the Summary Table below:

**Regular Startup Summary Table:**

	Startup Emissions before Opflex/Early NH3	Reduction Attributable to Early NH3 Inj.	Reduction Attributable to OpFlex	Recent Regular Startup Results – Note 1 (Nov. 2006 – Feb. 2007)
NOx (lbs.)	120	45	47	28
CO (lbs.)	35	0	25	10

Note 1: Excludes startups after lengthy shutdown (>24 hours) or after HRSG forced cool down for maintenance.

This prompted the District to take a closer look at the OpFlex product and early ammonia injection. The District obtained start up information from the project’s operation from October of 2006 to December of 2007 the same time period that Petitioner submitted variance reports for. After analyzing the data the District determined to lower the emission limits for hot starts from 125 pounds per start to 95 pounds per start for the

<sup>9</sup> The San Diego Air district responded with four variance reports within 24 hours of the records request. Compare this to the Petitioners last public records request to the BAAQMD was submitted on November 5, 2009. Petitioner was notified that the records were available on February 5, 2010 but the district must first receive a check for copy expense. Petitioner sent the check for the copy expense. Petitioner waited three weeks for the records. The petitioner then called the public record department and was informed that he should have called ahead and let them know he sent a check. Petitioner received the records on February 21, 2010. Petitioner was then informed that the bulk of the records consisted of four boxes located at the District office in San Francisco that consisted of records other individuals has requested on the same permit. The BAAQMD employs all means necessary to prevent public participation.

<sup>10</sup> [http://www.baaqmd.gov/~media/Files/Engineering/Public%20Notices/2009/15487/letters/02-06-09\\_sarvey\\_robert.ashx](http://www.baaqmd.gov/~media/Files/Engineering/Public%20Notices/2009/15487/letters/02-06-09_sarvey_robert.ashx)

PSD permit.<sup>11</sup> The Palomar data showed that the highest hot start emissions were 75 pounds for a startup event at Palomar on November 27, 2006. The highest hot start event at Delta Energy Center was 82.2 pounds.<sup>12</sup> The 75 pound emission limit for the Palomar Project represents a 20% compliance margin over the 95 pound limit, but the District still failed to adopt a lower limit.

The Districts review of Cold Start Data revealed that the highest NO<sub>2</sub> emissions during a cold startup at Palomar were 375 pounds according to the District's own calculations. This limit is similar to Delta and Metcalf Projects for which the highest cold startups were 281 and 335 pounds, respectively. At that point the District should have chosen either the Delta limit of 281 pounds the Metcalf limit of 335 pounds or the Palomar limit of 375 pounds as BACT for NO<sub>2</sub> startup emissions. Instead the District completely ignored the results of its BACT analysis and chose the 480 pound cold start limit. The 480 pound limit chosen by the District is 195 pounds higher or 42% higher than the Delta Energy Centers highest startup emissions. The 480 pound limit is 135 pounds higher or 30% higher than the Metcalf highest emissions for a cold start. The highest startup emissions from the Palomar project of 375 pounds is 22% higher than the 480 pound limit the District selected as BACT.

The District defended this 480 pound limit by stating: *The Air District did observe that the Palomar data showed a maximum startup emissions event of 375 or 437 pounds (depending on which calculation is used), which is somewhat below the proposed Russell City cold startup limit of 480 pounds, but the Air District does not consider this level of compliance margin – which is 9%-22% of the permit limit, depending on whose calculation is used – to be unreasonable for several reasons. First, the data from Palomar includes only five available data points for cold starts, which does not generate a great deal of statistical confidence that the maximum seen in this data set is representative of the maximum that can be expected over the entire life of the facility.* If the District was concerned about the limited amount of data from Palomar it could have obtained all of the 2008 data and the 2009 data to validate its results since its evaluation only included the October 2006 to December 2007 time period. The District's claim that it could not procure the data are baseless as the data is available through the California Energy Commission Compliance Division. The Petitioner provided data to the district for the 2006 and 2007 period which prompted further review of

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<sup>11</sup> August 3, 2009 Additional Statement of basis page 62

<sup>12</sup> August 3, 2009 Additional Statement of basis page 62

the permit and the District could have contacted the Petitioner if it didn't understand the public records process. Also in choosing this 480 pound limit the Air District discarded the lower Delta Energy Center emission rate for start up and shutdown of 281 pounds and the Metcalf rate of 335 pounds. The District somehow believes that compliance margins of 30 to 40 % are somehow inadequate.<sup>13</sup> Next the District states: *Moreover, the wide variability in the data that is available highlights the variability in individual startups, underscoring the need to provide a sufficient compliance margin to allow the facility to be able to comply during all reasonably foreseeable startup scenarios. For both of these reasons, the Air District has concluded that a cold startup limit of 480 pounds of NO<sub>2</sub> is a reasonable BACT limit that is consistent with the startup emissions performance seen at the Palomar facility.*<sup>14</sup> The District examined three facilities that had considerably lower emissions for start up and shutdown than the 480 pound limit chosen. The Delta data spanned from May of 2004 to June of 2008 and during all that time the highest emissions were 42% lower than the 480 lbs BACT limit. The Metcalf data spanned a period from April of 2006 till November of 2008 and its highest Start up emissions were 30% lower than the 480 pound limit.<sup>15</sup>

The Federal PSD Regulations define "Best Available Control Technology" as: An emissions limitation . . . based on the maximum degree of reduction for each pollutant subject to regulation under Act [sic] which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or **innovative fuel combustion techniques** for control of such pollutant. Clearly the Air District has failed to adopt lower permit limits for start ups and shut downs that have been demonstrated in practice

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<sup>13</sup> There is no precedent for allowing the permitting agency a license to set arbitrary compliance margins that defeat the purpose of BACT. While this Board has recognized on occasion that such a margin (or a "safety factor") may accommodate "uncertainty regarding the maximum degree of emissions reduction that is achievable," in *Re: Prairie State Generating Co.*, PSD Appeal No. 05-05, 13 E.A.D. \_\_\_, slip. op. at 72 [CHECK THIS CITE] (EAB Aug. 24, 2006), *aff'd*, *Sierra Club v. EPA*, 499 F.3d 653 (7th Cir. 2007), *reh'g denied and reh'g en banc denied*, 2007 U.S. App. LEXIS 24419 (7th Cir. 2007), such a margin must be "fact-specific and unique to the particular circumstances of the selected technology, the context in which it will be applied, and available data regarding achievable emissions," *id.* at \_\_\_, slip. op. at 73. Safety factors are allowed, for example, to account for "test method variability, location specific technology variability, and other practical difficulties in operating a particular technology." See *id.* (citations omitted). There is no precedent for allowing such a large margin. In *Re: Prairie Generating Co.*, slip. op. at 71, 13 E.A.B. \_\_ (EAB 2006), the Board has upheld only a small margin, amounting to about 2-3%. In *Re: Prairie Generating Co.*, the Illinois Environmental Protection Agency (IEPA) issued a PSD permit to the Prairie State facility setting a 98% control efficiency limit. The petitioner pointed out that an efficiency of 98.4% was achievable, while the IEPA noted that efficiency levels at comparable plants, including the one on which the petitioner relied, was about 97-98%. The Board thus found the IEPA to be justified in employing a safety factor by setting a 98% control efficiency rate. Similarly, in *Re: Masonite Corp.*, 5 E.A.D. 551, 561 (EAB 1994), to which Prairie cites, the dispute was over whether a control efficiency of 95% was appropriate, or whether one of 97 to 99% was appropriate. These cases are thus readily distinguishable from RCEC. While these cases involved disputes over a 0.4-1.4% or 2-4% discrepancy, the District gave RCEC a 9 to 22% compliance margin. It is one thing to employ a small safety factors justified evidence, such as the one in Prairie, but it is entirely another when that safety factor is so large as to make the most stringent limit unrecognizable. (CAP Appeal GGU)

<sup>14</sup> August 3, 2009 additional Statement of Basis page 61,

<sup>15</sup> 12/12/08 Statement of Basis for Proposed Amended PSD Permit Russell City Energy Center page 45

as PSD BACT for the RCEC. The District has received comments from the California Energy Commission, the agency responsible for State oversight of the permit, which agrees that a more stringent BACT limit on start up and shut down emissions is appropriate,<sup>16</sup>

*“Alternatively the 600 MW combined cycle Palomar Project in Escondido has installed a proprietary control system , Opflex form General Electric, and injects ammonia earlier to shorten start up times and reduce start-up emissions at the facility, Preliminary non optimized results form their March 7, 2007 Petition for Variance 4703 indicated that they have reduced NOx emissions form 120 lbs to 28 lbs for hto or warm startup events”.*<sup>17</sup>

The EPA has just required the OpFlex technology at the Gateway Project in Antioch as a Supplemental Environmental Mitigation Program. The Supplemental Environmental Mitigation Program was the result of a consent decree stemming from a violation of the Clean Air Act for lack of a PSD permit further eroding BAAQMD’s arguments about commercial availability and performance.<sup>18</sup> The BAAMD is fully aware of this fact as it was their responsibility to ensure that the Gateway Facility had a valid PSD permit. Considering all the facts before it, the EAB must remand the permit back to the District again so the District can provide a BACT limit for start ups and shut downs that meets PSD BACT requirements.

## **B. The District’s BACT Analysis for NO<sub>2</sub> is Defective**

The District performed a technology evaluation to determine which technology is NO<sub>2</sub> PSD BACT. The District concluded that “SCR and EMx™ are equally effective in reducing NO<sub>2</sub> emissions and are ranked No. 1 in the post-combustion control hierarchy. The conclusion was based on the determination that neither technology has significant energy, economic, or environmental impacts that would eliminate it as a BACT

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<sup>16</sup> Staff proposed technological solutions (Siemens-Westinghouse Fast-Start and General Electric OpFlex) which it believes would significantly reduce emissions from start-up events, but they were rejected by the Applicant for economic reasons. (Ex. 100, pp. 4.1-8 – 4.1-9.) Footnote 14 Should the Applicant change its mind, Condition **AQ-SC10** holds open the option to use fast start technology, in which case the Applicant would be relieved from the restrictions of **AQ-SC7** and **AQ-SC8**, as well as the simultaneous start-up prohibition of **AQ-SC9**, discussed below. Final Commission Decision page 77 <http://www.energy.ca.gov/2007publications/CEC-800-2007-003/CEC-800-2007-003-CMF.PDF> (Per CAP Comments 2/9 @5)

<sup>17</sup> [http://www.energy.ca.gov/sitingcases/russellcity\\_amendment/documents/2007-05-31\\_LTR\\_BROADBENT.PDF](http://www.energy.ca.gov/sitingcases/russellcity_amendment/documents/2007-05-31_LTR_BROADBENT.PDF)

<sup>18</sup> United States vs. Pacific Gas and Electric Civil Action NO. 09-4503

alternative. The District stated “that it would consider either as BACT for this project.” The SCR system uses ammonia as a reagent in the NOx reduction process, but some ammonia may not be fully used up in the reaction and may be emitted in the SCR exhaust. These ammonia emissions are often referred to as “ammonia slip”. In making this determination, the District concluded that the secondary particulate from the 60 tons of ammonia slip from the SCR would not be a significant environmental impact.<sup>19</sup> The District based its conclusion on an Office Memorandum from David Fairly to Tom Perardi and Rob DeMandel, “A First Look at NOx/Ammonium Nitrate Tradeoffs, dated September 8, 1997.”<sup>20</sup> A close look at the memorandum reveals that it provides no scientific justification that secondary particulate from the RCEC in Hayward will not lead to significant secondary particulate formation. The District memorandum outlines two objectives. One, whether the Bay Area is ammonia limited, and two, to what extent reducing NOx emissions would reduce ammonium nitrate. Among the findings presented in this memorandum, the District staff believes that “. . . *San Jose and Livermore are not ammonia limited*’ during wintertime high particulate matter conditions; rather, these two areas are acid limited. Other findings stated in the memorandum include recognition that the District analyses do not provide solid “...*footing to do planning or to provide guidelines to industry for such trade offs* between NOx and ammonium nitrate.” Thus, the District memorandum is very specific to say that San Jose and Livermore, not the entire Bay Area air basin or the project location, are nitric acid limited, and that no guidelines have been formed to address the ammonia induced PM10/PM2.5 problem. This project is located in the Hayward Area next to the Bay. Hayward is outside of the area where the District has made the determination. The RCEC is located next to a major freeway, Highway 82 and the toll booth for the San Mateo Bridge where NO<sub>2</sub> concentrations would be considerably higher than other parts of the BAAQMD.<sup>21</sup> The District admits that its new DRAFT report “does find that the amount of available nitric acid is not uniform but varies indifferent locations around the Bay Area, and consequently the potential for ammonia emissions to impact PM<sub>2.5</sub> formation varies around the Bay Area.” Therefore, the Districts contention that the increase in ammonia emissions from the

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<sup>19</sup> 12/12/08 Statement of Basis for Proposed Amended PSD Permit Russell City Energy Center page 27

<sup>20</sup> 12/12/08 Statement of Basis for Proposed Amended PSD Permit Russell City Energy Center page 27

<sup>21</sup> <http://www.epa.gov/ttnnaqs/standards/nox/fr/20100209.pdf>

RCEC would not cause any increase in PM10/PM2.5 emission impacts is not supported by the District memorandum or any other evidence in this permitting record.<sup>22</sup> The District provides no evidence in the permit that the Hayward area is nitric limited and that additional ammonia emission will not form significant secondary particulate. In fact the plume itself contains sufficient NO<sub>2</sub> to facilitate the secondary particulate formation. Therefore the BACT, analysis which recommends SCR as the preferred alternative, lacks scientific basis. Given this situation, the suggestion that ammonia slip from the facility will not cause significant secondary Particulate Matter formation is speculative at most. The EAB must take under consideration whether the additional PM precursor, ammonia, from the project's SCR will prevent or interfere with the attainment or maintenance of the Federal PM10 and PM2.5 Standards. The EAB must remand the permit back to the Districts to provide a proper BACT analysis which demonstrates that, in fact, SCR is the proper technology to control NO<sub>x</sub> emission from the RCEC and that no significant environmental impacts will occur.

### C. Cooling Tower BACT for Particulate Matter Emissions

The project proposes to use treated wastewater from the adjacent Hayward wastewater treatment plant. The use of wastewater to cool the RCEC will generate 9.4 tons of particulate matter per year. The largest PM-10 concentration from the project will be a direct result of the project's use of recycled water. In fact "The Air District found that using the assumption that the cooling tower water could have up to 8,000 ppm (by weight) Total Dissolved Solids (TDS), the highest modeled value would exceed the PM<sub>10</sub> significant impacts level of 5 µg/m<sup>3</sup>."<sup>23</sup> "The Air District therefore explored with the applicant whether it could keep TDS levels within a lower limit." Not surprisingly the applicant miraculously found that it could keep TDS within a limit of 6,200 ppmw and avoid the SIL for PM-10.

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<sup>22</sup> The district new Draft Study has not been provided for the record nor is it available anywhere else. Not that the information is relevant since the District Study is a DRAFT but the study cited by the District states that "the computer model predicted that emissions of all secondary particulate precursors from the facility will have a maximum additional impact on ambient PM<sub>2.5</sub> levels of 0.11 µg/m<sup>3</sup>, which is not a significant additional impact given the relative size of the direct PM<sub>2.5</sub> impact and background levels in the area." The District still does not respond to the Petitioners request for a level of particulate matter impacts that would be significant. ) In some areas in the BAAQMD the existing background 24-hour PM<sub>2.5</sub> monitoring data is already at the Federal standard one of which is Concord. Any additional PM 2.5 concentration is significant.

<sup>23</sup> Response to comments 2/6/10 page 133

The District's BACT analysis for the most significant piece of equipment in terms of PM-10 air quality, the cooling tower, consisted of reviewing one technology, which was drift eliminators. The District failed in its BACT analysis to consider technologies, work practices, or other sources of water that would reduce the impact from the projects cooling tower emissions. Outside of the BACT analysis, as mentioned above, the District asked the applicant whether he could keep total dissolved solids below 6,200 TDS to avoid the SIL, but the District never provided any analysis of what level and what technology or work practices could provide a lower level of TDS to lower PM-10 emissions from the cooling tower. The Air District does not even defend its failure to examine different technologies, sources of water, operating practices or dry cooling in its BACT analysis. The District does have a discussion of why it would have eliminated dry cooling even though it didn't include it in its BACT analysis. In that discussion the District agrees that dry cooling systems are preferable in general from a criteria air pollution perspective because they do not have the particulate emissions that can result from wet cooling. The BACT analysis fails to comply with PSD regulations and the Board should remand the permit back to the District for a complete BACT evaluation of BACT for cooling tower emissions.

### **Important policy considerations**

#### **D. The EAB should consider the impacts to permitting of the new Federal NO<sub>2</sub> Standard**

In review of this appeal the EAB must be mindful of the new Federal 1 hour NO<sub>2</sub> standard which was published in the Federal Register on February 9, 2010.<sup>24</sup> The standard becomes effective on April 9, 2010 which will be before this permit appeal is resolved. The Russell City 1 hour NO<sub>2</sub> ambient air quality impact is 130 ug/m<sup>3</sup> which is above the new Federal 1 Hour NO<sub>2</sub> Standard. Clearly the Russell City Project will cause a violation of this standard on its own without considering background concentrations.<sup>25</sup> As mentioned previously this project is located near Highway 82 and the San Mateo Toll Booth Plaza where traffic snarls daily as commuters attempt to cross the Bridge. In

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<sup>24</sup> <http://www.epa.gov/ttn/naaqs/standards/nox/fr/20100209.pdf>

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determining the correct BACT levels for NO<sub>2</sub> emissions and Start Up and Shutdown NO<sub>2</sub> limits for the project the new standard should be considered. The PSD requirements of the new Rule include but are not limited to the following:<sup>26</sup> Installation of Best Available Control Technology (BACT), Air quality monitoring and modeling analyses to ensure that a project's emissions will not cause or contribute to a violation of any NAAQS or maximum allowable pollutant increase (PSD increment), Notification of Federal Land Manager of nearby Class I areas, and Public comment on permit.

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<sup>26</sup> <http://www.epa.gov/ttn/naaqs/standards/nox/fr/20100209.pdf> page 6525

E. Permit condition must be enforceable with meaningful penalties for non compliance with permit conditions.

The State of California's lax enforcement of clean air laws has been well documented since a 1997 audit by the U.S. Environmental Protection Agency, which sharply criticized California's efforts as inadequate at deterring repeat offenders. The EPA admonished regional air districts to increase the size and severity of penalties, and said the state must provide better oversight of the districts' enforcement efforts.

The Environmental Working Group (EWG) issued a report on July 29, 2004 which documented that of all the air districts in California the BAAQMD was the most lenient in assessing penalties and the most lax in enforcement.<sup>27</sup> The EWG report was a follow up to a report they issued in 1999. They found "that the BAAQMD had the lowest median fine of any air district in the state."

The PSD permit must include a mechanism to provide meaningful penalties for violations of permit conditions for the Russell City Project because the BAAQMD has lax enforcement policies which do not deter repeat offenders. This is important because this project's potential to emit is much higher than the permit limits imposed on the project. Compliance with air quality regulations requires the Project to accept limitations on emissions to comply with air quality regulations. The Statement of Basis (SOB) issued in June of 2009 states:

*"Thus, if the underlying estimates turn out to be inaccurate and actual emissions exceed the estimates as they have been incorporated into the permit limits, the facility will be in violation of its permit and will have to shut down or curtail operations unless it can fix whatever problems are causing the increased emissions."*<sup>28</sup> Statement of basis June 2009 page 11

First petitioner would like to point out that the District will not shut down a power project for any reason and history confirms this. For example, the Gateway Power Project located in Antioch has been operating since January of 2009 without a valid PSD

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<sup>27</sup> Environmental Working Group "Still Above the Law"  
<http://www.ewg.org/reports/stillabovethelaw/newsrelease.php?>

<sup>28</sup> Statement of basis June 2009 page 11 [http://www.baaqmd.gov/~media/Files/Engineering/Public%20Notices/2009/15487/B3161\\_nsr\\_15487\\_sb\\_062309.ashx](http://www.baaqmd.gov/~media/Files/Engineering/Public%20Notices/2009/15487/B3161_nsr_15487_sb_062309.ashx)

permit or a Permit to Operate (PTO). The EPA issued a FNOV<sup>29</sup> to PG&E on August 8, 2009 for lack of a PSD permit and violation of the California State Implementation Plan. In fact the FNOV was issued in the course of an appeal to the EAB over the Gateway Projects PSD permit. The BAAQMD requested that the appeal be dismissed because the EPA was now initiating enforcement action:

*“This analysis of the jurisdictional issues raised by the Petition highlights the fact that the petition presents at most, a Clean Air Act enforcement matter, not a permitting issue for this board to adjudicate under its authority in 40 CFR 124.19. Fundamentally the petition claims that the Gateway Generating Station was constructed without a valid PSD permit in violation of the PSD provision of the Clean Air Act. (or alternatively the facility is in violation of the condition of the PSD permit) To the extent these claims have any merit they are enforcement issues that must be addressed by Region 9 through a Clean Air Act enforcement action- an action that Region 9 has already begun. They do not challenge PSD permitting actions that the Environmental Appeals Board can or should adjudicate at this stage in the permit appeal context under 40 CFR Section 124.19”<sup>30</sup>*

The BAAQMD has not shut the project down even though the projects do not have a valid PSD permit or a Permit to Operate (PTO), as required by District Rule 2-1-302.<sup>31</sup> The BAAQMD has not even assessed a fine to the Gateway Facility. The BAAQMD enforcement action consisted of executing a compliance agreement to allow Gateway to operate without a PSD Permit or a valid Permit to Operate. The compliance agreement has been extended three times. The compliance agreement was novated to add another NOV related to the Gateway facilities lack of an Authority to Construct (ATC) for a diesel fire pump. Ironically, the Fire Pump ATC was filed with an application in December 2007 for an amended PSD permit, which Gateway withdrew after it began operating the project in January of 2009. Instead of fining Gateway for not permitting the Diesel Fire Pump, BAAQMD rewarded them by including the violation in the compliance agreement. There is evidence in the EAB appeal docket for the Gateway Facility that the BAAQMD knew of this circumvention of District Rules and the Clean

<sup>29</sup>[http://yosemite.epa.gov/oa/EAB\\_Web\\_Docket.nsf/Filings%20By%20Appeal%20Number/1979700DF807B14D8525762600672862/\\$File/Notification%20...50.pdf](http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Filings%20By%20Appeal%20Number/1979700DF807B14D8525762600672862/$File/Notification%20...50.pdf)

<sup>30</sup> BAAQMD BRIEF ON JURISDICTIONAL ISSUES EAB PSD Appeal No. 09-02  
[http://yosemite.epa.gov/OA/EAB\\_WEB\\_Docket.nsf/Filings%20By%20Appeal%20Number/0E7FD6B0DCAC7CBD852575EC00450927/\\$File/BAAQMD%20Brief%20...37.pdf](http://yosemite.epa.gov/OA/EAB_WEB_Docket.nsf/Filings%20By%20Appeal%20Number/0E7FD6B0DCAC7CBD852575EC00450927/$File/BAAQMD%20Brief%20...37.pdf) page 13

<sup>31</sup> **2-1-302 Permit to Operate:** Before any person, as described in Section 2-1-401, uses or operates any article, machine, equipment or other contrivance, the use of which may cause, reduce or control the emission of air contaminants, such person shall first secure written authorization from the APCO in the form of a permit to operate.

Air Act before it ever occurred.<sup>32</sup> The BAAQMD even extended the Gateway Facility's ATC three times without requiring the project to adopt current BACT standards, perform an air quality analysis or submit the ATC to public review as required by BAAQMD District Reg. 2-1-407.1.2.

In Contra Costa County, which is home to over 50% of the BAAQMD's power plants and several refineries and chemical plants, the District's lax enforcement policies and minuscule civil penalties continue to encourage non compliance with State and Federal Air Quality regulations. Of the thirty nine facilities listed on the EPA Echo website in Contra Costa County, sixteen have been in non compliance with the Clean Air Act for 12 quarters in a row.<sup>33</sup> Ten of the thirty nine facilities have been in non compliance with the Clean Air Act for six to nine quarters in a row. Only 10 of the 39 facilities have been in compliance with the CAA for all of the last twelve quarters.<sup>34</sup>

Both federal and state laws require collection and reporting of air pollution violations and enforcement data, not only because the public has a right to information about contaminants in the air we breathe, but public disclosure helps hold corporations accountable to the community. Public disclosure of violation and enforcement data is not just a matter of bookkeeping. The ultimate goal is to make the air cleaner to protect the health and safety of all Californians. Detailed, facility-level information is not available from either the U.S. EPA or the State Air Resources Board, but is kept by 35 local air quality districts. To access this information the public must submit Public records requests and must have some indication that violations are occurring just to make the requests. This is not only challenging for the public, but it is also challenging for other State and Federal agencies that are responsible for enforcing State and Federal air quality regulations. In many cases, these agencies may not be aware of significant and repeated violations of the CAA by power plants and other major stationary sources.

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<sup>32</sup> Another example occurred with the Gateway facility in Antioch where the District knew it had not complied with the public notice provisions of 40 CFR 124.1. <http://www.epa.gov/eab/pmanual.pdf> page 3. Later the district found out that its assumption that it extended the PSD permit with the ATC extension was incorrect. The Gateway Applicant told the District that if the Gateway Facility would be subject to a complete PSD review it would delay the online date and it would be better to begin operation than submit to a complete PSD review: "Gary Rubenstein indicated that we expect the permit to be appealed to the EAB by Sarvey anyway He stated the time critical element for PG&E was the commission related conditions, and since the appeal would stay the permit whether it had any merit or not, its not clear that any time would be saved by renouncing the draft permit. Sandy said it would be easier for the EAB to dismiss the appeal without the notice issue. ...Gary noted that under EPA policy once a facility starts up a non major amendment no longer requires PSD review and public notice so if amendments issuance were to be delayed until after startup PSD issues would be moot." <http://www.epa.gov/eab/pmanual.pdf> page 3. The District then delayed issuance of the permit until after the Gateway facility began operation in January of 2009 thereby avoiding PSD review and public comment. Later the USEPA issued a FNOV to Gateway for no PSD permit.

<sup>33</sup> <http://www.epa-echo.gov/cgi-bin/ideaotis.cgi>

<sup>34</sup> <http://www.epa-echo.gov/cgi-bin/ideaotis.cgi>

The Los Medanos and Delta Projects, which are both owned by Calpine<sup>35</sup>, are other particularly good examples of how the BAAQMD compliance procedures and public record procedures<sup>36</sup> inhibit compliance and enforcement policies promulgated to prevent harm to the unsuspecting public and the environment. The District allowed the two projects to continue to emit excess emissions for over two years without informing even the California Energy Commission Compliance Division, who could have prevented the ongoing non compliance, had they been informed in a timely manner. The CEC air quality compliance expert for the two projects stated under oath on June 3, 2003:

7 But the thing here is that this is what  
8 happen. We have complying verification for two  
9 Calpine project right now. I'm working on it  
10 right now at the moment. And we have similar  
11 problem, verifying compliance. We don't even know  
12 whether they comply or not with the licensing  
13 condition.  
14 **Number two, we contact the district, the**  
15 **Los Medanos and Delta project in the last two year**  
16 **alone receive 48 note of violation to the district**  
17 **condition alone. And we didn't even know about**  
18 **it. We don't even know. They don't tell us until**  
19 **we call the district. And the district say, oh,**  
20 **yeah, we have 48 note of violation. And they are**  
21 **still operating in -- mode right now.**<sup>37</sup>

The EAB should remand the permit back to the District to include meaningful penalties for non compliance with permit conditions. Otherwise, the lax enforcement policies of the district will encourage repeat offenses of the project's permit conditions.

## Conclusion

The District failed to set appropriate BACT limits for NO<sub>2</sub> Startup and Shutdown Emissions. This is critical since the new Federal NO<sub>2</sub> Standard is less than the maximum Air Quality Impact for the RCEC and impacts are highest during Startup. The District

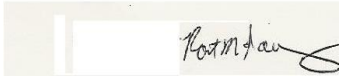
<sup>35</sup> Calpine is the developer of the Russell city Project.

<sup>36</sup> Petitioner submitted a public records request on the aforementioned Gateway Project on November 4, 2009. The District ultimately responded to the request on February 5, 2010. The petitioner sent check for copies the same day but did not receive the material for three more weeks.. Petitioner was informed at that time that four record boxes containing the bulk of the information are still at the Districts office.

<sup>37</sup> [http://www.energy.ca.gov/sitingcases/eastaltamont/documents/2003-06-09\\_EAST-01-AFC-4.PDF](http://www.energy.ca.gov/sitingcases/eastaltamont/documents/2003-06-09_EAST-01-AFC-4.PDF) page 217

has provided no scientific evidence in the permitting record that the ammonia slip from the projects SCR unit will not form significant particulate matter emissions. This is significant since some of the areas in the BAAQMD have air quality backgrounds that are at the Federal PM 2.5 standard. The BAAQMD failed to perform a proper BACT analysis for particulate matter emissions from the cooling tower. Particulate matter emissions from the cooling tower are a large portion of the projects particulate matter impacts. The District failed to include alternative equipment, operating scenarios, and other sources of water in their BACT analysis for cooling tower emissions. The District enforcement policies are lax and encourage repeat offenders since it is cheaper to violate District Rules than comply with them. For all these reasons the Board should remand the permit back to the District.

Respectfully Submitted,

A rectangular box containing a handwritten signature in black ink. The signature appears to read "Robert Sarvey".

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Robert Sarvey  
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Tracy, Ca. 95375  
209 835-7162