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

| | | |
|---|---|---|
| In re: | ) | |
| Pio Pico Energy Center | ) | Appeal Nos. PSD 12-04, PSD 12-05, and PSD 12-06 |
| PSD Permit No. SD 11-01 | ) | |

**EPA REGION 9'S EXCERPTS OF RECORD**

EPA Region 9 hereby submits the attached Excerpts of Record in support of EPA Region 9's Response to Petitions for Review in the above-referenced case.

Date: February 6, 2013

Respectfully submitted,

*/S/ Julie Walters*

Julie Walters
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EPA Region 9 (MC ORC-2)
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Email: Smith.Kristi@epa.gov

# EPA Region 9's Excerpts of Record
# In Re: Pico Pico Energy Center
# EAB Appeal Nos. PSD 12-04, PSD 12-05, PSD 12-06

A. Email exchange between Robert Sarvey and Roger Kohn, EPA Region 9, September 6, 2012 (PPEC AR Index No. VI.56)

B. Email messages from Rob Simpson to EPA Region 9 forwarding documents (without attachments), July 18, 2012 (PPEC AR Index Nos. VI.14, VI.15, VI.17, VI.20, VI.22, VI.25, VI.27, VI.29)

C. Excerpts from EPA Region 9's October 2011 Response to Comments for Palmdale Hybrid Power Project and EPA's May 2011 Response to Comments for Avenal Energy Project (PPEC AR Index n/a)

D. Excerpts from Pio Pico Energy Center, LLC's PSD Permit Application for the PPEC, September 2011 (from PPEC AR Index No. I.14)

E. Excerpt from letter from Steve Hill, Sierra Research to Gerardo Rios, EPA Region 9, January 5, 2012 (from PPEC AR Index No. I-33)

F. Letter from Steve Hill, Sierra Research to Gerardo Rios, EPA Region 9, December 8, 2011 (PPEC AR Index No. I-31)

# Excerpt A

**Re: Pio Pico PSD Permit**
R9AirPermits to: Sarveybob
Sent by: Roger Kohn
09/06/2012 04:26 PM

Mr. Sarvey:

I have attached our environmental justice (EJ) analysis for the PSD permit for the Pio Pico Energy Center (PPEC), per your request. Please note that this document has been available to the public in our electronic docket on regulations.gov since the public comment period for the proposed permit started on June 20, 2012. The public comment period closed yesterday. However, because you requested the document on July 24, 2012, and apparently have not been able to locate it, we will extend to you two additional weeks (until September 20, 2012) to comment ONLY on the EJ analysis for our proposed PPEC PSD permit. Please note that we are not extending the public comment period for the PPEC generally.

EPA Environmental Justice Analysis for PPEC, June 2012.pdf

Roger Kohn
USEPA Region 9 - Air Division (AIR-3)
75 Hawthorne Street
San Francisco, CA 94105-3901
415-972-3973
kohn.roger@epa

Sarveybob — Mr. Kohn, In my comments I submitted last mont... — 09/06/2012 08:44:08 AM

From: Sarveybob <sarveybob@aol.com>
To: R9AirPermits@EPA, sarveybob@aol.com, dbehles@ggu.edu,
Date: 09/06/2012 08:44 AM
Subject: Pio Pico PSD Permit

Mr. Kohn,
In my comments I submitted last month for this permit I requested that you provide me with a copy of the Environmental Justice analysis which I have never received, .I would appreciate if you provided the Environmental Justice analysis to me so I can comment on it.

# Excerpt B

## Pio Pico opening comments and request for extension of comment period

rob to: Roger Kohn 07/18/2012 12:56 AM

History: This message has been forwarded.

Hello Mr. Kohn,

This and the following emails, from me, constitute my opening comments and request for an extension of the public comment opportunity for the Pio Pico Proposed PSD permit.

An extension of the comment period is appropriate because there are live actions regarding this project, which may change its scope, at the state level in the California Public Utilities Commission (CPUC), California Energy Commission (CEC) and San Diego Air pollution Control District. Without germane information from those proceedings the public's ability to comment on PSD issues is unnecessarily restricted.

In its recent decision to license the Carlsbad Energy Center, despite a lack of a PSD determination, the CEC stated; "Power plant applicants at the Commission, when they are required to get a PSD permit, apply to EPA after they have obtained their state permit because it is EPA's preference that state and local permits be issued first. (12/12/2011 RT pp. 190-191.) In fact, EPA will typically wait until state permitting is finished before issuing its PSD. (Ibid.)" In this case the PSD comments are due one day after an evidentiary hearing at the CEC, and prior to evidentiary hearings at the CPUC, no state permitting is finished. As an intervenor in the CEC and CPUC proceedings and having submit comments to the air district it is beyond my ability to participate in 4 disjointed proceedings regarding the same project at the same time. I request that the EPA take Official Notice of all 3 proceedings. The air district proceeding may contain relevant air quality information, the CEC proceeding should contain relevant environmental information and the CPUC proceeding will demonstrate considerations of the need for the project.

The EPA should include all notice lists from all 3 proceedings in its Notice of this proposed action, as they have demonstrated that they are interested parties for this proposed project. At this point there appears to be no notice issued by the EPA to the officials or interested parties from any other proceeding. The proposal should first be determined as necessary by the CPUC, next the CEC and Air District should do their combined proceeding and if the EPA declines to participate in the combined proceeding, their proceeding should follow the state determinations. This is how the system was designed and the only way to for the public to effectively participate. It is how the CEC describes the procedure. It would also preserve EPA resources.

The San Diego Air Pollution Control District determination is not final and should not be relied on, at least, until the CEC issues a decision. I submit comments to the air district on their preliminary determination. The Air district failed to respond to my comments and issued their decision. I hereby submit the same comments regarding the Proposed PSD permit, in the following email, and request that the EPA revoke the air districts authority for its failure. The EPA is not in a position to make a final decision on this project and so should not require that the public make one in the form of comments at this time.

I contend that there is no need for this project. In response to my comments on the Palmdale proposed PSD permit the EPA stated;" EPA has previously recognized that it may consider the need for a facility and a "no build" alternative within the context of CAA section 165(a)(2). In re Prairie State Generating Company, 13 E.A.D. 1, 32 (EAB 2006) ("Prairie State"). However, we have also observed that it is appropriate to refrain from analyzing whether a
proposed facility is needed where the State has tasked another State agency with the authority to consider that issue. Id. Consistent with this precedent, EPA believes that mechanisms within the State of California provide the appropriate vehicles through which to

address issues regarding the need for natural gas-fired power plants in the State, as these mechanisms involve the entities specifically authorized and best equipped to consider the State's short- and long-term energy needs in the context of State renewable requirements, among other factors." In this case, as in Palmdale, the state has made not finished addressing the issue.

The response to comments further states; "In California, in order to conduct a reasoned analysis to determine the need for new natural gas-fired power plants in general, or a specific natural gas-fired power plant in particular,
either within the State as a whole, or in a particular geographic location within the State, EPA would need to consider a myriad of extremely complex factors and detailed information that EPA has neither the resources nor the expertise to analyze." I request that the EPA take official notice of the Palmdale proceeding presently before the EAB.

There are at least 10,000 pages of documents of 4 different proceedings to review in order to effectively comment on this proposed action. I have made records requests to the air district and have not received the records yet. It is too much to review in such a short time period and without final determinations from the state agencies. It would require at least another 30 days to receive response to my records requests and review documents.

The extension or delay of comment period deadlines may expedite a final permit. In Palmdale the EPA denied my request for an extension of the comment period. I appealled that denial, and other issues, to the Environmental Appeals Board (EAB), eight months ago, on November 17, 2011. The EAB has still not made a decision. The EPA could preserve resources by cooperating with the public and considering state level decisions. Should the EPA have difficulty understanding the relevance of the above requests and following comments please inform me prior to the expiration of the comment opportunity so that I might clarify them.

Rob Simpson
Executive Director
Helping Hand Tools
27126 Grandview Avenue
Hayward CA. 94542
Rob@redwoodrob.com

## Pio Pico PSD comments 1

rob to: Roger Kohn 07/18/2012 01:19 AM

Attached please find my initial Pio Pico PSD comments Pio Pico PSD comments

Rob Simpson
Executive Director
Helping Hand Tools
27126 Grandview Avenue
Hayward CA. 94542
Rob@redwoodrob.com

-------- Original Message --------
Subject: Pio Pico
From: <rob@redwoodrob.com>
Date: Wed, January 18, 2012 9:02 pm
To: "Steve Moore" <Steve.Moore@sdcounty.ca.gov>

Mr. Moore,
I will be sending a series of emails which constitute my comments for the Pio Pico PDOC. This attachment supports a no project alternative as the project is not needed. It is the PUC Standardized Planning Assumptions for System Resource Plans
Thank you

Rob Simpson

pio pico Standardized Planning Assumptions (Part 1).pdf

## Pio Pico PSD comments 2

rob to: Roger Kohn 07/18/2012 01:19 AM

Attached please find my initial Pio Pico PSD comments Pio Pico PSD comments

Rob Simpson
Executive Director
Helping Hand Tools
27126 Grandview Avenue
Hayward CA. 94542
Rob@redwoodrob.com

-------- Original Message --------
Subject: Pio Pico
From: <rob@redwoodrob.com>
Date: Wed, January 18, 2012 9:04 pm
To: "Steve Moore" <Steve.Moore@sdcounty.ca.gov>
Cc: "Staff April" <2htlegal@gmail.com>

Mr. Moore,
I will be sending a series of emails which constitute my comments for the Pio Pico PDOC. These attachments relate the Jacobson Effect and to localized effects of $CO_2$ and other pollutants
Thank you

Rob Simpson

jacobson link.pdf

jacobson effect.pdf

## Pio Pico PSD comments 3

rob to: Roger Kohn 07/18/2012 01:20 AM

Attached please find my initial Pio Pico PSD comments Pio Pico PSD comments

Rob Simpson
Executive Director
Helping Hand Tools
27126 Grandview Avenue
Hayward CA. 94542
Rob@redwoodrob.com

-------- Original Message --------
Subject: Pio Pico
From: <rob@redwoodrob.com>
Date: Wed, January 18, 2012 9:34 pm
To: "Steve Moore" <Steve.Moore@sdcounty.ca.gov>
Cc: "Staff April" <2htlegal@gmail.com>

Mr. Moore,
The attached MOU is a part of my comments. Please identify why the District has a comment period, how commenting to the District could have a different effect than commenting with the CEC, EPA or CARB and how the public can affect the proposed permit with the District as opposed to the CEC, EPA or CARB.

Rob Simpson CEC ARB MOUpdf.pdf

## Pio Pico PSD comments 4

rob to: Roger Kohn 07/18/2012 01:20 AM

Attached please find my initial Pio Pico PSD comments Pio Pico PSD comments

Rob Simpson
Executive Director
Helping Hand Tools
27126 Grandview Avenue
Hayward CA. 94542
Rob@redwoodrob.com

PDOC.Rob.Comments.doc

PDOC.Rob.Comments.pdf

20-may-08_Smart Energy 2020_2nd printing_complete.pdf

## Pio Pico PSD comments 5

rob to: Roger Kohn 07/18/2012 01:20 AM

Attached please find my initial Pio Pico PSD comments Pio Pico PSD comments

Rob Simpson
Executive Director
Helping Hand Tools
27126 Grandview Avenue
Hayward CA. 94542
Rob@redwoodrob.com

1.18.12PDOC.Comments.pdf

## Pio Pico PSD comments 6

rob to: Roger Kohn 07/18/2012 01:20 AM

Attached please find my initial Pio Pico PSD comments Pio Pico PSD comments

Rob Simpson
Executive Director
Helping Hand Tools
27126 Grandview Avenue
Hayward CA. 94542
Rob@redwoodrob.com

attf6bit.pdf

## Pio Pico PSD comments 7

rob to: Roger Kohn 07/18/2012 01:20 AM

Attached please find my initial Pio Pico PSD comments Pio Pico PSD comments

Rob Simpson
Executive Director
Helping Hand Tools
27126 Grandview Avenue
Hayward CA. 94542
Rob@redwoodrob.com

06-july-12_Pio Pico FSA_Powers_rebuttal testimony1.pdf

# Excerpt C

U.S. Environmental Protection Agency
October 2011

# Responses to Public Comments on the Proposed Prevention of Significant Deterioration Permit for the Palmdale Hybrid Power Project

light industrial uses, is needed, and requests that EPA deny or delay the issuance of the permit until such an analysis is conducted.

**Response:** Concerns about compliance with the CCR and associated issues relating to the CEC's PMPD are matters of State law and are generally outside the scope of matters regulated under the PSD permit for the Project; the commenter has not identified or described how the issues are relevant to EPA's PSD permit or associated analysis. Also, as noted in Response 43, the impacts of future sources are outside the scope of the PSD air quality analysis for PHPP. The impacts of any such future source would be accounted for at the time it seeks its own PSD permit.

4. **Comment:** The commenter stated additional measures are needed to address the visual blight associated with the Project, as required by the California Environmental Quality Act (CEQA). The commenter notes impacts associated with the facility's structure, states that the 622 foot high water vapor plumes associated with the Project would have an "adverse effect on visual resources," and states that the Project results in the complete obstruction of the "scenic views of the San Gabriel Mountains" from three of the four key observation points at the facility. The commenter requests that EPA delay or deny issuance of its PSD permit on these grounds.

   **Response:** The commenter has not described how visual impacts from the facility's structure or the CEC's compliance with CEQA raise issues with EPA's PSD permit or analysis for the Project; these issues generally appear to be outside the scope of the PSD program and the PSD permit for the Project.

   We note that EPA believes that PHPP adequately addressed the PSD regulatory requirements for assessing impairment to visibility (see 40 CFR 52.21(o)). The regulations require an assessment, but do not prescribe a particular test that a project must pass in order to receive a permit. To assess the visibility of the plume from the project, the applicant performed an extensive visibility analysis for nearby Class I areas and for some sensitive Class II areas (Sheep Mountain Wilderness Area, Saddleback Butte State Park, Antelope Valley Indian Museum State Park, Antelope Valley California Poppy State Reserve, and Arthur B. Ripley Desert Woodland). The impacts were found to be small, below the color difference and brightness contrast thresholds in EPA's Workbook for Plume Visual Impact Screening and Analysis.

   In sum, EPA does not believe that the issue raised by the commenter provides grounds for delaying or denying issuance of EPA's PSD permit.

***Comments Submitted by Gideon Kracov on Behalf of Desert Citizens Against Pollution and California Communities Against Toxics***

5. **Comment:** The commenter incorporated by reference and requested a response to attached documents relating to the Project prepared by Lisa Belenky for the Center for Biological Diversity (CBD) and Dr. Phyllis Fox, consulting engineer for the CBD. Specifically, the commenter requested that EPA respond to those comments that addressed $PM_{2.5}$ emissions,

interpollutant trading, and the air quality and other environmental impacts of the proposed use of road paving emission reduction credits.

**Response:** EPA acknowledges the documents provided by the commenter as attachments, and has included the attachments as part of the commenter's comments in the record for this action. The commenter, however, has not explained with any specificity the relevance to EPA's PSD permit decision of these attachments, which appear to have been created in the context of California Energy Commission (CEC) and/or local approval processes separate from the proposed PSD permitting action for the Project. Therefore, EPA cannot provide a detailed response. We note, however, that the issue of $PM_{2.5}$ increments is discussed in detail in Response 2.

We also note that the attached document from Dr. Phyllis Fox dated July 19, 2010 asserts that road paving associated with the Project may raise the potential for impacts to Federally listed endangered species; the U.S. Fish and Wildlife Service (USFWS) considered the issue of road paving generally in the Endangered Species Act (ESA) section 7 consultation with EPA for the PHPP, and determined that EPA's proposed action was not likely to adversely affect any Federally-listed species.

6. **Comment:** The commenter is concerned that the Project will consume much of the allowable criteria pollutant increment in the attainment area and, as a result, will prevent more environmentally friendly facilities from obtaining PSD permits in the future. The commenter is concerned this will have a negative impact on the economy and green jobs. The commenter requested that EPA provide how much increment for the various criteria pollutants will remain available in the attainment area. The commenter asked what the socioeconomic impacts are with increment consumption and stated that those impacts must be examined as part of the required socioeconomic impact analysis for the Project.

**Response:** The PSD increments that are currently in effect for the area in which the PHPP will be located are for annual, 24-hour, and 3-hour sulfur dioxide ($SO_2$), annual $NO_2$, and annual and 24-hour particulate matter under 10 μm in diameter ($PM_{10}$). There are no increments defined for the other criteria pollutants regulated under the permit, except for $PM_{2.5}$. However, as discussed in detail in Response 2, the effective date for the $PM_{2.5}$ increments is October 20, 2011, and therefore the PHPP is not required to perform an increment analysis because it is being issued a final PSD permit prior to that date. Response 2 also notes that the information available indicates the area over which PHPP has a significant $PM_{2.5}$ impact is limited in geographic scope to an area fairly close to the PHPP site.

The PHPP would emit lower than the significant emission rate of 40 tons per year for $SO_2$, so PSD is not applicable to PHPP for $SO_2$. For annual $NO_2$, the Project's modeled impacts are less than the SIL of 1 $\mu g/m^3$ and therefore further air quality modeling was not necessary to demonstrate compliance with the increment. For 24-hour $PM_{10}$, the Project's maximum modeled impact was 12.7 $\mu g/m^3$, which is above the SIL of 5 $\mu g/m^3$ and required a cumulative increment analysis. The $PM_{10}$ increment consumption was modeled to be 12.9 $\mu g/m^3$, which is below the increment of 30 $\mu g/m^3$. Further, these significant impacts all

| Palmdale Hybrid Power Project | | | |
|---|---|---|---|
| | **Cold Startup (lb/event)** | **Hot/Warm Startup (lb/event)** | **Shutdown (lb/event)** |
| **$NO_x$** | 96 | 40 | 57 |
| **CO** | 410 | 329 | 337 |

Because the emission limits are on a mass basis we find that the difference in size and setup of the two facilities does not make the emissions during startup and shutdown directly comparable. For example, a larger unit will generate more emissions on a mass basis (lb/hr or lb/event in this case) but on a concentration basis (ppm or lb/MMBtu) the emissions could be equivalent. This is demonstrated by the $NO_x$ limits during normal operations for these two facilities Both facilities must meet 2.0 ppm but OGS has a lb/hr emission limit of 15.52 whereas PHPP's lb/hr emission limit is 13.47 lb/hr (without duct burning). We continue to conclude that BACT during startup and shutdown is the lb/event limits and duration limits in the Proposed Permit. We continue to conclude that BACT during startup and shutdown is the lb/event limits and duration limits in the proposed permit.

59. **Comment:** The commenter attached a copy of a legal brief prepared on behalf of the Chabot-Las Positas Community College District regarding the Eastshore Energy Center.

**Response:** EPA acknowledges that this legal brief was provided by the commenter as an attachment to his comments, and has included the attachment as part of the commenter's comments in the record for this action. The commenter, however, has not mentioned or referenced this brief in his comments, or otherwise explained with any specificity the relevance to EPA's PSD permit decision of this document, which appears to have been created in the context of a proceeding before the CEC for a different project, the Eastshore Energy Center. Therefore, EPA cannot provide a detailed response.

***Comments Submitted by AECOM on behalf of the City of Palmdale***

60. **Comment:** The commenter stated that the hourly $NO_x$ and CO pound per hour emission limits for the combustion turbine generators (CTGs) in Condition X.C.1 should be revised to correspond to the load data provided in Appendix A of the application and to reflect the CO limits from the BACT analysis. The commenter states that the maximum hourly limits should correspond to the low temperature case (23°F) in the emissions data as that is expected to be the maximum hourly concentrations for the Project. The commenter states that it is standard practice for combined-cycle projects to use the low temperature case as the governing limit for maximum hourly values, as was done in the District's FDOC for the PHPP.

The commenter states that the $NO_x$ limits in Condition X.C.1 should be 13.47 lb/hr without duct burning and 16.60 lb/hr with duct burning. The CO limits in Condition X.C.1 should be 8.20 lb/hr (during the demonstration period) and 6.15 lb/hr (after the demonstration

US Environmental Protection Agency
May 2011

# Responses to Public Comments

## on the Proposed Prevention of Significant Deterioration Permit for the Avenal Energy Project

merely by virtue of the fact that the Project is to be sited in a particular location that is currently used as farmland.

33. **Comment:** The commenter states that it appears the additional electricity on the grid could cause growth in distant areas and interfere with the development of cleaner energy resources.

    **Response:** To the extent that the commenter is arguing that the Project's addition of more electricity to the power grid should be considered in EPA's growth analysis for the Project, EPA disagrees, for the reasons discussed in the response to comment 32 in Section II.A.1 concerning the appropriate scope of analysis. In addition, we note that the commenter has not provided any specific information to support the notion that adding electricity to the grid from the Project would result in growth in distant areas. Indirect impacts such as those raised by the commenter are under State and local planning jurisdictions.

34. **Comment:** The commenter states that the time period for a decision on the application seems to have expired. The commenter further states that if the Project had been permitted when the application was received, the permit would have expired by now. The commenter further states that the EPA should only act favorably on contemporaneous applications.

    **Response:** While EPA agrees that the one-year period established by CAA section 165(c) for issuing a permit decision has passed, given the fact that the permit application for the Project was determined complete in March 2008, EPA disagrees that this situation in and of itself provides a basis on which EPA should not "act favorably" on the permit application. EPA has processed this permit application as quickly as practicable under the particular circumstances surrounding the permit application. While Congress set a one-year deadline to issue or deny a permit from the time that an application is deemed complete, there are instances in which the process is complex and will require more time to complete. Our decision whether to issue a permit is based on whether the permit meets applicable substantive legal requirements; there is nothing in the CAA or our implementing regulations that indicates that passage of the one-year deadline alone determines permit approvability. *See, Hancock County v. EPA*, 1984 U.S. App. Lexis 14024, 22 ERC 1714 (6th Cir. 1984).

    We also disagree, for several reasons, with the commenter's argument that if the permit had been issued when the application was received, it would have expired by now. Among these reasons is the fact that EPA must follow the relevant statutory and regulatory processes for issuing PSD permit decisions and it often takes time for EPA to carry out those processes.

35. **Comment:** The commenter states his intent to incorporate the attached CEC Staff Assessment, Complaint and rebuttal testimony in a series of emails. The commenter provided more than thirty attachments composed of more than 1400 pages. The commenter also provided information relating to the Tracy power plant that he states is relevant to the AEP.

**Response:** EPA acknowledges the commenter's documents provided as attachments to his email transmittals and has included the attachments as part of the commenter's comments in the record for this action. The commenter, however, has not explained with any specificity the relevance of these attachments, which were created in the context of permitting matters separate from the proposed PSD permitting action for the Project. Therefore, EPA cannot provide a detailed response. We note, however, that where the text of the commenter's comments raise specific arguments concerning an attachment, we have responded to those comments elsewhere in this document. The commenter also did not explain the relevance to EPA's PSD permitting action for the AEP of the information regarding the Tracy power plant, and therefore EPA cannot provide a detailed response as to this issue.

***Comments Submitted by Sierra Research for APC (the Applicant)***

36. **Comment:** The Applicant states that the maximum rated heat input of each gas turbine is 1,856.3 MMBtu/hr rather than 2,356.5 MMBtu/hr, while clarifying that each duct burner has a maximum rated heat input of 562 MMbtu/hr. The maximum heat input of each power train (combustion turbine generator plus duct burner) is 2,356.5 MMBtu/hr.

    **Response:** We have made the requested correction in the equipment list for Unit IDs GEN1 and GEN2. The maximum rated heat input for the duct burners was correctly stated in the proposed permit and has not been changed.

37. **Comment:** The Applicant noted that the proposed natural gas-fired emergency generator engine will be a lean burn engine. Therefore, the emission control system is a three-way catalyst system, which controls $NO_x$, VOC and CO emissions. The control system will not be an NSCR (non-selective catalytic reduction) system, which controls only $NO_x$ emissions and is typically used for rich-burn engines.

    **Response:** In order to assist with the development of an accurate and enforceable permit, on May 6, 2010 EPA held a conference call with Applicant to discuss this issue and the issues raised in several of the following comments. APC followed up the conference call with a letter dated May 11, 2010 providing specific information about the emergency generator engine. In its letter, APC stated that the engine would be a lean burn engine with a post combustion integrated Miratech SCR/oxidation catalyst system. We have revised the language in the final permit to reflect the final equipment selection. See the following sections of the permit: (a) project description, (b) the equipment list, (c) Condition X.B (Air Pollution Control Equipment and Operation), and (d) Condition X.E.1 (Auxiliary Combustion Equipment Emission Limits). We note that the emission limits for this unit are unchanged, except for CO, which has been lowered from 0.6 g/bhp-hr to 0.21 g/bhp-hr (see Condition X.E.1). We also note that the exhaust and stack parameters will remain the same.

38. **Comment:** The Applicant stated that the averaging period for the CO limit for the gas turbines should be 3 hours instead of 1 hour. The Applicant noted that it has not requested a change from the 3-hour averaging period established in the District's Final Determination

# Excerpt D

sierra research

# Application to the U.S. EPA for a Prevention of Significant Deterioration Permit Pio Pico Energy Center San Diego County, California

prepared for:

**Pio Pico Energy Center, LLC**

September 2011

prepared by:

Sierra Research, Inc.
1801 J Street
Sacramento, California 95811
(916) 444-6666

## 1.1 INTRODUCTION

In this Application for Certification (AFC), Pio Pico Energy Center, LLC (PPEC LLC or "Applicant") is seeking approval from the California Energy Commission (CEC) to construct and operate a power generation facility, the Pio Pico Energy Center (PPEC), within the County of San Diego. PPEC LLC seeks CEC approval in order to satisfy an obligation to supply electrical capacity and energy to San Diego Gas & Electric (SDG&E) under a 20-year Power Purchase Agreement (PPA).

PPEC is a proposed simple-cycle power generation project that consists of three General Electric (GE) LMS100 natural gas-fired combustion turbine generators (CTGs). The total net generating capacity would be 300 megawatts (MW), with each CTG capable of generating 100MW. The proposed plant will be owned and operated by Pio Pico Energy Center, LLC (PPEC LLC). The electricity generated by this project would be in support of a contract with SDG&E. Section 2.0, Project Objectives, describes the contract in more detail.

The GE LMS100 is the first intercooled gas turbine system developed especially for the peaking electrical needs of the power generation industry. The LMS100 is designed for cyclic applications with 10-minute starts that provide flexible power generation for peaking and intermediate solutions vital to support variable demand and variable renewable energy sources that SDF&E is increasingly contracting for.

The project site consists of previously disturbed and prepared land within an industrial park, the Otay Mesa Business Park, in the County of San Diego, adjacent to the existing Otay Mesa Generating Project. The site is served by prepared, paved streets, water and other utilities. Besides short connections in the streets for water and sewer, PPEC will require only a natural gas transmission pipeline and an electrical transmission connection line. Surrounding uses are highly compatible with PPEC. For these reasons, PPEC will have minimal adverse environmental impacts while providing a valuable peaking and load shaping needs for the San Diego area.

PPEC is designed to directly satisfy the San Diego area demand for peaking and load-shaping generation, near and long term. Power would come from three GE LMS100 natural gas-fired CTGs. Each CTG would be equipped with water injection for reducing oxides of nitrogen ($NO_x$) emissions, a selective catalytic reduction (SCR) system with 19 percent aqueous ammonia ($NH_3$) injection to further reduce $NO_x$ emissions, and an oxidation catalyst to reduce carbon monoxide (CO) and volatile organic compound (VOC) emissions. Auxiliary equipment would include inlet air filters with evaporative coolers, a turbine compressor section intercooler, a partial dry-cooling system, circulating water pumps, water treatment equipment, natural gas compressors, generator step-up and auxiliary transformers, and water storage tanks.

This AFC has been prepared in accordance with the requirements of the Warren Alquist Act (Public Resources Code section 25000 et. seq) and regulations adopted pursuant to that law. The AFC provides:

- A detailed description of the proposed PPEC project.

The Pio Pico Energy Center (PPEC) is a simple-cycle power generation project that has been designed and developed to conform to the requirements of San Diego Gas and Electric (SDG&E) and the California Public Utilities Commission (CPUC). This project's primary goal is to meet the objectives of SDG&E's 2009 Request for Offers (RFO) and the resulting contractual requirements contained in the Power Purchase Agreement between SDG&E and Pio Pico Energy Center, LLC (PPEC LLC).

## 2.1 SDG&E REQUEST FOR OFFERS

The CPUC approved the SDG&E long-term resource plan. In this proceeding, SDG&E submitted its long-term resource needs and the increments of generation required to meet these load projections. SDG&E indicated that most of the required generation would be acquired to satisfy peaking and shoulder loads, and would be dispatchable. According to CPUC's decision that approves SDG&E's long-term resource plan, SDG&E was authorized and encouraged to seek new peaking dispatchable generation through a bidding process to satisfy projected system loads.

In response to this decision, SDG&E issued its 2009 RFO. SDG&E also indicated that, in accordance with the CPUC decision, SDG&E would utilize an "Independent Evaluator" to oversee the RFO process. SDG&E notified prospective bidders that their bids would be evaluated utilizing a number of factors, including market valuation, portfolio fit, transmission impact, environmental characteristics, and conformance with SDG&E's nonprice terms and conditions.

These RFO objectives are derived from a need for new electric power generation as projected and authorized by the CPUC and California Independent System Operator (CAISO). SDG&E, as authorized by the CPUC, issued an RFO in June 2009 and awarded PPEC LLC a Power Purchase Agreement in January 2011 under the RFO Product 2 category. Following is an excerpt from that Product 2 offering:

> **Product 2 - New Local Generation Projects, online in 2010 – 2014.**
>
> SDG&E seeks a minimum of 100 MW of peaking or intermediate-class resources as new construction or expansion projects within SDG&E's territory. Any resulting contract will be a tolling agreement with a term of 20 years and online dates of May 1- or October 1 in either 2010, 2011, 2012, 2013, or 2014. The generation must be located physically within SDG&E's service territory (as more specifically described in the Addendum) or have its sole generator transmission system interconnection (gen-tie) directly interconnected to the electric network internal to SDG&E's local area as currently defined by the California Independent System Operator ("CAISO") such that the unit supports SDG&E's Local RA requirement. … Products offered in this category shall be capable of operating under all permits at annual capacity factors of a minimum of 30% with an availability of >98%. It is anticipated that heat rates will be no higher than 10,500 btu/kWh. For this product, SDG&E requires flexible resources that are capable of providing regulation during the morning and evening ramps and/or units that can be started and shut down as needed. In addition, SDG&E will include the

additional value provided from projects that can provide quick start operations in the ranking of Offers. SDG&E also requires that each Offer contain pricing for, and an option to provide, black start capability.

These SDG&E RFO objectives are listed below:

1. Be online by 2014.
2. Be a minimum of 100 megawatts (MW) of peaking and intermediate-class resources.
3. Locate in SDG&E service territory.
4. Operate under a fuel tolling agreement over a 20-year contract.
5. Be capable of operating under all permits at annual capacity factors of a minimum of 30% with an availability of >98%.
6. Heat rates will be no higher than 10,500 British thermal units per kilowatt hour (Btu/kWh).
7. Use flexible resources that can provide regulation during the morning and evening ramps and/or units that can be started and shut down as needed.
8. Provide quick start operations.

## 2.2 RESPONSE TO REQUEST FOR OFFERS

The Applicant, upon evaluation of all the RFO Product offerings, decided that Product 2 (peaking power) was the most compatible offering with the Applicant's power development experience. PPEC LLC was incorporated and a bid into the SDG&E RFO was submitted in August 2009. The PPEC team believes that a relatively large number of offers were submitted to SDG&E in response to its June 9, 2009, RFO.

In December 2009, PPEC LLC was informed by SDG&E that the PPEC bid had been short-listed and that power purchase agreement negotiations would begin in earnest. See Section 4.0, Alternatives, for more details on PPEC's RFO response. As noted above, a PPA was executed between SDG&E and PPEC, LLC in January 2011.

## 2.3 SDG&E CONTRACT

SDG&E evaluated the offers and created a short list of potential projects. Following the submittal of additional information to SDG&E, the list of projects was further shortened. In December 2009, SDG&E informed PPEC LLC that its project had been accepted on a final list, thereby commencing negotiations over contract terms and conditions. Rigorous negotiation ensued over contract terms that culminated in a contract signed in January 2011 for generation services.

Salient contract provisions include:

- A contract term of 20 years.
- PPEC would be constructed on a leased parcel of land located in San Diego County.
- PPEC would have three General Electric LMS100 combustion turbine machines.
- Each of these combustion turbines would provide approximately 100MW of capacity in summer peak conditions for a total of 300MW.
- A turbine efficiency level no higher than 10,500 Btu/kWh is to be produced at 100 percent rated capacity, summer peak conditions.
- SDG&E has the ability to dispatch each of the units as system conditions require.
- The entire three-turbine project is to be online and available for SDG&E to dispatch into the grid on or before May 27, 2014.

## 3.1 INTRODUCTION

The Pio Pico Energy Center (PPEC), proposed by Pio Pico Energy Center, LLC (PPEC LLC), is a simple-cycle electrical generating facility that is contracted under a 20-year power purchase agreement (PPA) with San Diego Gas & Electric (SDG&E) in response to their 2009 Request for Offers (RFO). The RFO was a broad solicitation for power generation that included peaking facilities, like PPEC, as well as demand-side management and generation from renewable energy resources.

PPEC, which would be owned and maintained by PPEC LLC, is designed to directly satisfy the San Diego area peaking and load-shaping generation current and long-term requirements. Key among these requirements is supporting wind and solar generation, whose overall output varies. As wind, hydro, solar, and other renewable resource output drops, PPEC can be dispatched from 'cold iron' to 300 megawatts (MW) in fewer than 10 minutes to make up the lost grid capacity. Thus, PPEC would support and allow heightened penetration of renewable energy into SDG&E's service territory.

Electric power generated at PPEC would be sold to SDG&E under a 20-year PPA between PPEC LLC and SDG&E. Design of the plant and equipment selection is based on requirements in the PPA.

The project would be located on a disturbed and development-prepared parcel within an unincorporated industrial area within San Diego County (see Figure 3.1-1, Regional Location, and Figure 3.1-2, Site Vicinity). The project site and facilities would encompass 9.99 acres of permanent improvement and would temporarily utilize 6.0 acres of laydown area. The project also has linears comprised of a natural gas pipeline having a maximum length of approximately 10,300 feet, and an electrical transmission line having a maximum length of approximately 2,650 feet. The project will also connect to water supply and discharge pipelines in the paved streets adjacent to the site. The project site is adjacent to or nearby all necessary supporting infrastructure. Specifically:

- The 230-kilovolt (kV) SDG&E Otay Mesa switchyard is located within 1,800 feet.
- An SDG&E intrastate gas transmission line is located within two miles.
- Otay Water District will provide potable and, eventually, recycled water directly to the project site through Otay Water District water lines immediately adjacent to the site.
- Sewer discharge mains area located immediately adjacent to the project site along Alta Road and Calzada de la Fuente.
- The site is easily accessible by existing primary County roads.

The metal acoustical enclosure, which contains the CTGs and accessory equipment, will be located outdoors. The CTGs will be equipped with the following required accessories to provide safe, reliable operation:

- Evaporative coolers (enhance hot weather performance)
- Inlet air filters (remove dust and particulate from the air)
- Metal acoustical enclosure (reduce sound emissions)
- Duplex shell and tube lube oil coolers for the turbine and generator (cool lubricating oil)
- Annular standard combustor combustion system
- Compressor wash system (cleans compressor blades and restores compressor performance)
- Fire detection and protection system
- Compressor intercooler (improves the efficiency of the compressor)
- Hydraulic starting system
- Combustor water injection system (for $NO_x$ control and output enhancement)
- Compressor variable bleed valve vent (prevent compressor surge in off-design operation)
- The combustion gases exit the turbine at approximately 770ºF and then pass through the hot SCR system for $NO_x$ emission control and an oxidizing catalyst for control of CO and VOC emissions. The SCR is used in conjunction with $NH_3$ injection for the control of $NO_x$ emissions. A 19 percent aqueous $NH_3$ solution is injected into the CTG exhaust gas stream that passes over a catalyst bed, which reduces the $NO_x$ to inert nitrogen.
- The SCR equipment includes a reactor chamber, catalyst modules, $NH_3$ storage, vaporization and injection system, and monitoring equipment and sensors. The $NH_3$ storage area will consist of a tank on a concrete pad with a boxed containment wall. After passing through the SCR, the exhaust gases exit through the attached stack.

### 3.5.4.2 Performance Data and Plant Efficiency

Each CTG will generate approximately 100MW under most ambient conditions. The PPEC plant will be limited to a maximum capacity factor of 46 percent, which is equivalent to 4,000 hours per year for each CTG.

The full-load performance of each CTG on a typical day (70 degrees ºF and 57 percent relative humidity) is as follows:

- Power Output 102.4.7MW at the generator terminals

- Fuel Flow 808 million British thermal units per hour (MMBtu/hr) low heating value (LHV), or 39,203 pounds per hour (lb/hr)
- Heat Rate 7,894 British thermal units per kilowatt hour (Btu/kWh) LHV

Auxiliary power loads for CTG auxiliaries and for the balance of plant equipment will reduce the net electrical power output transmitted from the generator terminals to the transmission grid. The project operating characteristics during season (i.e., Winter, Spring/Fall, and Summer) and peak periods are provided on the heat and mass balance diagrams presented on Figures 3.5-2A through 3.5-2D, and key characteristics are summarized in Table 3.5-2, Seasonal Heat and Mass Balances. Annual operating characteristics (per CTG and total plant) are presented in Table 3.5-3, Design Condition Annual Operating Characteristics.

**TABLE 3.5-2**
**SEASONAL HEAT AND MASS BALANCES**

| | Winter | Spring/Fall | Summer | Peak |
|---|---|---|---|---|
| **Conditions** | | | | |
| Ambient Dry Bulb, ºF | 59 | 70 | 80 | 93 |
| Relative Humidity, % | 60 | 57 | 38 | 22 |
| **Performance** | | | | |
| CTG Output (each), MW | 104.3 | 102.4 | 101.0 | 99.3 |
| Heat Rate, Btu/kWh, LHV | 7,856 | 7,894 | 7,926 | 7,964 |
| Fuel Flow, MMBtu/hr, LHV | 819 | 808 | 800 | 791 |
| $NO_x$ Water Injection, lb/hr | 26,388 | 25,255 | 24,910 | 24,472 |
| CT Exhaust Flow, klb/hr | 1,708 | 1,685 | 1,669 | 1,650 |

ºF = degrees Fahrenheit
klb/hr = kilo pound per hour
lb/hr= pound per hour
LHV= lower heating value
MW = megawatts

**TABLE 3.5-3**
**DESIGN CONDITION ANNUAL OPERATING CHARACTERISTICS**

| | Winter (per CTG) | Spring/Fall (per CTG) | Summer (per CTG) | Peak (per CTG) | Total Annual (Per CTG) | Total Annual Plant (3 CTGs) |
|---|---|---|---|---|---|---|
| Operating Hours | 1,100 | 1,600 | 1,000 | 300 | 4,000 | 4,000 |
| Fuel Consumption[1], MMBtu, LHV | 900,900 | 1,292,800 | 800,000 | 237,300 | 3,231,000 | 9,693,000 |
| Net Electrical Energy Produced[1], MWhr | 114,730 | 163,840 | 101,000 | 29,790 | 409,360 | 1,228,080 |

MMBtu = One million Btu
MWhr = Megawatt-hour
LHV = lower heating value
[1] Assumes 500 startups and shutdowns per year.

# Excerpt E

January 5, 2012

sierra research

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Mr. Gerardo Rios
Chief, Permits Office
U.S. EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

Subject: Pio Pico Energy Center PSD Permit Application
Modeling Questions

Dear Mr. Rios:

As requested by EPA in the December 9, 2011 meeting between representatives of EPA and Pio Pico Energy Center, LLC (Applicant), we are herein submitting additional information on behalf of Applicant. Specifically, EPA requested additional analysis and information to support the modeling performed for the Pio Pico PSD Permit Application.

It should be noted that Applicant submitted the proposed modeling protocol for the Pio Pico Energy Center (Project) to EPA on December 1, 2010, with a request for review and comment, consistent with EPA's policy encouraging early consultation on modeling issues.[1] EPA did not respond to Applicant's request. In the absence of any questions or concern expressed by EPA regarding the protocol, the Applicant proceeded with modeling and analysis consistent with the protocol, and has expended considerable time and effort in reliance on EPA's tacit approval.

## Data Substitution

**Comment**: *Provide tables showing the measured data (prior to data substitution).*

**Response:** The requested information has been prepared by the San Diego Air Pollution Control District (District), and is included on the enclosed disk.

## Meteorological Data

**Comment**: *Justify the use of Otay Mesa meteorological data to characterize conditions in the project area.*

[1] Appendix W, Section 10.2.1: "[e]very effort should be made by the Regional Office to meet with all parties involved in a SIP revision or a PSD permit application prior to the start of any work on such a project. During this meeting, a protocol should be established between the preparing and reviewing parties to define the procedures to be followed, the data to be collected, the model to be used, and the analysis of the source and concentration data."

## PM BACT for Turbines

**Comment:** *Provide the data from the Panoche Energy Center project used to develop the proposed turbine PM BACT emission level of 5.5 lb/hr.*

**Response:** The Panoche Energy Center source test data are summarized in Table 3. Please note that these few source tests are not sufficient to demonstrate that the measured emission rates are achievable under all conditions and for the lifetime of the turbines. Furthermore, the test method used to measure PM is not very accurate at the low levels being measured; there is considerable variability in the results. For these reasons, the applicant has proposed a compliance level that takes into account (a) the vendor guarantee; (b) the emission levels demonstrated in the source tests; (c) reasonable variability in performance that can be expected over the lifetime of a well-maintained unit; and (d) the variability inherent in the source test methodology.

Taking all of the above into account, test results provide sufficient support for the Applicant to determine that it can comply with a 5.5 lb/hr emission limit, which is equivalent to 0.0065 lb/MMBtu measured at or near peak turbine load.

Source test reports and/or summaries are included on the enclosed CD.

**Table 3. Panoche Energy Center**
**PM Emission Tests Results (lb/MMBtu)**
4 x 100 MW GE Model LMS100 combustion turbines

| Date | 5/13/2011 | 5/12/2011 | 5/11/2011 | 5/10/2011 | 5/11/2010 | 5/12/2010 | 5/18/2010 | 5/19/2010 | 4/30/09 - 5/1/09 | 4/27/2009 | 4/23/2009 | 4/24/2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Unit** | **1** | **2** | **3** | **4** | **1** | **2** | **3** | **4** | **1** | **2** | **3** | **4** |
| **Unit Load** | | | | | | | | | 100% | 100% | 100% | 100% |
| **Run 1** | 0.00298 | 0.00402 | 0.00314 | 0.00184 | 0.00279 | 0.00141 | 0.00168 | 0.00249 | 0.002 | 0.005 | 0.012 | 0.002 |
| **Run 2** | 0.00261 | 0.00192 | 0.00420 | 0.00182 | 0.00213 | 0.00107 | 0.00176 | 0.00198 | 0.002 | 0.003 | 0.002 | 0.007 |
| **Run 3** | 0.00167 | 0.00169 | 0.00605 | 0.00185 | 0.00169 | 0.00155 | 0.00149 | 0.00310 | 0.004 | 0.001 | 0.002 | 0.006 |
| **Average** | 0.00242 | 0.00254 | 0.00446 | 0.00184 | 0.00220 | 0.00134 | 0.00164 | 0.00252 | 0.003 | 0.003 | 0.005 | 0.005 |

| | 2011 | 2010 | 2009 | Overall |
|---|---|---|---|---|
| **Average** | 0.00282 | 0.00193 | 0.004 | 0.003 |
| **Std Deviation** | 0.00136 | 0.00060 | 0.003 | 0.002 |
| **Relative Std Deviation** | 48% | 31% | 78% | 73% |
| **Mean plus 2 S.D** | 0.0055 | 0.0031 | 0.0103 | 0.0072 |

# Excerpt F

December 8, 2011

sierra research

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Mr. Gerardo Rios
Chief, Permits Office
U.S. EPA, Region 9
75 Hawthorne Street
San Francisco, CA 94105

Subject: Pio Pico Energy Center PSD Permit Application
PM BACT for Simple-Cycle Turbines

Dear Mr. Rios:

As requested by EPA in a telephone conversation between Roger Kohn (EPA) and Steve Hill (Sierra Research) on November 29, 2011, we are submitting clarifying information on behalf of Pio Pico Energy Center, LLC (Applicant). EPA requested additional analysis to support the determination in the repackaged PSD application of BACT for PM emissions from the simple-cycle turbines.

## Summary of BACT Analysis Contained in the September 15th PSD Package

On September 15, 2011, the Applicant submitted a repackaged PSD application. The top-down PM BACT analysis demonstrated that $PM/PM_{10}/PM_{2.5}$ BACT for normal operation of the simple-cycle gas turbines is the use of natural gas as the primary fuel source. The Applicant proposed an emission limit of 5.5 lb/hr, based on vendor guarantees and the experience of the Applicant and others with similar installations.

EPA staff also requested confirmation of the sulfur levels used by the Applicant in its emission calculations. The Applicant based its emission calculations on fuel sulfur levels of 0.25 gr/100 scf (annual average) and 0.75 gr/100 scf (hourly average).[1]

## Control Level

EPA has not indicated that it disagrees with the Applicant's demonstration that BACT for this project is the use of natural gas as the primary fuel source; but did request additional justification for the proposed compliance limit of 5.5 lb/hr. Additionally, EPA has indicated that the compliance limit should be expressed as an emission rate in units of lb/MMbtu (HHV) of heat input.

[1] See repackaged PSD Application (September 2011), pp. PSD-4.34, PSD-4.55, and PSD-App-1.53.

**Comment**: *In order to facilitate comparison with other projects, EPA requests that the proposed limit be expressed as an emission rate (in units of lb/MMBtu).*

**Response:** The Applicant's originally proposed compliance limit of 5.5 lb/hr was intended to apply under all circumstances, including full load, low load, startup, and shutdown. Because fuel use is different under these conditions, the lb/MMBtu rate will be different as well.

Compliance with the PM limits is demonstrated through the use of periodic source tests. As specified in 40 CFR 60.8(a)(4)(c), performance tests are conducted "under such conditions as the Administrator shall specify based on representative performance of the affected facility." The Applicant is willing to accept the emission limit of 0.0065 lb/MMBtu (HHV), which is equivalent to the Applicant's proposed limit of 5.5 lb/hr, when the turbine is operated at or near full load.[2] Compliance with this limit would be demonstrated by a source test that complies with all of the requirements set forth in 40 CFR § 60.8 and 40 CFR Part 60 Appendix A, conducted at or near full load.[3]

**Comment**: *Please provide additional justification for the proposed limit. Compare with the limits achieved in practice by other gas turbines. Following the top-down BACT procedure, rank the examples from lowest to highest and either explain why they do not apply to the project, or revise your proposed BACT emission rate to reflect achieved-in-practice limits.*

**Response:** Particulate emissions from combustion of natural gas are usually below the limits of detection of current EPA test methods. As a result, PM test results from gas-fired combustion equipment are highly variable, and are often dominated by testing artifacts. Differences in PM emission rates proposed for PSD permits are often attributable to the risk tolerance of the applicant and/or equipment vendor, rather than to any technical specification. Nonetheless, we have reviewed additional PM BACT determinations as requested by EPA.

The sources listed in the attached Table 1 were considered for this analysis. Information in this table was taken from EPA's fact sheet for the Palmdale Hybrid PSD Permit.

The most recently permitted units with total PM limits expressed as lb/MMBtu are Palmdale Hybrid in California (Palmdale), Warren County Power Station in Virginia (Warren County), and Chouteau Power Plant in Oklahoma (Chouteau). Of these three facilities, only the Chouteau unit is operational. Because neither Palmdale nor Warren County has any operating history, the permit limits are not relevant to an analysis of achieved-in-practice emission rates. Therefore, all of the sources listed in Table 1, except Chouteau, were eliminated from further consideration.

[2] 0.0065 lb/MMBtu = (5.5 lb/hr) / (851.5MMBtu). The heat rate is the lowest peak fuel use rate from the design cases.

[3] EPA Methods 5 and 202, or Methods 201A and 202, for PM, $PM_{10}$, and $PM_{2.5}$, or CTM-039 in lieu of Method 202.

The new turbines at Chouteau are subject to a PM limit of 0.0035 lb/MMBtu, averaged over 24 hours.[4] Because the source test methodology used to demonstrate compliance is comprised of three test runs that can be as short as one hour each, it is impossible to determine compliance with a 24-hour average limit for PM expressed as lb/MMbtu.

PM source tests were conducted at Chouteau on May 18-25, 2011, and again on July 6-8, 2011.[5] The results from initial compliance testing of total PM at Chouteau are summarized in Table 2 (attached). Table 2 shows that Chouteau did not comply with its PM limits; therefore, this unit does not demonstrate achieved-in-practice BACT.

As shown in the following table, a statistical analysis of the Chouteau test results indicates a mean PM value of 0.0052 lbs/MMbtu, with a relative standard deviation of 30%. Since permit limits must be met on an on-going basis for the life of the plant, an analysis of source test data must include an allowance for variability. The mean plus two standard deviations, based on the Chouteau test data, is 0.0084 lbs/MMbtu; thus, if these are used to establish a permit limit, the limit should be no lower than 0.0084 lbs/MMbtu.

**Summary of Chouteau PM Test Results (lbs/MMbtu)**

| Date | 5/25/2011 | 5/22-23/2011 | 5/18/2011 | 7/7-8/2011 | 7/7/2011 | 7/6/2011 | 7/6/2011 | 7/7/2011 |
|---|---|---|---|---|---|---|---|---|
| **Unit** | **21** | **22** | **22** | **21** | **21** | **21** | **22** | **33** |
| **Unit Load** | **100%** | **100%** | **60%** | **60%** | **100%** | **100%** | **100%** | **100%** |
| **DB Load** | **0%** | **0%** | **0%** | **0%** | **70%** | **100%** | **70%** | **100%** |
| **Run 1** | 0.0036 | 0.0042 | 0.0056 | 0.0054 | 0.0058 | 0.0078 | 0.0082 | 0.0069 |
| **Run 2** | 0.0029 | 0.0035 | 0.0043 | 0.0055 | 0.0061 | 0.0079 | 0.0080 | 0.0039 |
| **Run 3** | 0.0035 | 0.0040 | 0.0048 | 0.0043 | 0.0047 | 0.0048 | 0.0061 | 0.0039 |
| **Average** | 0.0033 | 0.0039 | 0.0049 | 0.0051 | 0.0055 | 0.0068 | 0.0074 | 0.0049 |
| | | | | | | | | |
| | Overall Average | | 0.0052 | | | | | |
| | Overall Std Deviation | | 0.0016 | | | | | |
| | Relative Std Deviation | | 30% | | | | | |
| | Mean plus 2 S.D | | 0.0084 | | | | | |

The PM control level proposed by the Applicant, 0.0065 lb/MMBtu at peak turbine load, was based on source test data from similar units operating in Southern California, and is the lowest emission rate that assures continuous compliance. It is lower than the level for which the turbine vendor will provide guarantees, and it is lower than the value suggested by the Chouteau data.

The Applicant's proposed limit of 0.0065 lbs/MMbtu is not applicable to low load operation, startup, or shutdown. We understand that EPA wishes to consider including in the permit an emission rate limit that is applicable to low load operations. We believe there is insufficient data upon which to establish a low-load emission rate (in units of

[4] Oklahoma DEQ Permit No. 2007-115-C (M-1) PSD, Condition 1, limits $PM_{10}$ emissions from Turbines EU 1-03 and 1-04 to 6.24 lb/hr (3-hour average, without duct firing), 6.59 lb/hr (3-hour average, with duct firing) and 0.0035 lb/MMBtu (24-hour average).

[5] Letter, dated August 19, 2011 from Tadd Henry (Associated Electric Cooperative) to Kendal Stegman (Oklahoma DEQ).

lbs/hr) different from that applicable at maximum load. Because the hourly emissions are expected to be about the same for the Pio Pico Energy Center turbines (5.5 lb/hr) at all loads, the highest emission rate (in lbs/MMbtu) will occur at the lowest fuel usage, or low load. While each turbine will normally operate at close to full load when it is operating, each turbine is expected to operate at loads as low as 50% on occasion. The expected emission rate at low load is 0.01 lb/MMBtu.[6]

If you have any questions regarding this information, please contact the Applicant's representative David Jenkins at (317) 431-1004, or Gary Rubenstein or me at (916) 444-6666.

Sincerely,

Steve Hill

cc: John McKinsey, Stoel Rives LLP
David Jenkins, Apex Power Group
Steve Moore, SDAPCD

[6] 0.01 lb/MMBtu = (5.5 lb/hr) / (542.5MMBtu). This heat input rate is the lowest low load fuel use rate from the design cases.

**Table 1**
**Summary of Recent PM BACT Limits for Combined-Cycle, Natural Gas-Fired Combustion Turbines**

| Facility | Location | PM Limit Without Duct Firing | Type of PM Filterable (F) Total (T) | Averaging period | Control | Permit Issuance | Source | Basis for Excluding |
|---|---|---|---|---|---|---|---|---|
| **Pio Pico Energy Center** | **California** | **5.5 lb/hr, 0.0065 lb/MMBtu** | **TPM10, TPM2.5** | **3-hour** | **Natural Gas Fuel** | **This Application** | **PSD Permit Application** | |
| Avenal Energy Project | California | 8.91 lb/hr | TPM10 | 12-month rolling | Natural Gas Fuel | June 2011 | PSD Permit | Not yet constructed; not lb/MMBtu |
| Warren County Power Station | Virginia | 0.0027 lb/MMBtu | TPM10, TPM2.5 | 3-hour | -- | December 2010 | PSD Permit | No operating data |
| Carty Plant | Oregon | 2.5 lb/MMscf | FPM10 | -- | Clean Fuel | Draft December 2010 | RBLC #OR-0048 | Not yet constructed; Filterable PM |
| Langley Gulch Power Plant | Idaho | No limit | FPM10 | -- | GCP | Draft December 2010 | RBLC # ID-0018 | Not yet constructed; Filterable PM |
| Colusa Generating Station | California | 13.5 lb/hour | TPM, TPM10 | 12-month rolling | Natural Gas Fuel | March 2010 | PSD Permit | No operating data; not lb/MMBtu |
| Victorville II Hybrid Power Project | California | 12.0 lb/hr | TPM, TPM2.5 | 12-month rolling | Natural Gas Fuel | March 2010 | PSD Permit | Not lb/MMBtu |
| Chouteau Power Plant | Oklahoma | 0.0035 lb/MMBtu | TPM10 | 3-hour | Natural Gas Fuel | January 2009 | RBLC # OK-0129 | Not in compliance with conditions |
| Cane Island Power Park | Florida | 2 gr S/100 SCF | TPM10 | -- | Fuel Spec | September 2008 | RBLC # FL-0304 | Fuel specification, not source test |
| FPL West County Energy Center Unit 3 | Florida | 2 gr S/100 SCF | PM, PM19/PM2.5 | | Clean Fuel | July 2008 | RBLC # LA-0136 | Fuel specification, not source test |
| Plaquemine Cogeneration Facility | Louisiana | 0.02 lb/MMBtu | FPM10,TPM | -- | Clean Fuel | July 2008 | RBLC #LA-0136 | Less stringent than PPEC |
| Arsenal Hill Power Plant | Louisiana | 24.23 lb/hr | FPM | -- | Pipeline Natural Gas | March 2008 | RBLC # LA-0224 | Filterable PM |
| Kleen Energy Systems | Connecticut | 11 lb/hr | FPM10 | -- | -- | February 2008 | RBLC # CT-0151 | Filterable PM |
| Palmdale Hybrid | California | 0.0048 lb/MMBtu | TPM | 9-hour | Better-than-PUC quality natural gas | October 2011 | PSD Permit | Not yet constructed |

**Table 2**
**2011 Chouteau Source Test Results**

| Date | Unit | CT Load (%) | DB Load (%) | Particulate Emissions (lb/hr)[a] | | | Permit Limit (lb/hr) | Particulate Emissions (lb/MMbtu)[a] | | | Permit Limit (lb/MMbtu) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| May 25 | 21 | 100 | 0 | 6.01 | 4.70 | 5.56 | 6.24 | 0.0036 | 0.0029 | 0.0035 | 0.0035 |
| | | | | **5.42** | | | | **0.0033** | | | |
| May 18 | 22 | 60 | 0 | 6.97 | 5.41 | 6.15 | 6.24 | 0.0056 | 0.0043 | 0.0048 | 0.0035 |
| | | | | **6.18** | | | | **0.0049** | | | |
| May 22-23 | 22 | 100 | 0 | 7.09 | 5.68 | 6.52 | 6.24 | 0.0042 | 0.0035 | 0.0040 | 0.0035 |
| | | | | **6.43** | | | | **0.0039** | | | |
| July 7-8 | 21 | 60 | 0 | 6.68 | 6.63 | 5.33 | 6.24 | 0.0054 | 0.0055 | 0.0043 | 0.0035 |
| | | | | **6.21** | | | | **0.0051** | | | |
| July 7 | 21 | 100 | 70 | 10.4 | 11.1 | 8.58 | 6.59 | 0.0058 | 0.0061 | 0.0047 | 0.0035 |
| | | | | **10.0** | | | | **0.0055** | | | |
| July 6 | 21 | 100 | 100 | 14.6 | 14.9 | 8.53 | 6.59 | 0.0078 | 0.0079 | 0.0048 | 0.0035 |
| | | | | **12.7** | | | | **0.0068** | | | |
| July 6 | 22 | 100 | 70 | 14.8 | 14.2 | 10.9 | 6.59 | 0.0082 | 0.0080 | 0.0061 | 0.0035 |
| | | | | **13.3** | | | | **0.0074** | | | |
| July 7 | 22 | 100 | 100 | 12.8 | 7.35 | 7.23 | 6.59 | 0.0069 | 0.0039 | 0.0039 | 0.0035 |
| | | | | **9.13** | | | | **0.0049** | | | |

[a] Individual test run results shown in top row; three-run average shown in bold in bottom row.
Three-run averages highlighted in yellow exceed applicable limit.