



US Environmental Protection Agency

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Responses to Public Comments

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

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I. Introduction

A. Overview

On June 16, 2009, the United States Environmental Protection Agency Region 9 (EPA Region 9) proposed to issue a Prevention of Significant Deterioration (PSD) permit to Avenal Power Center, LLC (“Avenal”, “APC” or “Applicant”) that would authorize construction and operation of a 600 megawatt natural gas-fueled combined cycle power plant known as the Avenal Energy Project (“the Project”), in Kings County, California. After carefully considering public input and the potential impact of the Project on air quality in the affected community, EPA is issuing a Clean Air Act (CAA) PSD permit for it, which authorizes construction and operation of the Project on the condition that the source may not emit air pollutants in excess of the levels specified in the permit and that the source complies with other terms of the permit. The Project is a new, state-of-the-art, natural gas-fired electric generating facility that will apply modern pollution control technology to achieve the lowest levels of air pollutant emissions achievable in this instance. The applicant has satisfied the applicable standards in the CAA and EPA regulations for obtaining this permit.¹ Although the area where the Project will be located is subject to a number of environmental burdens, the available information does not suggest that the relatively low levels of emissions from this source will exacerbate these existing burdens to a degree that should affect issuance of this permit. On balance, considering the full scope of actions that EPA and other agencies are actively taking to reduce more significant environmental hazards in the San Joaquin Valley and affected communities, EPA’s judgment is that construction and operation of the Project should be authorized under the laws that EPA is responsible for administering in this instance.

As required by the CAA, the conditions in this PSD permit are applicable to a subset of the air pollutants that will be emitted from the Project. These are the pollutants that the Project has the potential to emit above designated levels for which the local area is either meeting the National Ambient Air Quality Standards (NAAQS) or is unclassifiable with respect to these standards. The conditions in the permit are based on the use of Best Available Control Technology (BACT) to limit emissions of carbon monoxide (CO), nitrogen dioxide (NO₂), particulate matter (PM), and PM equal to or less than 10 micrometers in diameter (PM₁₀) to the greatest extent feasible. The available information indicates that with this technology installed, the Project will have a relatively minor effect on air quality. The Project’s impacts are well below (in all cases, less than 6 percent of) the applicable NAAQS for the pollutants addressed in the PSD permit. Consistent with the provisions of the CAA, EPA’s permit does not contain limitations on the air pollutants (including precursors to the formation of these pollutants) for which the relevant area is not attaining the NAAQS. Emissions of these nonattainment pollutants – ozone and PM equal to or less than 2.5 micrometers in diameter (“fine particulate matter” or “PM_{2.5}”) – are regulated under the Nonattainment New Source Review (NNSR) permitting program administered by the San Joaquin Valley Air Pollution Control District (the District).

¹ Because we are grandfathering the Project from requirements stemming from the 1-hour NO₂ and SO₂ NAAQS, when we use the term “applicable NAAQS” and “applicable pollutants” or “pollutants regulated under the permit” we mean to exclude the 1-hour NO₂ and SO₂ NAAQS.

EPA's review of this permit application has continued for two years beyond the one-year deadline established in the CAA for EPA to grant or deny the application. In light of this and other factors, EPA has determined that it is appropriate and equitable under the circumstances to exercise available discretion under the CAA to issue this permit without requiring this applicant to meet recently-adopted requirements that have taken effect during the lengthy period of time that EPA has been reviewing this application.

EPA has listened carefully to the concerns of nearby residents, including those of the nearby communities of Avenal, Huron and Kettleman City who are understandably worried that adding an additional source of pollution in this area would make existing environmental problems worse. The San Joaquin Valley has some of the highest ozone and PM_{2.5} levels in the country. Furthermore, local residents are concerned about health risks from drinking water contamination, exposure to pesticides and other agricultural chemicals, air pollutant emissions from vehicles on the I-5 freeway, the effects of defunct oil and gas extraction operations, the proximity to a hazardous waste disposal facility and composting and the application of biosolids sludge from Los Angeles. There are reports of higher-than-average asthma rates, birth defects and miscarriages among local residents. EPA has met with community representatives regarding a number of concerns, outside the context of EPA's PSD permitting action for the Project, and to help protect the community a number of EPA Program Offices have focused resources on following up appropriately on the community's concerns.

Many residents and environmental organizations have urged EPA to ensure that we take action in the context of this permit application to alleviate these environmental conditions and to assure them that the construction and operation of the Project will not make matters worse. We have also heard that EPA's decision to grandfather this permit application from certain newly enacted requirements has undermined the confidence of some citizens in EPA's commitment to doing our job to protect public health and welfare in the affected communities. At the same time, EPA has also heard the concerns expressed by the permit applicant about EPA's failure to complete action on this application in a timely manner, as required by the CAA. The applicant has emphasized the impact of this delay on its proposal to supply electrical power and the inequities of extending this delay by requiring the applicant to address a series of additional requirements that were not applicable at the time the permit application was completed and when EPA initially proposed to issue this permit.

EPA is also sensitive to the fact that the many residents in the communities adjacent to the Project are minorities and have low incomes. These communities have high unemployment rates and many residents lack access to healthcare. Executive Order 12898 provides that "[t]o the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States." Section 1-101 of Exec. Order 12898, 59 FR 7629 (Feb. 16, 1994). EPA has recognized the need to consider EJ in the PSD permitting process and to ensure public participation, and has further recognized an obligation to respond to public comments. Thus, the public comments, including comments on "alternatives" and "other appropriate considerations" under section

165(a)(2) of the CAA may provide EPA with a basis for incorporating environmental justice considerations into PSD permitting decisions in appropriate circumstances. Based on the Executive Order and prior actions by EPA applying this order, EPA has considered environmental justice issues in connection with the issuance of this PSD permit. Since this Executive Order references all of the programs, policies and activities of each federal agency to which it applies, EPA has considered how best to respond to the environmental justice concerns raised in public comments within the larger context of all the actions EPA is taking to reduce actual or potential environmental hazards in the communities potentially affected by emissions from the Project. EPA also believes it is appropriate to consider actions being taken by State and local government agencies to address these concerns.

Considering the environmental conditions of greatest significance in this region and the range of actions EPA and State and local government agencies are currently taking to reduce the risks these conditions pose to health and welfare in these communities, EPA's judgment is that, despite some uncertainties and limitations in available data, emissions from this source are unlikely to add significant environmental harm to the local communities. EPA has not identified disproportionate adverse impacts on minority communities and low-income communities from the Project that should affect issuance of this permit. To the extent environmental concerns already exist, EPA believes they are more effectively addressed through other actions EPA and State and local agencies are taking outside the context of this permit application. As discussed below, EPA and the State have taken numerous actions to respond to the communities' concerns about the environmental challenges and burdens they currently face.

EPA and the State have recently undertaken several actions to respond to communities' concerns about birth defects, stillbirths and miscarriages in the area, as well as concerns about the potential for releases from the Kettleman Hills hazardous waste facility. First, EPA requested a comprehensive sampling and analytical study, including a risk assessment, of the possible off-site impacts that the PCB disposal operations at the Chemical Waste Management Facility may present to human health or the environment, and that study was completed, with extensive EPA oversight. In addition, the State of California recently completed studies on reports of increased birth defect incidences and potential environmental exposure sources within Kettleman City. The California Department of Public Health (CDPH) analyzed birth records and interviewed mothers who agreed to participate. The California Environmental Protection Agency (Cal/EPA) also conducted testing of air, water and soil gas in Kettleman City. Further, on February 8, 2010, EPA Region 9 began an extensive Resource Conservation and Recovery Act (RCRA) and Toxic Substances Control Act (TSCA) investigation of the Chemical Waste Management (CWM) Kettleman Hills facility. The TSCA investigation discovered non-compliance with PCB requirements, including PCB releases at the facility. CWM cleaned up those PCB releases under a cleanup plan approved by EPA and the State of California, Department of Toxic Substances Control (DTSC).

EPA and the State of California have also recently taken action to address drinking water concerns in the area. On March 25, 2011, EPA issued an administrative compliance order under the federal Safe Drinking Water Act to the City of Avenal to address the City's violation of the Safe Drinking Water Act Disinfectants and Disinfection By-Products Rule. In addition, in January 2009, the State of California issued a compliance order to the Kettleman City

Community Services District to address its violations of the California Safe Drinking Water Act's maximum contaminant level for arsenic.

With respect to PM_{2.5} and ozone levels in the San Joaquin Valley, EPA, the State of California and the District are working diligently through an air quality planning process under the CAA to address these nonattainment pollutants. Members of the public have had, and will continue to have, the opportunity to provide input at several stages of this process. These agencies are working to ensure that there is a comprehensive plan with adequate controls for attaining the annual and 65 µg/m³ 24-hour PM_{2.5} ambient air quality standards. EPA's proposed action on the California Air Resources Board's (ARB) 2008 plan for attaining the PM_{2.5} standards in the San Joaquin Valley was published on November 30, 2010 (see 75 FR 74,518), and California has recently adopted revisions to the plan to address concerns identified by EPA and require additional reductions of air pollutants that adversely affect public health. EPA expects to re-propose action on the plan seeking additional public comment in the near future, before taking final action on the plan by September 30, 2011. EPA will also be working closely with both agencies as they develop a plan to meet the 35 µg/m³ 24-hour standard, which the State must submit to EPA by December 2012, following reasonable notice and public hearings. In addition, EPA is working with ARB and the District to ensure that there is a comprehensive plan with adequate controls for attaining the 1997 8-hour ozone air quality standard by the CAA's deadline of 2024. To that end, later this year, EPA intends to propose action on ARB's 2007 plan for attaining the 1997 8-hour ozone NAAQS in the San Joaquin Valley and to request public comment before taking final action on that plan by December 15, 2011. We note that both the 2008 PM_{2.5} plan and the 2007 ozone plan were subject to State/local public participation procedures and public hearings prior to adoption and submittal to EPA.

At the same time, a number of governmental bodies and others are providing significant funding for a wide variety of emissions reduction projects in the San Joaquin Valley that will contribute to substantial emissions reductions for PM_{2.5} and ozone in the Valley, among other pollutants. Through the Federal Highway Congestion Mitigation and Air Quality (CMAQ) program, Kings County is spending \$6,439,000 on projects in the years 2010-2014 to reduce emissions of air pollutants from vehicles throughout the county. Further, the West Coast Collaborative, a partnership between leaders from federal, state and local government, the private sector and environmental groups committed to reducing diesel emissions along the West Coast, has provided funding to the District, the Kern County Superintendent of Schools and Cal/EPA for a variety of diesel emission reductions projects throughout the San Joaquin Valley. Since 2008, EPA has provided over \$10,000,000 in Diesel Emissions Reductions Act funds to reduce diesel emissions throughout the Valley. We estimate that these funds result in approximately 130 tons of PM and 7 tons of NO_x reductions annually, affecting over 250 diesel engines throughout the Valley.

The provisions in the CAA and EPA regulations do not expressly contemplate that a PSD permit will contain conditions addressing air pollutants for which an area is in nonattainment. EPA interprets the Act and court precedents to establish those emissions of nonattainment pollutants (and their precursors) from the Project should be directly addressed in the NNSR permits that are issued in this instance by the District. Nevertheless, EPA has considered in the context of our environmental justice analysis for this permit the nonattainment conditions in the local area and

strategies in place to achieve attainment with the PM_{2.5} and ozone NAAQS in the San Joaquin Valley. But given the existing framework in which the commenters' concerns regarding nonattainment pollutants are being addressed, EPA has determined that it is not appropriate to address these issues further in the context of this PSD permitting action.

Nitrogen dioxide (NO₂) concentrations in the region are projected to decrease as a result of State and federal mobile source engine and fuel standards already in effect and being phased in as new vehicles replace older ones. Emissions from mobile sources account by far for the majority of NO_x emissions in Kings County. Emissions inventory data from ARB indicate that mobile source emissions in 2010 resulted in 25.2 tons per day of NO_x as compared with 2.2 tons per day for all stationary sources combined (the total inventory for 2010, including area sources, was 27.8 tons per day). In comparison, emissions of NO_x from the Project authorized by this permit are limited to 0.395 tons per day. The emissions inventory for 2020 projects that emissions from mobile sources will be 14.7 tons per day as compared with all stationary sources combined at 2.3 tons per day (with a total inventory of 17.3 tons per day). The maximum modeled impact that the Project will have on annual average NO₂ concentrations is 0.5 µg/m³, less than 1 percent of the NAAQS of 100 µg/m³.²

EPA does not believe that the available data provide sufficient information to determine whether the project's emissions would result in an exceedance of the 1-hour NO₂ NAAQS. EPA believes it is appropriate for us to consider the best available data that are germane in analyzing whether there may be disproportionate adverse impacts on minority communities and low-income communities. Executive Order 12898 recognizes agency discretion and provides for its provisions to be implemented as permitted by existing law, here the CAA, which does not preclude EPA from approving this PSD permit in the face of uncertainty concerning the impacts of short-term NO₂ emissions associated with the Project on the community. However, as noted above, EPA's judgment is that emissions from this source are unlikely to add significant environmental harm to the local communities.

When what is known about the air quality impact of this source is placed in context with mobile source emissions and other sources of air pollutants in the area and balanced against the amount of time EPA's review has extended beyond the deadline by which we were required to issue this decision under the CAA, EPA believes it reasonable to issue this permit without requiring a demonstration that the Project will not cause an exceedance of the 1-hour NO₂ NAAQS. This action is appropriate here to reconcile the tension that exists between provisions of the CAA in this particular instance where we have failed to complete our review of this application within one year of completeness and new requirements have become applicable after that time period. EPA has previously grandfathered pending PSD permit applications where imposing new PSD requirements could delay construction and frustrate economic development and our judgment was that the grandfathered projects would have a relatively minor effect on air quality.

To address the uncertainty that remains about air quality conditions, EPA intends to place an ambient NO₂ monitor in an appropriate location in the vicinity of the proposed source to gather

² The annual NO₂ NAAQS is formally expressed in units of parts per million (ppm), with a specified level of 0.053 ppm, for which the equivalent level in units of micrograms per cubic meter (µg/m³) is 100 µg/m³. Microgram per cubic meter units are commonly used in air quality modeling.

more information about the local NO₂ concentrations. This monitor, along with other NO₂ monitors that exist or may be sited in the District, will be used by ARB, the District and EPA to inform community residents about levels of that pollutant in the ambient air, to determine whether air quality in the region meets or exceeds the NAAQS for NO₂, and will inform governmental plans to address any identified concerns. Any such plans would consider all contributing sources in the airshed, including the Project, in the effort to address any identified nonattainment challenges. Having additional NO₂ monitoring data from this area will better inform future permitting decisions, and help to ensure that any additional measures necessary to reduce NO_x emissions and improve air quality and public health are put in place.

Although the PSD program is based on the goals of preventing air pollution and installing controls when new sources are being constructed, another purpose of the PSD program is to “insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources.” Furthermore, there is also evidence of Congressional intent to avoid a moratorium on construction and delays in permit processing.

An initial effort by the applicant and EPA to assess the impact of this source on 1-hour NO₂ NAAQS has been inconclusive and added one additional year to the time it has taken for EPA to process this permit application. At the time EPA initially requested that APC address this requirement in May 2010, EPA was already more than one year overdue in completing action on the permit application, but we did not expect that it would take significant additional time for APC to complete a satisfactory analysis of its impact on 1-hour NO₂ concentrations. However, EPA and APC then spent the next 9 months preparing and reviewing information. The refined nature of the analysis required that APC take more time to prepare its submissions and EPA staff more time to review these submissions than EPA first expected. This delay has extended EPA’s review of this application beyond the effective date of the 1-hour SO₂ NAAQS and the date greenhouse gases (GHG) became subject to regulation. These requirements would not have otherwise applied had EPA taken action on this permit application sooner. In the face of the potential need to consume additional time to conduct further review of APC’s analysis of 1-hour NO₂ concentrations and to prepare a BACT analysis for GHG, EPA has concluded that grandfathering this application from these three requirements is a more equitable approach to avoid further delays in completing action on this permit in contravention of Congressional intent. EPA maintains our view that the grandfathering of this particular permit from the identified requirements is justified by the combination of the five factors described in the Supplemental Statement of Basis (Supplemental SB) and provides additional explanation below for why the combination of these factors and other considerations support grandfathering in this instance. These factors include: (1) the facility that APC proposes to construct will be a well-controlled facility that will apply BACT for NO₂ and achieve the lowest levels of air pollutant emissions achievable in this instance; (2) APC’s permit application was deemed complete by EPA more than a year before, and EPA had issued a proposed permit for the project before, the date on which EPA proposed the hourly NO₂ NAAQS; (3) unanticipated delays with the preparation and review of sufficient information to predict the impact of proposed sources on hourly NO₂ concentrations; (4) the delays encountered in supplementing the APC permit application to address the hourly NO₂ NAAQS caused EPA’s review of this application to extend beyond the dates when the hourly SO₂ NAAQS and greenhouse gas requirements became applicable to PSD permit applications; and (5) court decisions recognize an exception, in cases of significant delay

by the administrative agency, to the general rule that an administrative agency should apply the law in effect at the time it issues a permit or license.

EPA has expressed the intent to extend the same treatment to other permit applications that are similarly situated. However, the proposed approach of grandfathering the permit for the Project in particular is the result of EPA's responsibility to balance the statutory obligations to issue decisions on permit applications in a timely manner and to implement the substantive requirements of the Act. While EPA has reached a conclusion on the proper balance in the particular case of APC, we have not yet determined where the proper balance falls for other permits, all or most of which will differ from the APC case in at least some aspects. Thus, this decision should not be viewed as establishing a general rule or precedent applicable to any other permit application.

Courts have recognized that problems may arise in a case that the administrative agency could not reasonably foresee and that such problems must be solved despite the absence of a relevant general rule. In such instances, regulatory agencies may proceed through case-by-case decision-making rather than establishing general rules and regulations. While EPA interprets the law to provide us discretion to grandfather a permit on a case-by-case basis, this is a unique and unforeseen circumstance. Thus, EPA does not intend or expect to make widespread use of this discretion. EPA is separately considering whether a rulemaking process or another mechanism may be a more appropriate means to develop a nationwide grandfathering policy for the 1-hour NO₂ NAAQS.

B. Summary of the Formal Public Participation Process

As stated in the preceding section, EPA proposed to issue a PSD permit to APC for the Project on June 16, 2009. The initial public comment period on the proposal (Proposed Permit)³ began June 16, 2009, and closed on October 15, 2009. Another public comment period specific to three issues for the proposal began on March 4, 2011 and closed on April 12, 2011. During this second public comment period EPA took comments on the following three issues: 1) EPA's proposal to approve APC's PSD permit application for the Project without requiring a demonstration that this source will not cause or contribute to a violation of the 1-hour NO₂ NAAQS, 2) EPA's proposal not to require this source to meet emissions limitations for GHG or to demonstrate that the proposed source will not cause or contribute to a violation of the NAAQS for 1-hour concentrations of SO₂ and 3) EPA's environmental justice analysis for our proposed PSD permit action for the Project.

The purpose of this document is to respond to every significant issue raised in the public comments received during the public comment periods and explain what changes have been made in the final permit (Final Permit) as a result of those comments.

For the 2009 and 2011 public comment periods, EPA announced the public comment period through public notices published in the Fresno Bee, Vida en El Valle, the Avenal Chimes and on Region 9's website. EPA also distributed the public notices to the necessary parties in

³ We note that EPA's permitting regulations at 40 CFR Part 124 refer to proposed permits as "draft permits." See 40 CFR 124.6.

accordance with 40 CFR Part 124. The second, third, and fourth public notices were distributed and published in newspapers in English and Spanish. The Administrative Record for the Proposed Permit was made available at EPA Region 9's office. EPA also made the Proposed Permit, the SB and Ambient Air Quality Impact Report (AAQIR) and other supporting documents available on Region 9's website, at the District office and at the following three public libraries in Kings County: Hanford Branch, Avenal Branch and Kettleman City Branch. The Supplemental SB was translated into Spanish and was made available in the same manner as the AAQIR.

EPA held a public information meeting on September 30, 2009 in Avenal, California. The purpose of the public information meeting was to provide information about the proposed permit and how to participate in the public comment process. A Spanish language interpreter was present for oral translation. EPA responded to questions at these meetings but did not formally record remarks from the audience.

EPA held three formal public hearings, on October 1, 2009; October 15, 2009; and April 12, 2011 in Avenal, California. All oral public comments made at both hearings were recorded by a court reporter, and a Spanish language interpreter was present for oral translation.

During the 2009 and 2011 public comment periods, EPA received numerous comment letters by mail, email, fax, and in person. We also received comments by oral testimony at the three public hearings. All comments received equal weight, regardless of the method used to submit them.

C. Recent Court Decision

Based on the one-year deadline set forth in Clean Air Act section 165(c) for EPA to grant or deny a complete PSD permit application, the United States District Court for the District of Columbia issued an order on May 26, 2011 requiring that EPA "issue a final agency action, either granting or denying [APC's] permit application, no later than August 27, 2011." *Avenal Power Center, LLC v. USEPA et al.*, Case No. 1:10-cv-00383-RJL. EPA believes that there remains an opportunity under this order for parties to petition the Environmental Appeals Board to review the Assistant Administrator's permit decision in accordance with 40 CFR 124.19.

II. EPA's Responses to the Public Comments

This section summarizes all significant public comments received by EPA and provides our responses to the comments. In some instances, similar comments may be grouped together by topic into one comment summary, and addressed by one EPA response. The full text of all public comments and many other documents relevant to the permit can be accessed online through EPA's website at <http://www.epa.gov/region09/air/permit/r9-permits-issued.html>.

A. Comments Submitted During the First Public Comment Period (June 16, 2009 – October 15, 2009)

1. Written Comments

*Comments Submitted by Greenaction*⁴

1. **Comment:** EPA received a comment stating that EPA's permit process for the Project violates the Executive Order on Environmental Justice because of deficiencies in EPA's scheduling of the 2009 public hearings for the project. The comment states EPA has insisted that the Executive Order does not apply to our⁵ permitting decisions. The comment also states that the public hearings held by EPA on October 1 and 15, 2009 were improperly scheduled and violated environmental justice because 1) EPA did not respond to a request for a moratorium on permitting due to a birth defect and infant mortality cluster affecting the town of Kettleman City, and 2) EPA scheduled these hearings at the same time various governmental agencies were taking action on the Project as well as conducting permitting activities for the proposed expansion of the nearby Kettleman Hills hazardous waste landfill. The commenter had earlier expressed concerns about the public notice provided by EPA in June 2009, stating that the notice was not provided to the affected community or to organizations involved in Kings County pollution issues, and requesting that notice be issued again in Spanish and that key documents be translated into Spanish. The commenter had also requested that the draft permit be rescinded until EPA met with the community and provided proper notice, and requested that an evening meeting be held. The commenter had further expressed concerns about EPA's August 2009 public notice, stating that the notice was published only in English-speaking newspapers, and that residents on EPA contact lists from prior meetings in Kings County did not receive notice. The commenter also states that the hearings in October 2009 interfered with the community's attempt to get agencies to conduct an investigation of a birth defect and infant mortality cluster in the area. In addition, the commenter states that EPA is required to promote the maximum level of involvement from the communities affected by our processes and decisions, and that the scheduling had the effect of preventing the fullest possible outreach and level of public involvement in the hearing process.

Response: Executive Order 12898 ("EO 12898" or "EO"), "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," was signed

⁴ In this section and certain other sections of this document, for ease of reference, we have identified the primary commenter raising the issues discussed. However, in some instances a comment summary and response may also address comments made by other commenters.

⁵ In summaries of and responses to public comments, the terms "we", "us", and "our" refer to EPA.

on February 11, 1994. The EO establishes federal executive policy on environmental justice. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies and activities on minority populations and low-income populations. The EO is designed to focus the attention of federal agencies on the human health and environmental conditions in minority communities and low-income communities with the goal of achieving environmental justice.

EPA agrees that the EO does apply to our PSD permitting decisions. See, e.g., *In re Shell Gulf of Mexico, Inc. & In Re Shell Offshore, Inc. (Frontier Discovery Drilling Unit)*, OCS Appeal Nos. 10-01 through 10-04, slip op. at 63-64 (EAB Dec. 30, 2010) (citing prior Environmental Appeals Board (EAB) opinions). EPA defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies. EPA has this goal for all communities and persons.

EPA defines meaningful involvement to mean that 1) potentially affected community residents have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health, 2) the public's contribution can influence our decision, 3) the concerns of all participants involved will be considered in our decision-making process and 4) the decision makers seek out and facilitate the involvement of those potentially affected. The extensive outreach process enacted by EPA for the Project addressed all of these objectives. In particular, the public information meeting held on September 30, 2009, in Avenal, California was specifically intended to provide potentially affected parties with information about the proposed permit and about how to participate in the public comment process. The public involvement process, which also included three public hearings in the City of Avenal, was also designed to give interested parties ample time to prepare their comments and flexibility to submit their comments in a variety of ways. This enhanced outreach and public comment process goes well beyond the regulatory requirements set forth in 40 CFR Part 124 for PSD permit proceedings, and it clearly demonstrates an effort on EPA's part to seek out and facilitate the involvement of communities in the decision making process.

In response to requests from the public, Region 9 determined it was appropriate to schedule a public information meeting and an initial public hearing in the City of Avenal, with Spanish translation services for both, which it announced through a public notice issued in English and Spanish. In scheduling the 2009 public information meeting and initial hearing, Region 9 considered a variety of factors such as the availability of the meeting facilities and translators, the need to provide adequate time for public notice prior to the information meeting and hearing, and the need to move forward with our permitting decision in a timely manner. In addition, in light of the fact that members of the public expressed concern about conflicting public proceedings in the area, EPA also scheduled a second public hearing (announced by notices in English and Spanish, published in both English- and Spanish-language newspapers) in the City of Avenal with Spanish translation

services to take place two weeks after the first hearing in order to ensure the opportunity for greater participation by the community. The public notice of the second public hearing was distributed to an extensive mailing list, including, among others, environmental justice and community organizations, as well as all Kettleman City post office boxes. Further, EPA extended the public comment period for the permit to almost 4 months. As described above, EPA also opened another public comment period in March 2011 and scheduled a public hearing in April 2011 to solicit comment on three specific issues for our proposal. EPA believes these efforts served to elicit and facilitate the involvement of the potentially affected community so that members of the community were given an appropriate opportunity to participate in, contribute to and voice concerns about EPA's proposed PSD permit decision regarding the Project. Comments made by the public during these processes have been fully considered. In sum, EPA's public participation activities for this PSD permit were fully consistent with our responsibilities under EO 12898, including the relevant provisions in Section 5-5 on public participation and access to information. In particular, EPA believes that the scheduling of the 2009 hearings was proper and consistent with environmental justice goals for meaningful involvement.

Regarding the commenter's statement that the 2009 public hearings for the Project were improperly scheduled because EPA did not respond to the commenter's request for a moratorium on permitting, EPA believes that it was appropriate for us to treat the scheduling of the public hearings for our proposed action as a separate matter from considering and responding to a request for a moratorium on permitting. The purpose of a public hearing is precisely to elicit comments about a proposed action that any member of the public believes EPA should consider in making our final permit decision. Through the scheduled public hearings and the public comment period as a whole, the commenter and other members of potentially affected communities were afforded an opportunity to raise concerns about the Project and provide EPA with any information relevant to the permit decision, including information about why the Project should not be built. Pursuant to 40 CFR 124.17, the appropriate avenue for responding to comments on EPA's proposed action made during the public comment period, including those provided at the hearing, is in EPA's response to comments document.

In addition, we note that 1) EPA has had numerous discussions with community members and community groups to discuss environmental justice concerns, including concerns regarding the birth defects and infant mortality cluster in the area, and 2) EPA and the State of California have taken numerous actions outside of the scope of this PSD permitting decision to follow up on these concerns. Further, EPA believes that our proposed permitting action is protective of public health as the permit meets the NAAQS for the pollutants regulated under the permit, and otherwise meets PSD requirements.

With respect to the commenter's statement that the 2009 hearings interfered with the community's attempt for agencies to conduct an investigation of a birth defect and infant mortality cluster in the area, we do not understand from the comment how the commenter believes the scheduling of the hearings created such interference. In any event, EPA believes that our public participation process, which included a public information meeting; three public hearings with advance notice and Spanish translation services; a period of

approximately 120 days in which to submit comments, later followed by another month-long public comment period on specific issues for the proposal; and flexibility to submit comments in a variety of formats, provided members of the public with a reasonable opportunity to participate in the permit proceedings even for persons who may have had a conflict on the date of one of the public hearings.

2. **Comment:** The commenter further states that, in light of the above, EPA should extend the 2009 public comment period for another 60 days.

Response: In proposing action on a PSD permit, EPA is required by 40 CFR 124.10 to provide for a public comment period of at least thirty days. EPA believes it is important for commenters to have ample time to review proposed permits, and we thought it appropriate to provide the public with extra time to review the permit for this project in particular during our 2009 public comment period. It was for that reason that EPA conducted the enhanced public involvement process in 2009 discussed above, which included a total comment period approximately four times longer than the minimum required by the regulations. We find that the commenter has neither provided a sufficient reason as to why extending the 2009 comment period even further was necessary nor has the commenter adequately explained how any information that may be brought forth during such an extension could influence our final decision. We therefore do not believe that the 2009 comment period should have been extended beyond the approximately 120 days that was provided.

3. **Comment:** The commenter also stated that EPA should hold a public hearing in Kettleman City due to its proximity to the Project (8 miles away) and due to the negative impacts the plant would have on Kettleman City's air quality. The commenter states that Kettleman City is suffering from a health emergency that may be related to environmental pollution, and that there is strong public interest and concern there about the Project.

Response: EPA's goal was to provide communities close to the Project site ample opportunity to comment on the permit. In this case, EPA conducted an extensive public outreach process for the proposed PSD permit. This process included multiple public notices in two languages, and a public information meeting and three public hearings in Avenal, California, which was a reasonable location approximately 9 miles from the Project site and 18 miles from Kettleman City. To the extent some residents found these distances to be unreasonably burdensome, they still had a period of approximately 120 days during which to submit written comments by mail or email. Various community members provided comments by one of these methods. EPA's regulation at 40 CFR 124.12 sets forth the requirements for public hearings; the regulation provides EPA with broad discretion over whether to hold a public hearing, and it does not prescribe the location for a hearing should one be held.

4. **Comment:**⁶ The commenter further states that EPA should not issue permits for pollution unless and until environmental pollution is ruled out as a factor in the Kettleman City birth defects cluster. The commenter states that it would be irresponsible for EPA to issue a permit for a large air pollution source in southern San Joaquin Valley so close to a town suffering from birth defects, infant deaths and stillborns. The commenter states that EPA assumes the health of the community of Kettleman City is fine, but that is not the case, and that EPA must re-do our health analysis and evaluate the possible causes of birth defects and infant deaths.

Response: EPA shares the commenter's concerns about birth defects, infant deaths and stillborns in the Kettleman Hills community, and EPA and the State of California have taken numerous actions to follow up on these concerns. For a detailed response concerning actions being taken by EPA and the State of California to address these concerns, please see our response to comment 23 in Section II.B.1. However, the applicable PSD provisions of the CAA do not direct EPA to consider these concerns in the context of this action. EPA believes they are more appropriately addressed through other avenues such as those discussed in the aforementioned response. As a result, we do not believe these issues provide an appropriate basis on which to deny the PSD permit for the Project.

A new stationary source is subject to preconstruction review requirements under the PSD program if it will emit, or will have the potential to emit, in major amounts any criteria pollutant for which the area is designated attainment or unclassifiable with respect to the NAAQS. The location at which the Project will be located is currently designated attainment (or is unclassifiable) for the CO, NO₂, SO₂, PM₁₀ and lead NAAQS. The level of each NAAQS is set in consideration of numerous health studies and input from experts and the public, and the NAAQS are set at a level to protect public health, including the health of individuals who might be sensitive to the effects of a particular criteria pollutant. The PSD program is designed to ensure that a new or modified facility will not cause or contribute to a violation of the NAAQS for the PSD pollutants to which a proposed project is subject, and that air quality in a particular area will not deteriorate and will continue to meet those NAAQS. The PSD regulations require a source impact analysis for each such pollutant emitted in significant amounts, and a modeled impact less than the NAAQS ensures that public health is protected. In this case, the modeling analyses indicate that the applicable PSD pollutants from the proposed Project would not cause or contribute to a violation of any NAAQS applicable to the Project. Based on the results, EPA believes that the emissions of applicable pollutants from the Project regulated under the PSD program will not cause any adverse health effects to the Kettleman City community or to other members of the public. As discussed in the Supplemental SB, we are grandfathering the project with respect to the 1-hour NO₂ and 1-hour SO₂ NAAQS. We are making no finding with regard to whether the air quality effects of hourly NO_x emissions will cause any adverse health effects to the Kettleman City community or to other members of the public. We note that SO₂ emissions from the project are below the level that would require an air

⁶ These or similar statements were also made by individuals during the Kettleman City Listening Session held on August 12, 2009. Participants in this Listening Session included members of the Kettleman Hills community and government officials, including representatives from EPA Region 9.

quality analysis for 1-hour SO₂ emissions and therefore these emissions would not be expected to have any adverse impact in any event.

5. **Comment:** The commenter included a formal complaint to EPA demanding that EPA enforce Title VI [of the Civil Rights Act of 1964, as amended] against the District and the California Energy Commission (CEC) based on allegations that these agencies violated environmental justice and engaged in discriminatory permit processes concerning the proposed power plant. The commenter elaborated on the actions by these entities that formed the basis of its complaint.

Response: We are concerned about and take very seriously any alleged violation of Title VI. The review process for such Title VI complaints is carried out independently of the CAA PSD permitting program and is therefore separate from the PSD permitting program. Pursuant to 40 CFR 7.20 and 7.25, the Director of the Office of Civil Rights (OCR), EPA Headquarters, is the designated official for administering the civil rights program at EPA. When a complaint of discrimination is filed with EPA alleging a violation of Title VI of the Civil Rights Act of 1964 or another non-discrimination statute, the complaint is handled by EPA's OCR. EPA Region 9 forwarded the commenter's complaint to EPA's OCR. We note that in a letter dated August 6, 2010 the OCR notified the complainant that it had partially accepted the complaint for investigation and partially referred the complaint to the U.S. Department of Energy for its consideration.

Comments Submitted by Pacific Environment

6. **Comment:** The commenter raised concerns that the proposed power plant would run counter to California's State law for the Renewable Portfolio Standard (RPS) and that the Avenal Energy Project would violate the CEC and the California Public Utilities Commission's (CPUC's) own policies and goals. The commenter explains that the original RPS required utilities to procure 20 percent of their electricity from renewable energy by 2010 and that the California governor ordered an increase in that amount to 33 percent by the year 2020. The commenter further points out that with the increase in natural gas plants, the procurement of electricity from these plants will need to decrease to achieve the RPS goals.

Response: Ensuring compliance with the RPS and the other policies of the CEC and CPUC to which the commenter refers is a matter of California State law and is outside the scope of our decision to issue a PSD permit under the federal requirements. EPA proposes to issue the PSD permit for the Project pursuant to the federal requirements set forth in Section 165 of the CAA, the implementing regulations of the PSD program under 40 CFR 52.21 and the applicable procedural requirements at 40 CFR Part 124.

7. **Comment:** The commenter refers to various sources, including a 2003 study conducted by the Lawrence Berkeley National Lab (LBNL) that looked at the effects of increasing renewables, and reducing growth in energy demand, on the future need for natural gas plants in California. The commenter states that California has more than enough capacity

from a variety of sources (such as natural gas, nuclear, hydroelectric and other renewable power sources and imports from out of State) to meet the electrical demand on California's electric power grid. The commenter further states that if the State implements both a 33% renewables requirement and aggressive efficiency programs, over 20,000 megawatts would need to be retired and that constructing the Project will reverse this effort by 600 megawatts. The commenter concludes that the policy to move to renewables directly conflicts with any new natural gas capacity beyond those already built or under construction, and that there is no need for the project.

Response: On a national level, EPA promotes renewable energy and energy conservation. Among other things, EPA's Green Power Partnership program encourages organizations of all types to purchase renewable energy certificates from sources of renewable energy in amounts according to the amount of fossil-fuel based power they use. For more information, see <http://epa.gov/greenpower>. Also see <http://www.energystar.gov> for information on EPA programs encouraging energy efficiency. However, as discussed above, EPA is issuing the PSD permit for the Project pursuant to the federal requirements set forth in Section 165 of the CAA, the implementing regulations of the PSD program under 40 CFR section 52.21. As stated above, considerations regarding Project compliance with the RPS to which the commenter refers is a matter of California State law and is outside the scope of our decision to issue a PSD permit under the federal requirements.

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.

Various mechanisms are in place within the State of California that provide a structure for considering the need for new natural gas-fired power plants in the context of the State's renewable energy requirements and policies.⁷ These mechanisms include, among other things, a regular integrated assessment by the CEC of major energy trends and issues facing the State's electricity and natural gas sectors, and the CPUC's oversight of the very detailed planning processes and the procurement activities of investor-owned utilities within the State.

⁷ A recent report prepared for the CEC entitled "*Framework for Evaluating Greenhouse Gas Implication of Natural Gas Fired Power Plants in California*" provides useful background regarding some of the considerations and certain aspects of the legal and policy framework in which the issue of need for natural gas-fired power generation should be assessed in the context of the increased use of renewable energy within the State of California. See <http://www.energy.ca.gov/2009publications/CEC-700-2009-009/CEC-700-2009-009-F.PDF>.

We also note generally that the CEC has recently indicated that there continues to be a need for natural gas-fired power plants in California in the context of increasing reliance on renewable generation. In the context of an informational proceeding held by the CEC to solicit comments and perspectives regarding how it should perform California Environmental Quality Act analyses for the thermal power plants that it licenses, the CEC's committee report on the proceedings stated:

The decline in the gas-fired energy in the system might easily mislead some to think that no more gas-fired power plants need be built. However, that misapprehends the nature of an electric system more reliant on "intermittent" renewable power such as wind and solar energy, and the need for reserve generation capacity when those intermittent renewable sources generate less. Wind power, for instance, is often less available on the hottest summer days when generation capacity is most needed to meet system load requirements. Thus, a system that increasingly relies on renewable generation for energy must likewise provide gas-fired dispatchable capacity to make the system reliable when intermittent renewable generators are providing less. This is why the 2007 IEPR states that natural gas generation "must be used prudently as a complementary strategy to reduce greenhouse gas emissions." [citation omitted] Many of the gas-fired license applications currently before the Energy Commission are for projects that will support a transition to a more renewable-based generation system, presumably because the procurement process favors such projects. This criterion—the degree to which a project supports the transition to a more renewable system, while preserving reliability—is important to the assessment of project GHG impacts in future licensing decisions.

CEC Committee Guidance on Fulfilling CEQA Responsibilities at 224 (March 2009).⁸

Furthermore, a PSD permit issuing authority is not required to perform an independent analysis of alternatives, or an analysis that extends beyond that submitted by commenters. The EAB has explained that administrative imperatives are a key reason why the permitting authority is not required to undertake an independent evaluation of alternatives:

These limits on the permit issuer's obligation to consider alternatives are particularly important where... a rigorous and robust analysis would be time-consuming and burdensome for the permit issuer. In this context, the permit issuer must be granted considerable latitude in exercising its discretion to determine how best to apply scarce administrative resources.

Id. at 33.

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. Therefore,

⁸ See <http://www.valleyair.org/programs/CCAP/documents/CEC-700-2009-004.pdf>.

EPA does not believe that it is appropriate to conduct the type of rigorous and robust analysis that would be required to definitively determine the need for the Project. We note that even if EPA did have the expertise and resources to conduct such an analysis, the level of analysis and information submitted by the commenter does not consider all of the relevant factors or provide the type of detailed information necessary for such an analysis as it provides limited information focused specifically on the State's renewable energy requirements and policies.

In sum, EPA believes that the information provided by the commenter does not support a determination that EPA should not approve the PSD permit for the Project.

Comments Submitted by the Center for Race, Poverty & the Environment

8. **Comment:** The commenter raised concerns about the health effects of ozone and PM_{2.5}, and requested that EPA subject the Project to the highest level of scrutiny to minimize any emissions associated with it.

Response: As the commenter notes, the location at which the Project will be located is designated nonattainment for ozone and PM_{2.5}. While we appreciate the commenter's concerns, the applicable regulations provide that direct PM_{2.5} emissions and emissions of ozone and PM_{2.5} precursors from the Project are covered by NNSR permitting requirements and are not covered by the PSD permitting criteria in section 52.21 of EPA's regulations that apply to EPA's decision. See, 40 CFR 52.21(i)(2). The NNSR program contains more extensive and often more stringent requirements for the control of emissions. In this case, the applicable NNSR program is administered by the District. Our responses to comments 11, 12 and 17 in this section below also address this issue. Nevertheless, in this instance we have considered the potential impacts of nonattainment pollutants in the context of our Environmental Justice Analysis. For further information, please see the Supplemental SB and EPA's response to comment 29 in Section II.B.1.

As discussed above, a new stationary source is subject to preconstruction review requirements under the PSD program if it will emit, or will have the potential to emit, in major amounts any criteria pollutant for which the area is designated attainment or unclassifiable with respect to the NAAQS. Also as discussed above, the location at which the Project will be constructed is currently designated attainment (or is unclassifiable) for the CO, NO₂, SO₂, PM₁₀ and lead NAAQS. EPA has carefully considered the potential impacts on air quality of these emissions from the Project. As required by the CAA and applicable PSD regulations, the terms and conditions of the final PSD permit ensure that activities authorized by the permit will not cause or contribute to a violation of the applicable NAAQS. Because this permit assures compliance with the applicable NAAQS and the NAAQS are set in such a way that they are protective of public health, we are confident that with respect to these NAAQS the emissions of these pollutants from the Project will not pose significant health risks. We are grandfathering the Project with respect to the 1-hour NO₂ and 1-hour SO₂ NAAQS. (See the responses to comments 1-22 in Section II.B.1.)

9. **Comment:** The commenter states that the BACT determination is flawed and fails to comply with federal PSD program BACT requirements because it does not include a ranking of control options and does not consider whether any control options are technically infeasible. The commenter further states that the BACT analysis provided in the permit application makes no mention of a top-down approach to the analysis. Finally, the commenter identified the following two similar generating facilities with lower CO emission limits and requested that these lower emission limits be included in the CO BACT analysis:
1. Kleen Energy Systems (RBLC ID: CT-0151), with permitted BACT limits of 0.9 ppmvd without duct burning and 1.7 ppmvd with duct burning, at 15% O₂ over a 1-hour period; and
 2. Virginia Electric and Power Company's Warren County Facility (RBLC ID: VA-0308, operating scenarios 1 and 2), with permitted limits of 1.2 and 1.3 ppmvd at 15% O₂ (no averaging period specified).

Response: EPA developed the top-down process in order to improve the application of the BACT selection criteria and provide consistency in establishing BACT. EPA has not established the top-down BACT process as a binding requirement through rule, but EPA Regional Offices that implement the federal PSD program apply the top-down BACT process in accordance with EPA policies and interpretations. The most comprehensive discussion of the five-step top-down BACT process can be found in EPA's 1990 Draft New Source Review Workshop Manual, but the method has been progressively refined through federal permitting decisions by EPA, orders on Title V permitting decisions, and opinions of the EPA Environmental Appeals Board (EAB) that have adopted many of the principles from the 1990 Workshop Manual and expanded upon them. In response to this comment, we asked the permit applicant to prepare a more detailed control technology analysis using the established five-step top-down procedure to provide a more detailed explanation as to why the options selected as BACT were the top options available. The information provided by the applicant is provided in Appendix A. Having evaluated the Applicant's further submittal, we have confirmed that the emission limits we originally proposed for NO₂ and PM₁₀ do in fact represent BACT for the Project. Therefore, no change has been made to the permit in this regard.

Based on the information that the Agency had at hand, and the fact that the District Rules require new major sources in a nonattainment area to satisfy requirements pertaining to the Lowest Achievable Emission Rate (LAER), the Agency determined when it issued the draft permit that the applicant was proposing the top control options available after reviewing the information provided. For the combustion sources, no more stringent control options were eliminated as a result of the BACT analysis. Our AAQIR summarizes BACT determinations for other projects and discusses the chosen control options for the Project. Furthermore, the selected options also were determined to represent LAER, which does not require consideration of the cost-effectiveness for emission reductions. Under these circumstances, EPA believed it was unnecessary to include a detailed discussion in the AAQIR of all possible control options with regard to the Project. EPA has noted that when the applicant accepts the top control option, energy and environmental impacts need not be

analyzed at step 4 of the process. *In re: Knauf Fiber Glass, GMBH*, 8 E.A.D. at 131 n.15. Furthermore, a full analysis is not required where there are two or more alternatives with comparable control efficiencies. *In re: Prairie State Generating Co.*, 13 E.A.D. at 36.

With respect to CO, the more detailed analysis provided by the Applicant also supports the fact that the original limits we proposed were consistent with BACT at the time the permit was released for public comment in 2009. However, BACT is properly established at the time of permit issuance and we recognize that it is appropriate not to rely solely on the BACT analysis supporting the 2009 proposal. Based on information provided by the commenter regarding the two facilities described above, and additional information collected by EPA that has become available since the time of our original proposal in 2009, we have determined that continuous compliance with a CO limit of less than 2.0 ppmv appears to be achievable. This determination is based on the permitted level for the Virginia Electric and Power Company's Warren County Facility (now named Dominion Power) referenced by the commenter.

It should be noted that the Dominion Power facility is not in operation and one unit at the Kleen Energy facility has only just begun operating while the other unit at that facility is still undergoing shakedown. Additionally, the Dominion Power permit was revised in December 2010 with CO emission limits of 2.4 ppm at 15% O₂ with duct burning and 1.5 ppm at 15% O₂ without duct burning (both at averaging periods of three-hours), which represents an increase in the CO emission limits originally established.

An emissions limitation applies for the entire lifetime of the facility, which in this case will be decades, and must be met on a continuous basis. For this reason, the EAB has stated that "it is wholly appropriate for the permit issuer to consider, as part of the BACT analysis, the extent to which the available data demonstrate whether the emissions rate at issue has been achieved by other facilities *over a long term*." See *In Re: Newmont Nevada Energy Investment, L.L.C.*, 12 E.A.D. (Dec. 21, 2005) at 18 (emphasis added). In addition, the EAB approved of the permit issuer "tak[ing] into account the absence of long term data, or the unproven long-term effectiveness of the technology in setting the emissions limitation that is BACT for the facility." *Id.* See also *Prairie State Generating Company*, PSD Appeal No. 05-05 (Aug. 24, 2006) at 71. We believe that the BACT limit we have established for CO in the final permit for the Project strikes an appropriate balance between the permitted levels on one hand and the lack of long-term compliance data for these very low emission rates on the other hand. Given the lack of long-term compliance data, we feel it is appropriate to implement a phased approach for establishing revised CO limits for the Project. In addition to revising the concentration limit (ppmvd) for CO, we have also revised the hourly mass emission rate (lb/hr) commensurate with the revised concentration limit. This hourly mass emission rate was calculated using the F-factor method per 40 CFR Part 60 Appendix A, Method 19. The phased approach will work in the following manner:

1. The permit requires the Permittee to design the gas turbines to achieve CO emission rates of 1.5 ppmvd and 6.27 lb/hr (1-hour average) without duct firing, and 2.0 ppmvd and 8.35 lb/hr (1-hour average) with duct firing. The permit requires that prior to construction, the Permittee submit design specifications as proof that the

gas turbines were designed to achieve such a rate. The Permittee is also required to submit a plan that sets forth the measures that will be taken to maintain the system and optimize its performance.

2. For the first three years of commercial operation of the Project, the Permittee must operate the gas turbines according to the design specifications and within the design parameters, and consistent with the maintenance and performance optimization plan, but will be allowed to emit up to 2.0 ppmvd CO and 8.35 lb/hr (1-hour average) with duct firing and without duct firing.
3. Following the first three years of commercial operation, the limits of 1.5 ppmvd and 6.27 lb/hr (1-hour average) without duct firing will take effect unless the emissions and operating data collected by the Permittee indicates that these limits are not feasible and the Permittee submits an application to EPA no later than the end of this 3-year period requesting a revision to these limits. Such an application must contain data and information that demonstrates the Facility was operated according to the design specifications and parameters and the maintenance and performance optimization plan, as well as a technical justification explaining why the lower limits are not feasible.
4. EPA will review the submittal and, following the applicable review process (which will include an opportunity for public review and comment), make a final decision regarding the requested revision based on what has been shown to be achievable. During this review process (should it be necessary), the Permittee will be allowed to operate under the initial emission limits of 2.0 ppmvd and 8.35 lb/hr (1-hour average) with duct firing and without duct firing. If EPA determines that a revision is not warranted, the lower emission limits will become applicable.

This process will ensure that the optimal limit is set for the Project while accounting for the current uncertainties regarding the ability of facilities to demonstrate continuous and long-term compliance with such low emission rates. Such optimization processes that ratchet limits downward based on assessments that take place after permit issuance have been upheld in the past by the EAB. See *In re RockGen Energy Ctr.*, 8 E.A.D. 536, 554 (EAB 1999) and cases cited therein.

Condition X.C.1 of the Final permit has been revised and X.C.3 has been added as a result of this comment.

10. **Comment:** The commenter raised concerns that the proposed BACT determination is faulty as a matter of law because it fails to consider or analyze the GHG emissions from the Project or any technology to control them. The commenter also states that energy efficiency measures to minimize GHG emissions should be considered. The commenter presents a regulatory interpretation expressing its perspective that GHGs are “subject to regulation” under the CAA, which cites Sections 111 and 202 of the CAA, as well as the [then] proposed Endangerment Finding.

Response: EPA did not consider GHGs to be subject to regulation at the time it issued the Proposed Permit in June 2009. 75 FR 17004 (April 2, 2010). Although EPA has determined that GHGs became subject to regulation as of January 2, 2011, we are grandfathering the Project with respect to the requirement for GHG BACT, for the reasons given in the Supplemental SB. For additional detail with respect to this issue, see the response to comment 10 in Section II.B.1.

11. **Comment:** The commenter acknowledges that the Project's potential to emit PM/PM₁₀ is 80.7 tons per year (tpy) and states that APC's proposal to offset PM emissions through SO₂ offsets is invalid under the CAA, thus impairing the ambient air quality.

Response: The PSD permit for the Project is being issued under Part C of the CAA and the implementing regulations at 40 CFR 52.21, which set forth the preconstruction review requirements for sources located in an area that is designated attainment or unclassifiable for a particular pollutant. Unlike the provisions of Part D of the Act, which include preconstruction requirements for sources located in nonattainment areas, neither Part C nor the PSD regulations require project applicants to offset increases in emissions. Rather, air quality is primarily protected through the NAAQS and PSD increment analysis. In this case, the location at which the Project will be constructed is designated attainment for the federal PM₁₀ NAAQS and we have therefore evaluated the impacts of the Project's PM₁₀ emissions on ambient air quality according to the PSD program requirements.

As we explained in the AAQIR for the proposed permit, EPA has established Significant Impact Levels (SILs) to characterize air quality impacts from sources that undergo PSD review. A SIL is a threshold level for the ambient concentration resulting from a source's emissions for a given pollutant and averaging period, below which the source is assumed to have an insignificant impact. The permit record clearly shows that the maximum modeled impact for PM₁₀ is considerably below the applicable SIL. We therefore disagree with the commenter that the Project will significantly impair air quality in this respect. Furthermore, offsets are not required by the regulations at 40 CFR 52.21. EPA is unable in this PSD permitting action to address the commenter's concerns about the adequacy of any offsets required by the District in its permitting process. EPA's focus here is on whether the project applicant has satisfied the regulatory requirements in section 52.21 that must be met in order to obtain a PSD permit.

12. **Comment:** The commenter raises concerns regarding attainment and maintenance of the NAAQS within the context of the San Joaquin Valley's nonattainment status for PM_{2.5}. The commenter further discusses concerns regarding APC's proposal to meet 98% of its PM offset requirements from SO₂ offsets at a one-to-one ratio. Concerns raised by the commenter include the following: the differing health risks associated with SO₂ and PM; the commenter's belief that the PM emissions from the Project will likely be PM_{2.5} or smaller; whether there is an even trade for people living near the Project given that the SO₂ reductions occurred farther away; the precursor relationship of SO₂ to PM; and the EPA recommended 40 to 1 ratio for SO₂ to PM trading.

Response: As the commenter notes, the San Joaquin Valley is designated nonattainment for PM_{2.5}. Our responses to comments 8, 11, and 17 in this section explain that the statutory and regulatory provisions under which this permit is being issued pertain to pollutants for which an area is designated attainment or unclassifiable. The District administers the nonattainment preconstruction permit program under the CAA.

13. **Comment:** After citing a passage from the AAQIR for the proposed permit, which states that the applicant has assumed the combustion emissions of PM are considered equivalent to those of PM₁₀ emissions, the commenter states that the draft permit is legally and technically inadequate because it attempts to use PM₁₀ as a surrogate for avoiding the direct regulation of PM_{2.5} as required by the CAA. The commenter contends that EPA must conduct a BACT analysis for PM_{2.5} and establish BACT emission limits for PM_{2.5} directly as part of any final permit for the project.

Response: We would like to clarify the passage from the AAQIR quoted by the commenter and its implications as to whether EPA is required to establish BACT limits for PM_{2.5} in this PSD permit.

Regarding the need to establish limits for PM_{2.5}, as we have explained above, the PSD permitting program applies to pollutants for which an area is designated attainment or unclassifiable, and the nonattainment NSR program applies to pollutants for which the area is designated nonattainment. In this case, the San Joaquin Valley is classified as attainment (or unclassifiable) for NO₂, SO₂, CO, PM₁₀ and lead. These are the only pollutants for which EPA is the permitting authority. The San Joaquin Valley is classified nonattainment for PM_{2.5} and ozone, and the District is the permitting authority for the nonattainment NSR program. Since the San Joaquin Valley is designated nonattainment for PM_{2.5}, emission limitations and other applicable requirements pertaining to PM_{2.5} emissions are appropriately addressed in the applicable nonattainment NSR permitting process administered by the District⁹ and not in the PSD permit that EPA is issuing. Given this, EPA has not inappropriately used PM₁₀ as a surrogate to meet PSD requirements for PM_{2.5} because EPA is not required under section 52.21 to address PSD requirements for PM_{2.5} in this permit. However, to clarify the meaning of the passage the commenter quoted from our AAQIR, we shall explain further.

Prior to July 1, 1987, air quality impacts from stationary sources were measured by an indicator known as Total Suspended Particulate (TSP). TSP consists of all PM emissions, including those greater in size than PM₁₀. Recognizing that PM₁₀ particles have more significant health effects than larger particles, EPA revised the NAAQS for PM on July 1, 1987 and in doing so, we established PM₁₀ as an indicator by which air quality impacts are to be measured. Although the TSP NAAQS and increments were later revoked and are no longer in place today, the PSD program still applies to sources that emit more than a threshold amount of TSP. The application of BACT, for example, is a PSD requirement

⁹ We note that in this matter, the potentially applicable regulation is 40 CFR Part 51, Appendix S. Under Appendix S, the applicable regulatory threshold for triggering NNSR permitting for PM_{2.5} emissions is 100 tons per year. The potential to emit PM_{2.5} for this project is less than 100 tons per year and these emissions are therefore not subject to NNSR requirements.

that is still relevant for TSP sources. Given the nature of the stationary source in this case (i.e., a natural gas-fired power plant), it is unlikely that any of the PM emissions will be larger than PM₁₀ particles. Further, because PM₁₀ has more serious health impacts than TSP, and because there is a NAAQS for PM₁₀ whereas there is none for TSP, it is far more protective of public health in the PSD permitting context to assume that all of the PM emissions from the Project are in the form of PM₁₀ (recall that in this case PM_{2.5} emissions are handled separately under the nonattainment NSR permitting process). The passage from the AAQIR quoted by the commenter is an explicit statement of this assumption and it is in no way related to the use of PM₁₀ as a surrogate for PM_{2.5}. As a result, we disagree with the commenter that the permit is inadequate on the basis alleged.

Comments Submitted by Earthjustice

14. **Comment:** The commenter states that the CAA requires BACT for pollutants subject to regulation under the Act and that carbon dioxide (CO₂) is such a pollutant. The commenter notes that the permit record does not contain an analysis for CO₂ controls and states that the permit fails to address BACT for CO₂. According to the commenter, such an analysis should have considered such things as energy production alternatives that do not rely on fossil fuel combustion, hybrid technologies that could improve overall carbon efficiency of the power plant, co-generation, changes to the project design that would lower total carbon emissions, and opportunities to improve turbine efficiency. The commenter finally states that once EPA determines the efficiency that represents BACT, EPA must translate that performance into enforceable limits on CO₂ emissions. The commenter also states that EPA must revise the proposed permit to explain EPA's position on BACT for CO₂ so the public can comment on the control levels selected or EPA's rationale for refusing to impose such controls.

Response: EPA did not consider GHGs to be subject to regulation at the time it issued the Proposed Permit in June 2009. 75 FR 17004 (April 2, 2010). Although EPA has determined that GHGs became subject to regulation as of January 2, 2011, we are grandfathering the Project from the requirement for BACT for GHGs, as stated in our Supplemental SB and for the reasons given in our responses to comments 1-22 in Section II.B.1.

15. **Comment:** The commenter states that the proposed permit fails to fully analyze BACT for NO_x, CO, or PM₁₀. The commenter states that:
- EPA failed to provide a top-down BACT analysis (including a ranking of available technologies, among the other elements of such an analysis);
 - the analysis EPA did provide was incomplete as it did not consider two facilities (the Kleen Energy Systems facility in Connecticut, and the CPV Warren facility in Virginia) that were recently permitted with CO limits below 2.0 ppm;
 - EPA did not consider improvements in gas turbine efficiency to lower overall emissions;
 - EPA did not consider alternatives to duct burning; and
 - EPA did not consider actual emissions data from other sources as opposed to a simple review of permitted levels for other facilities.

Response: Our response to comment 9 in Section II.A.1 addresses the majority of the issues raised in this comment, including the commenter’s desire for a more complete top-down BACT analysis, consideration of the facilities in Connecticut and Virginia, and consideration of actual emissions data.

With respect to the commenter's suggestion that we consider alternatives to duct firing for peak power production, we agree with the commenter that emissions from the facility are slightly greater when the duct burners are used than when they are not. However, the commenter has not identified a lower-emitting alternative for achieving the purpose of the duct burners, which is to raise peak electric output as needed. Because the duct burners use turbine exhaust gas (TEG) for combustion and the temperature of the TEG is already elevated, relatively little heat is required to raise the temperature of the combustion products entering the HRSG to the final desired level. As a result, duct burner thermal efficiency can approach 100%. In comparison, other potential alternatives such as an auxiliary boiler, simple cycle gas turbine, or internal combustion engine have lower thermal efficiencies. The commenter did not suggest other alternatives for us to consider, and we are aware of none that would rival the duct burners in efficiency or produce fewer emissions. As a result, we do not believe our BACT analysis is flawed because we did not consider alternatives to duct firing in greater depth.

Similarly, we do not agree with the commenter that our BACT limits for the Project are flawed because we did not conduct an exhaustive analysis of the potential improvements one gas turbine model might have over another and the incremental benefits such improvements might have on criteria pollutant emission levels. Where there are two or more alternatives with comparable control efficiency, only one of the alternatives must be fully analyzed. *In re Prairie State Generating Co.*, 13 E.A.D. at 36. Notably, the document the commenter cites to as evidence that the Project is “terribly inefficient” states that, “[t]he F-class advanced heavy duty gas turbines to be employed in Avenal Energy represent some of the most modern and efficient such machines now available. The applicant would employ two GE Frame 7FA combustion turbine generators in a two-on-one combined cycle power train nominally rated at 530 MW and 56.5% maximum full load efficiency LHV at International Organization for Standardization (ISO) conditions (GTW, 2008). One possible alternative is the Siemens SCC6-5000F...Another alternative is the Alstom Power KA24-2...Any differences among the GE 7FA, SCC6-5000F, and Alstom KA24 in actual operating efficiency would be insignificant.” Final Staff Assessment for the Avenal Energy Project, at 5.3-4 [emphasis added]. EPA is thus not persuaded by the comment that the selected options is “terribly inefficient.”

As requested by the commenter, we are providing the following table, which ranks the most effective technologies for controlling NO_x and CO emissions from the gas turbines:

Technology	Typical Control Efficiency	Typical Emission Rates
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NO _x		
Dry Low NO _x Combustion	75-90%	9-25 ppm
EMx TM (or SCONO _x TM)	90-95%	2.5 ppm (a)
DLN+SCR	80-95%	2 ppm
CO		
EMx TM (or SCONO _x TM)	~90%	5-6 ppm (a)
Oxidation Catalyst	70-95%	2-6 ppm

(a) For the EMx technology, the listed emission rates are for gas turbines less than 50 MW. We are unaware of EMx installations on utility-sized turbines.

It is clear from this comparison that dry low NO_x burners with SCR and an oxidation catalyst represent the most efficient options for NO_x and CO control respectively. This comparison supports our original proposal for the control technology for the Project.

16. **Comment:** Regarding the CO BACT limit, the commenter states that limits below 2.0 ppmvd cannot be ruled out without analyzing the feasibility and cost-effectiveness of improved performance. The commenter discusses various cost-effectiveness values including one that is based on a project permitted by the Bay Area Air Quality Management District and others in a paper from the Air & Waste Management Association. The range of cost-effectiveness values presented in the comment is from \$3,373/ton to \$4,944/ton, and the commenter included a reference to a letter that concluded costs “well over \$6,000/ton” would not be BACT.

Response: EPA agrees with the commenter that a CO limit below 2.0 ppmv cannot necessarily be ruled out in this case. However, as previously mentioned, the two facilities whose CO limits were cited are either not operational or have only just begun operation. Our response to comment 9 in Section II.A.1 provides further details on our final CO BACT determination. We also wish to note for clarification that (as the commenter himself recognizes in his comments) the primary purpose of the collateral impacts assessment in Step 4 of the BACT analysis is to temper the stringency of the technology requirements whenever energy, environmental and economic factors render use of the most effective technique inappropriate. See *Columbia Gulf Transmission Co.*, 2 E.A.D. 824, 826 (Adm’r 1989). In this case, we are establishing the CO BACT limit in the range suggested by the commenter and are not ruling out use of another control option based on economic factors. As a result, our revised BACT determination does not rely on the cost data provided by the commenter.

17. **Comment:** The commenter states that the proposed permit fails to demonstrate that the Avenal Project will not cause or contribute to violations of NAAQS for ozone and fine particulate matter. The commenter notes that the Project’s PM_{2.5} and NO_x emissions would be 80.7 tpy and 144.3 tpy, respectively, and states that these emissions are over the significance thresholds at 40 CFR 52.21(b)(23)(i) [10 tpy and 40 tpy, respectively]. As such, the commenter claims that pursuant to 40 CFR 52.21(m)(1)(a) and 52.21(k)(1), and CAA section 165(a)(3), the applicant must conduct an analysis of ambient air quality in the area for PM_{2.5} and ozone, and demonstrate that the increase in emissions from the source will not cause or contribute to air pollution in violation of the PM_{2.5} and ozone NAAQS. The commenter acknowledges the language at 40 CFR 52.21(i)(2), which exempts sources

from air quality analysis requirements with respect to pollutants for which the area is designated nonattainment, but the commenter contends that there is no basis for such an exemption in this instance because EPA only recently designated the San Joaquin Valley nonattainment for the 24-hour 35 µg/m³ PM_{2.5} standard and has not yet designated the Valley for the 75 parts per billion ozone standard.

Response: We would like to clarify that the provisions of 52.21(m)(1)(a) and 52.21(k)(1) do not apply to the Project with respect to PM_{2.5} and ozone. As explicitly stated at 40 CFR 52.21(i)(2), paragraphs (j) through (r) of section 52.21 shall not apply to a major stationary source with respect to pollutants for which an area is designated nonattainment. The commenter acknowledges this exemption but argues that the applicant is still required to demonstrate that the source will not cause or contribute to a violation of the PM_{2.5} and ozone NAAQS in order to receive a PSD permit. We believe that a proper reading of the CAA and its implementing regulations does not support this argument. The commenter's argument is founded on its incorrect reading of the language of CAA section 165(a)(3), which states that the owner or operator of a proposed facility must demonstrate "that emissions from construction or operation of such facility will not cause, or contribute to, air pollution in excess of *any*...national ambient air quality standard in any air quality control region" (emphasis added). Here, the commenter effectively reads "any" to mean "all," irrespective of the attainment status of the project location with respect to a particular pollutant – thus, the commenter's assertion that the project proponent must evaluate the air quality impacts of the Project's PM_{2.5} and ozone emissions despite the fact that the San Joaquin Valley is designated nonattainment for both pollutants. What the commenter does not recognize is that the text of section 165(a)(3) is preceded by language that states: "No major emitting facility on which construction is commenced after August 7, 1977, may be constructed *in any area to which this part applies* unless –" (emphasis added). See CAA 165(a). The meaning of this language was considered by the Court of Appeals for the D.C. Circuit in *Alabama Power Co. v. Costle* when EPA was challenged in our promulgation of PSD regulations to implement provisions of the CAA Amendments of 1977. The Court's decision states in relevant part:

Section 165(a) [footnote omitted] provides that a PSD permit is required before a major emitting facility "may be constructed in any area to which this part applies." Industry petitioners contend that this language limits the application of the PSD review requirements to sources constructed in certain locations, and that those locations are the statutorily defined "clean air areas." [footnote omitted] On this premise, industry petitioners argue that section 165 does not apply to sources located in the so-called "nonattainment" areas. [footnote omitted] EPA, on the other hand, takes the position that the identification of "clean air" and "nonattainment" areas in section 107(d) [footnote omitted] of the Act are only a starting point for the planning process that will lead to revised state implementation plans, that these identifications do not shape the "area" to which the PSD review requirements apply, and that preconstruction review must precede the construction anywhere of a major emitting facility which will adversely affect the air quality of an area to which this part applies. EPA's regulations extend the permit requirements of section 165 to all sources, wherever located, if the emissions from the source have an impact on any

clean air area. [footnote omitted] The issue, then, is whether a source becomes subject to the PSD review process because of its location within an area to which this part applies, or because of its impact upon the air quality of one....After careful consideration of the statute and the legislative history, we must accept the contention of the industry petitioners that the phrase “constructed in any area to which this part applies” limits the application of Section 165 to major emitting facilities to be constructed in certain locations....The plain meaning of the inclusion in section 165 of the words “any area to which this part applies” is that Congress intended location to be the key determinant of the applicability of the PSD review requirements....We have now held that section 165 does not, by its own terms, apply to sources located outside of clean air areas.

636 F.2d 323 (D.C. Cir. 1980). It was actually in response to the Court’s decision in this case that the exemption at 52.21(i)(2) cited above was added to the regulations:

This section summarizes how PSD review as modified in response to Alabama Power will apply....If a source or modification thus qualifies as major, its prospective location or existing location must also qualify as a PSD area, in order for PSD review to apply. A PSD area is one formally designated by the state as “attainment” or “unclassifiable” for any pollutant for which a national ambient air quality standard exists. This geographic applicability test does not take into account what new pollutant emissions caused the construction to be major. It looks simply at whether the source is major for any pollutant and will be located in a PSD area. Once a source applicant has determined that proposed construction falls under PSD based on the above size and location tests, it must then assess whether the pollutants the project would emit are or are [sic] subject to PSD. If a new major stationary source emits pollutants for which the area it locates in is designated nonattainment then the source is exempt from PSD review for those pollutants. These sources must, however, meet the applicable requirements of NSR for each nonattainment pollutant. Similarly, if a major modification to be constructed in a PSD area involves changes only for nonattainment pollutants then the source is not subject to PSD. These modifications must meet the appropriate nonattainment NSR under the SIP for the pollutant.

45 FR 52677.

The preamble goes on to say: “C. What Must a Source or Modification Do To Obtain a PSD Permit? ...It must conduct an ambient air quality analysis. Each PSD source or modification must perform an air quality analysis to demonstrate that its new pollutant emissions would not violate either the *applicable* NAAQS or the applicable PSD increment.” 45 FR 52678 (emphasis added).

Thus, the reach of section 165(a)(3) of the Act and sections 52.21(k) and 52.21(m) of EPA’s regulations do not extend to pollutants for which the project area is designated nonattainment. The location of the Project is designated nonattainment for both PM_{2.5} and ozone. (See 70 FR 944, 74 FR 58688, and 69 FR 23858) This is true even though the San

Joaquin Valley was designated nonattainment for PM_{2.5} relatively recently. The timing of the State planning process for nonattainment pollutants has no bearing on the fact that section 165(a)(3) of the Act and the applicable PSD regulations do not apply to those pollutants in this instance. Further, although the commenter is correct that EPA has not designated the San Joaquin Valley with respect to the 75 ppb ozone standard, the Valley is designated nonattainment for the less stringent 1997 ozone standard of 80 ppb. We note that the exemption at 40 CFR 52.21(i)(2) applies on a pollutant-wide basis and is not applied separately to individual standards for the same pollutant. The language reads as follows:

The requirements of paragraphs (j) through (r) of this section shall not apply to a major stationary source or major modification **with respect to a particular pollutant** if the owner or operator demonstrates that, **as to that pollutant**, the source or modification is located in an area designated as nonattainment under section 107 of the Act. (emphasis added)

Application of this exemption to the older, less stringent ozone NAAQS, but not the newer, more stringent one would be illogical. It would not make sense to require a source to demonstrate that it would not cause or contribute to a violation of the 75 ppb standard when the area in which the source is located is already in nonattainment with the less stringent standard of 80 ppb.

For all of the reasons stated above, we disagree with and cannot base our action on the commenter's assertions that the applicant must conduct an analysis of ambient air quality in the area for PM_{2.5} and ozone to satisfy section 165(a)(3) of the Act and sections 52.21(k) and 52.21(m) of our regulations. As noted in the response to comment 29 in Section II.B.1, however, we are very actively supporting the efforts to improve PM_{2.5} and ozone air quality in the area and have considered PM_{2.5} and ozone in the context of the Environmental Justice Analysis for this permit.

18. **Comment:** The commenter raises a number of additional issues related to concern about the lack of an air quality analysis for PM_{2.5} and ozone. Among other things, the commenter states that the applicant's air quality analysis is defective because there is no discussion of ambient ozone impacts including a discussion as to how the NO_x emissions from the plant will or will not contribute to the ozone problem in the area. Additionally, the commenter states that the APC's analysis does purport to address PM_{2.5} but is fatally flawed. The commenter references portions of the modeling analysis that evaluate the air quality impacts associated with PM₁₀, draws a connection between this analysis and the PM_{2.5} standard, and then discusses the Project's alleged use of PM₁₀ as a surrogate for determining compliance with section 165(a)(3) for PM_{2.5} and the lack of SILs or other *de minimis* thresholds for use in making such a determination. The commenter also states that the modeling analysis is inadequate because it does not account for the contribution of secondary PM_{2.5} and ozone formation as a result of the source's NO_x emissions. Next, the commenter points to recent studies, which it says show that emissions of CO₂ can alter local atmospheric chemistry and increase the formation of ozone and fine particulate matter concentrations, and states that the air quality analysis should analyze the effect of adding

1.7 million tons per year of CO₂ to the area; the commenter suggests several options for modeling these impacts. Finally, the commenter concludes that if EPA and APC persist in trying to claim that the Project will not significantly contribute to ozone and PM_{2.5} violations, the two parties must prepare an adequate analysis and circulate it for public review and comment.

Response: Our response to comment 13 in Section II.A.1 clarifies that PM₁₀ has not been used as a surrogate in this case for PM_{2.5}. The rest of the above comments pertain to air quality issues associated with pollutants for which the project location is designated nonattainment. Our responses to comments 8, 11, 12 and 17 in Section II.A.1 explain why these pollutants are not covered by the PSD permit issued by EPA in this instance.

19. **Comment:** The commenter states that neither EPA nor APC has provided any record showing how the offsets obtained for this project will compensate for the Project's impacts. The commenter further states that the District's offset requirements will not prevent the Project from contributing to violations of the ambient air quality standards for PM_{2.5} and ozone. The commenter additionally finds fault in EPA's presumed reliance on the District's NNSR program to satisfy the requirement of CAA section 165(a)(3) with respect to PM_{2.5} and ozone because the NNSR and PSD programs are fundamentally different when it comes to offsets. After a discussion of the method used to calculate the amount of offsets required for NO_x, VOC and PM₁₀, the commenter notes that this calculation includes no analysis of the impact that the project will have on air quality. The commenter goes on to state that for PSD purposes, these emission reduction credits (ERCs) are already reflected in the current ambient air quality concentrations (which the commenter says continue to violate the national standards) used to assess the Project's projected impact and that EPA has not demonstrated how the ERCs can be used to show that the emissions from the project will not cause or contribute to the violation of any NAAQS in the project impact area. Next, the commenter claims that there are temporal and spatial defects with the offsets used for this project, and that even if these defects could be ignored there is still no rational basis for the offsets because the District inappropriately relied on interpollutant trading. Specifically, the commenter takes issue with the 1 to 1 ratio used by the District for the interpollutant trade and claims that a ratio of 40 to 1 should be used unless a demonstration is made that another ratio is locally appropriate. Finally, the commenter states that while EPA could grant APC a PSD permit with a showing that the contributions to ongoing ozone and PM_{2.5} nonattainment concentrations will be offset, no such demonstration has been made and that there is still considerable work to be done on this PSD permit.

Response: Providing Offsets is a requirement of the NNSR program. The NNSR program is administered in this case by the District. As discussed in our responses to comments 8, 11, 12 and 17 in Section II.A.1, section 165(a)(3) of the Clean Air Act does not apply to PM_{2.5} and ozone in this instance and EPA is unable in this PSD permitting action to address the commenter's concerns about the adequacy of any offsets required by the District in its permitting process.

Comments Submitted by Rob Simpson

20. **Comment:** The commenter expresses concern about the public participation process for the proposed permit, alleging that the notice provided to the public did not disclose vital information about the Project's effects on air quality. The commenter states that without a fact sheet or accurate emission data there is too much information for the public to sift through to obtain the relevant information. The commenter further states that if EPA had provided this information or published a fact sheet, EPA may have elicited additional public participation. The commenter then quotes from 40 CFR 124.8(b)(3), regarding the requirement that fact sheets for PSD permits include information concerning the degree of increment consumption expected to result from operation of the Project.

Response: We appreciate the commenter's desire for the public to have adequate information on which to comment on EPA's proposed permitting action for the Project and strive continuously to improve the public notice process. In this case, we believe that EPA provided ample notice to the public through our public participation process, including the documents issued as part of that process, concerning the proposed Project and its air quality impacts.

EPA issued numerous public notices in 2009 pertaining to the proposed permit as well as a detailed AAQIR describing the project. EPA's public notices for the proposed PSD permit for the Project included appropriate information as required by 40 CFR 124.10(d). EPA's AAQIR provided the information required by 40 CFR 124.7; i.e., information describing the derivation of the conditions of the draft permit and the reason for them. The AAQIR incorporated a detailed summary of the proposed project, including its proposed location, its impacts and its control requirements. In addition, during the 2009 information meeting and public hearings, EPA also provided informational sheets for the public that summarized the information in the AAQIR.

The commenter may be arguing in particular that EPA was required to prepare a fact sheet for this action in accordance with 40 CFR 124.8. We disagree that we were required to do so. 40 CFR 124.8 states that in the context of PSD permitting, a fact sheet shall be prepared for every draft permit "which the Director finds is the subject of wide-spread public interest or raises major issues." While EPA did receive numerous comments expressing interest in the project after EPA issued our initial public notice, at the earlier point in time when EPA issued the proposed permit, we were not aware of wide-spread public interest nor did we believe that the proposed permit raised major issues.

We note that, in any case, the AAQIR provides much, if not all, of the information that would otherwise be required in a fact sheet, and provides precisely the type of information concerning air quality impacts of the project that the commenter appears to be concerned about in terms of notice to the public.

We are not entirely clear regarding the commenter's concerns regarding 40 CFR 124.8(b)(3). However, we note that the AAQIR also included information concerning the degree of increment consumption expected to result from operation of the Project, consistent with 40 CFR 124.8(b)(3). Sections 8.3-8.4 on pages 25-6 of the AAQIR make

clear that there is no increment for CO, and that the Project's impacts for NO₂ and PM₁₀ are below the SILs. In the event that a source's modeled impacts of a particular pollutant are below the applicable SIL at all ambient air locations modeled, i.e., *de minimis* everywhere, EPA's policy for PSD provides that no further modeling analysis is required for that pollutant. Our longstanding policy under the PSD program is that when a preliminary screening analysis is below the SIL, that analysis is sufficient to demonstrate that the source's emissions throughout the area modeled will not cause or contribute to a violation of the increment, and there is no need for a comprehensive source impact analysis involving a cumulative evaluation of the emissions from the proposed source and other sources affecting the area.

In sum, we disagree with the commenter's assertion that EPA did not meet the requirements of 40 CFR Part 124 in terms of providing appropriate information to the public concerning the Project's effects on air quality.

21. **Comment:** The commenter expresses concern that the title of the Public Notice and the first paragraph of the public notice together could make the public believe that the project will be in Texas and stop reading.

Response: The contents of the public notices issued by EPA for our proposed permit in this case were drafted in accordance with the requirements in 40 CFR 124.10(d). We note that each of these public notices clearly states in one of the first two paragraphs that the proposed Project would be located in Kings County, California, which would eliminate any confusion about the location of the Project. The second paragraph of the public notices issued by EPA describes the specific location and address of the Project, while the first paragraph provides the address of the applicant, in accordance with 40 CFR 124.10(d)(ii) (with the exception of the first notice EPA issued, in which this information was inadvertently omitted).

22. **Comment:** The commenter suggests that the site address should be prominent in the notice as should the effect on air quality: "The metes and bounds site description, as was used in lieu of the actual address in all notices from the CEC, District and the EPA except for these last Notices from the EPA that includes a site address only after the Applicants address and the antiquated site description, does not serve to inform. The Site address should be prominent in the notice as should the effect on air quality." The commenter also notes the CEC's Preliminary Staff Assessment discloses the total maximum annual emissions in tons per year and suggests this information could affect public interest and participation.

Response: We appreciate the commenter's suggestions for improving the public notice, and will consider them for future notices. However, with respect to the issues raised in this comment, we believe that the contents of our public notices for this matter are consistent with the requirements of 40 CFR 124.10(d) as discussed above. We note section 124.10(d) does not require that EPA's public notice provide a detailed description of the project's emissions; however, EPA included that information in our AAQIR for the Project.

23. **Comment:** The commenter states that the following statement, which appeared in our 2009 public notice, is false: "Air pollution emissions from Avenal Energy Project would not cause or contribute to violations of any of the National Ambient Air Quality Standards (NAAQS)."

Response: The statement quoted by the commenter refers to applicable NAAQS for pollutants regulated under the PSD permit. As discussed above, the project demonstrates compliance with the NAAQS that are regulated under this PSD permit. For further information about why PSD permits do not have to demonstrate compliance with the NAAQS for nonattainment pollutants, please see our response to comment number 8, 11, 12 and 17 in Section II.A.1.

24. **Comment:** The commenter states that he has had difficulty getting on EPA public notice lists and asks how the EPA has satisfied the requirements of 40 CFR 124.10(c)(1)(ix), which requires that EPA mail a copy of public notice for activities described in 40 CFR 124.10(a) to persons on a mailing list developed by a number of listed methods.

Response: The commenter is included in the database Region 9 uses for distributing public notices related to PSD permits issued by EPA in California; therefore, as far as we can determine, we sent the commenter all public notices issued by EPA for our proposed permit decision for the Project. We note that Region 9 has mailed, and in some cases, emailed, public notices for this action to an extensive list of interested parties, including all persons who had requested to be on EPA's mail or e-mail distribution list for this PSD permitting action, in addition to other required entities under 40 CFR Part 124. In addition to our existing public notice distribution database, for our second and third 2009 public notice distribution, we provided our public notices to select recipients from the mailing maintained by the CEC for this project as well as to all post office boxes in Kettleman City; we additionally solicited input from other internal EPA Region 9 staff regarding parties that may have an interest in the proposed action. We note that in our 2011 public notice our distribution list included those mentioned above as well as additional parties such as all post office boxes in the city of Avenal, among others. In sum, we believe that our public notice distribution for the Project is consistent with 40 CFR Part 124. EPA notes that the commenter has not stated that he did not receive appropriate public notice for this permitting action.

We note that Region 9 maintains an ongoing notice to the public on our website regarding the opportunity to be placed on mailing lists for information about our permitting actions. This website allows individuals to sign up to receive public notices pertaining to permitting actions of their choosing based on geographic or other criteria. See <http://www.epa.gov/region09/air/permit/psd-public-guidelines.html>. In addition, Region 9 provided the public with the opportunity to complete a form at the public information meeting and public hearings for this project to be added to the Region's distribution list. Region 9 also has begun to notify members of the public through public notices we issue for PSD permits that they can request to be put on our distribution list for other EPA PSD permitting actions. We ask requestors to notify Region 9 if there is a change in address or

electronic mail address; this notification can be completed by contacting the Region 9 Air Permits Office.

25. **Comment:** The commenter states that it does not appear that organizations like Californians for Renewable Energy (CARE) have been provided notice of these proceedings, although it appears that they have been “participants in past permit proceedings in that [sic] area.”

Response: We appreciate the commenter’s concern regarding whether public notice was provided to CARE and other organizations that have been participants in past proceedings in the area. We have added CARE to our distribution list for notices relating to this PSD permit action.

26. **Comment:** The commenter asked for clarification about the District and CEC approval processes for the Project, as well as what authority EPA has over those processes.

Response: The CEC’s licensing process and the District’s permitting process for the Project are distinct from this PSD permitting action. However, as discussed previously in an email dated to the commenter dated June 22, 2009 we note that it is our understanding that a power plant over 50 megawatts needs both an approval from the District and the license from the CEC before it can commence construction. We also note that EPA retains oversight authority to ensure compliance with CAA requirements governing new source review, *see* CAA sections 113(a)(2), 113(a)(5), 179(a)(4). But this PSD permitting action is not the appropriate context for EPA to exercise such authority.

27. **Comment:** The commenter states the permit should have a condition that requires fast start technology. The context of this request includes the commenter’s perspective that the power plant is being designed to provide base load power in an environment without demand for additional base load power. The commenter identifies operating facilities that he says received modified permits “to function more like load following peaker type plant [sic] despite the slow start design flaw that results in higher emissions and lower efficiency during startup than a facility designed for peak use.” The commenter further states that “to license the facility with the intent to change its operating profile after its [sic] built would be considered a ‘sham permit.’ ”

Response: EPA agrees with the commenter that, consistent with BACT requirements, the permit should require the shortest start-up/shutdown times possible so as to minimize the Project’s emissions. We have revised the startup/shutdown conditions for the permit under Condition X.D.3 to require shorter startup/shutdown durations. See our response to comment 49 in Section II.A.1. The commenter has not explained how fast start would be appropriate for the Project or how fast start would impact the Project’s emissions.

With regard to the commenter’s concern about the potential for a sham permit, it is unclear to EPA what the basis is for the commenter’s assertion that the Project plans to change its profile after it is built. This Project is being permitted based on its maximum potential to emit. While a load-following facility may have more transient episodes than a baseload

facility, the Project will still have to comply with its hourly and annual emissions limitations. Furthermore, it is important to note that if the Project proponent changes the way in which it wants to operate the permitted facility, that change in operations may trigger the need for additional PSD review, depending on the nature and magnitude of the change.

28. **Comment:** The commenter asks how EPA considered the energy line loss associated with the hundreds of miles that the energy would likely have to travel to a load center. As context, the commenter states that the plant does not have a power purchase agreement identifying where the power might be used.

Response: Because the commenter has not illustrated how this is a relevant consideration to EPA’s decision to issue this PSD permit under applicable criteria in the CAA and EPA regulations, EPA did not consider the energy line loss. Although “energy impacts” are a consideration in the BACT analysis, the commenter has not shown how “energy line loss” is relevant to the selection of the BACT in this instance. Further, since the commenter has not shown how the prevention of energy line loss or the absence of a power purchase agreement relates to an air quality objective, these subjects are outside the scope of relevant considerations under section 165(a)(2) of the Clean Air Act. *Prairie State*, 13 E.A.D. at 30.

29. **Comment:** The commenter asks whether EPA considered construction and commissioning period impacts, GHGs, the energy used to pump the water through the California Aqueduct to the Project, as well as the impacts of the water use on soils and vegetation and biological resources.

Response: With respect to the energy used to pump the water through the California Aqueduct to the Project, and impacts of water use on soils and vegetation and biological resources, the commenter has not illustrated how these subjects are relevant to EPA’s decision to issue this PSD permit under applicable criteria in the CAA and EPA regulations. The comment has not explained how EPA’s BACT analysis should be influenced by these considerations. EPA’s additional impact analysis focuses on impacts associated with emissions from the source of pollutants regulated under the PSD permit from the source.

With regard to the impacts associated with construction, we note that the impacts of these emissions are temporary in nature and are not included in modeling under PSD regulations at 40 CFR 52.21(i)(3), which state:

(i) Exemptions . . .

3) The requirements of paragraphs (k), (m) and (o) of this section shall not apply to a major stationary source or major modification with respect to a particular pollutant, if the allowable emissions of that pollutant from the source, or the net emissions increase of that pollutant from the modification:

(i) Would impact no Class I area and no area where an applicable increment is

known to be violated, and

(ii) Would be temporary.

In this case, as explained in EPA's AAQIR, the Project's emissions would not impact any Class I area, and would not impact any area where an applicable increment is known to be violated. In addition, construction emissions from the source would be temporary in nature. Therefore, in accordance with 40 CFR 52.21(i)(3), construction impacts were not included in EPA's modeling analysis for the Project. However, we note that the Applicant did provide information concerning construction impacts to the District, and that information was included as a part of the PSD permit application. The information provided indicates that the air quality impact of the Project's construction emissions would be less than that during normal operations for CO, slightly higher than those during normal operations for PM₁₀ (4.7 µg/m³ vs. 2.9 µg /m³), but still below the SILs, and slightly higher than those during normal operations for annual NO₂, but well below the NAAQS (though slightly higher than the SILs).

With regards to the one-time commissioning scenario, the air quality modeling for the applicable pollutants and standards does include the maximum emissions during the commissioning year as well as emissions during startup, shutdown and normal operations.

Finally, EPA's position regarding the applicability of BACT requirements for GHG for the Project is discussed in detail in our Supplemental SB and our responses to the public comments we received on the Supplemental SB in Section II.B.1 of this document.

30. **Comment:** The commenter states that EPA's AAQIR should not rely on the District evaluation as it was not vetted in public scrutiny. Further, the commenter states that to the extent EPA relies on the District's findings, EPA should also respond to the commenter's complaint regarding the lack of opportunity for public participation in the District's proceedings, attached to the comments.

Response: EPA reviewed a number of documents to make sure that the emissions estimates and other data we used for the Project were consistent with other documentation related to the Project, including documents prepared by the District. However, EPA did not rely solely on information provided by the District for our analysis. Further, we are not aware of any inaccuracies in the information provided by the District that is relevant to our analysis, nor does the commenter identify any. While we also believe in the value of public participation, the commenter's concerns about the District's public participation process for its NNSR permit are not matters covered by the criteria applicable to EPA's decision on this PSD permit application.

31. **Comment:** The commenter expresses concerns about the Applicant's use of EPA's guidance document, "Screening Procedure for the Impacts of Air Pollutions Sources on Plants, Soils and Animals." The commenter states that this document appears outdated and that another PSD permitting action for a different facility has more contemporaneous information. The commenter further states that the soils analysis appears inadequate.

Response: As the AAQIR makes clear, in addition to using the 1980 Screening Procedure, the applicant also conducted further analysis and provided additional site-specific information concerning the Project's potential impacts on soils and vegetation. See AAQIR pp. 27-8; PSD permit application at pp. 6.4-8 – 6.4-9; and biological resources CEC section 6-6 submitted as part of the biological assessment for EPA's Endangered Species Act (ESA) Section 7 consultation for the Project. After reviewing this information, Region 9 concluded that we did not expect any adverse impacts on plants and soils as presented in Table 9-1 of the AAQIR. The commenter provides no site-specific concerns that call into question either the information presented by the applicant or EPA's conclusion. EPA believes that the soils and vegetation information presented by the applicant is sufficient and that EPA's conclusions are sound.

32. **Comment:** The commenter quotes the growth analysis in the AAQIR and states that it does not demonstrate how an additional 600 MW facility fails to cause significant growth, and requests that EPA take Administrative Notice of the CEC proceedings. The commenter further references the CEC proceedings and states that the siting of the Project alone constitutes a land use change from farming to industrial, and that its development is expected to result in further industrial development around the site. The commenter states that excerpts from the CEC Evidentiary Hearing (July 7, 2009),¹⁰ which are included as part of the comment, demonstrate that the project is specifically planned to cause growth. The commenter states that the cumulative effects of the planned industrial area should be considered and that EPA should recognize the growth planned as a result of this siting.

Response: EPA has previously interpreted section 52.21(o) to call for consideration of emissions generated by growth that will occur in the area due to the source. NSR Workshop Manual at D.1 – D.4. In conducting this review, we focus on residential, commercial and industrial growth that is likely to occur to support the source under review. Such an approach is consistent with that described in EPA's 1990 NSR Workshop Manual, which we believe is persuasive on this point and, which we have determined is appropriate to follow here. As discussed in Section 9.3 of the AAQIR, EPA reviewed relevant information contained in the CEC docket that was also provided by the Applicant as part of the PSD permit application. Considerations included information about existing population, economic information, housing, schools and public services. Descriptions also include the potential impacts of construction and operations and maintenance-related activities, such as projected work force and fiscal resources. Thus, we believe that EPA's growth analysis, as summarized in EPA's AAQIR, considered the relevant information and leads to the conclusion that the project will not cause significant growth in the area. As a result, EPA did not conduct further analysis associated with growth caused by the project

We also disagree with the commenter's assertion, as supported by his citation to the CEC record, that we should consider as part of our analysis the cumulative effects of planned industrial growth unconnected to the Project that may be somewhat more likely to occur

¹⁰ EPA has considered the specific portions the CEC proceedings presented and discussed by the commenter in his comment. The commenter did not explain the relevance of his request that EPA take administrative notice of the CEC proceedings to the topic at issue or identify how additional portions of the CEC proceedings might be relevant.

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

of Compliance for the Project. The Applicant also stated that the CO emission limit should be 10.60 pounds per hour instead of 13.55 pounds per hour.

Response: The Applicant has not provided a sufficient basis for its request for a 3-hour averaging period and we continue to believe that a 1-hour averaging period is appropriate. The permit remains unchanged in this particular respect. With respect to the CO emissions limits, we first note that the 13.55 lb/hr limit reflects a typographical error and we have made the correction requested by the Applicant. In addition, as discussed in our response to comment 9 in section II.A.1, we have determined that compliance with a CO limit less than 2.0 ppmv appears to be achievable without duct burning and we have further revised the permit to reflect that determination. See our response to comment 9 for further information.

Conditions under X.C.1 have been revised, and Condition X.C.3 has been added accordingly in the final permit.

39. **Comment:** The Applicant stated that the annual restrictions on usage of the duct burners and the auxiliary boiler should be based on annual heat input rather than on annual hours of operation since all annual emissions calculations in the application and ambient air quality analysis are based on heat input. Specifically, the Applicant points out the following:

1. For the duct burners, the application and ambient air quality analysis are based on a heat input in MMBtu, high heating value (HHV). The restriction on usage should be revised to 449,800 MMBtu/year, based on 562.26 MMBtu/hr for each duct burner and not more than 800 hours per year operations for each duct burner; and
2. For the auxiliary boiler the application and ambient air quality analysis are based on a heat input in MMBtu (HHV). The restrictions on usage should be 46,675 MMBtu/yr, based on a boiler rating of 37.4 MMBtu/hr and 1,248 hours per year operations.

It should be noted that the Applicant further refined the heat input of the duct burners to 562.26 MMBtu/hr (compared to the original 562 MMBtu/hr), which is consistent with what was assumed in the emission estimates.

Response: In the interest of developing an accurate and enforceable permit, on May 6, 2010 EPA held a conference call with the Applicant to discuss this issue. In addition, APC followed up the conference call with a letter dated May 11, 2010 providing specific clarification about the request for fuel-based limits. We agree that this change is appropriate and we note that it will not affect the emissions limits or the Project's modeled air quality impacts.

Accordingly, the following sections of the permit have accordingly been revised as a result of this comment: the equipment list, (b) Condition X.C.2, (c) Condition X.E.1, and (d) Condition X.H.2.

40. **Comment:** The Applicant requested that Special Condition X.B be revised. The Applicant interpreted this condition to require the SCR and oxidation catalyst emission control systems to be installed and operational prior to initial startup, as defined in 40 CFR 60.2. 40 CFR 60.2 defines "startup" as "the setting in operation of an affected facility for any purpose." However, as discussed in the permit application (section entitled "CTG Emissions During Commissioning" on page 6.2-47), the Applicant stated that the gas turbines and HRSGs must undergo a commissioning period during which the units must be operated without emission controls to prevent damage to those systems.

Response: The intent of Condition X.B is to assure that the air pollution control devices are fully operating and maintained at all times before the Project commences commercial operations but we agree that Condition X.B should be revised to account for the commissioning period, which is also referred to as shakedown, as referenced in Condition X.J. We have revised Condition X.B accordingly. We have further added in Condition X.J that the shakedown period shall be limited to no more than 90 days.

41. **Comment:** The Applicant noted that the definition of startup in Condition X.D.1.a ("...startup occurs when a CTG has not been in operation during the preceding 48 hours") may be interpreted as occurring only if a turbine has been shut down for 48 hours or more. The Applicant further suggests that the definition be revised so it is identical to the District's FDOC condition regarding startup and shutdown.

Response: EPA agrees that the provision at issue may be misinterpreted as described by the Applicant. Therefore, the permit conditions will be clarified as follows. The current definition of startup in Condition X.D.1 will be retained, and Condition X.D.1.a will be deleted. Condition X.D.1.b (the definition of shutdown) will be renumbered as Condition X.D.2 resulting in the revised numbering of Condition X.D from X.D.1-5 in the Proposed Permit to X.D.1-6 in the Final Permit. All references to Condition X.D in other permit conditions have also been revised, accordingly. This includes updating references under the following conditions: Condition X.D.6 (originally Condition X.D.5) has been revised to reference X.D.3 rather than X.D.2, and Condition X.F.13.b has been revised to reference X.D.6 rather than X.D.5.

42. **Comment:** Condition X.E.2 prohibits simultaneous operation of the auxiliary boiler with the gas turbines. The Applicant requested that this condition be deleted because it is not practical to ensure the boiler is completely shut down at the moment of turbine startup.

Response: We have revised Condition X.E.2 in the Final Permit to clarify that the auxiliary boiler shall not operate during normal operation of the gas turbines except during periods of, or immediately following, startup. We have further revised this condition to clarify that the boiler must be shut down as soon as practicable after the completion of any startup process. We note that the ambient air quality modeling analyses for NO₂, CO and PM₁₀ conservatively included operations of the auxiliary boiler concurrently with startup and normal operations of both gas turbines, the emergency generator and the diesel-fueled emergency fire water pump.

43. **Comment:** The Applicant noted that Condition X.F.1 requires that the continuous emissions monitoring systems (CEMS) be certified before commercial operations, but the permit does not include a definition of the term “commercial operations.” The commenter suggested adding the definition in the acid rain requirements to clarify the CEMS certification timing requirements. The applicant further suggested revised language for Condition X.F.1 to clarify the timing of commencing commercial operation.

Response: EPA’s intent is for the CEMS to be certified prior to commencing commercial operations. We agree with the suggested change in this regard and have clarified in Condition X.F.1 that the phrase “commence commercial operation” is defined as it is in 40 CFR 72.2. Specifically, this definition states - “*Commence commercial operations* means to have begun to generate electricity for sale, including the sale of test generation.” We have also revised Condition X.B accordingly, because Condition X.B also pertains to the timing of the use of the control equipment.

It is our intent for the CEMS to be installed on each of the turbines prior to first fire, and thereafter maintained, operated and calibrated, accordingly. Therefore, EPA has also made additional changes to Condition X.F.1 to clarify our intent in this regard, in lieu of some of the changes suggested by the Applicant.

44. **Comment:** The Applicant states that, as written, the permit requires the NO_x and oxygen (O₂) CEMS to meet specific requirements of 40 Part 60 Appendices B and F. The applicant requested that the permit be revised to enable the NO_x and O₂ CEMS to utilize the requirements of Part 75 as allowed by the applicable New Source Performance Standards at 40 CFR 60.4345.

Response: EPA has reviewed the relevant applicable requirements in light of our interest in issuing an accurate and enforceable permit that does not raise operating costs unnecessarily. Because Part 60 Subpart KKKK allows the option of using Part 75 to comply with the requirements of 40 CFR 60.4345, we agree with the request and are making revisions to the following sections of the permit: (a) the reference to Part 60 will be replaced with Part 75 in Condition X.F.2; and (b) the reference to Part 60 for NO_x and the diluent (O₂) in Condition X.F.8 will be replaced with Part 75 and also reference diluent CO₂.

45. **Comment:** The Applicant requested that, because the potential to emit PM and PM₁₀ emissions from the auxiliary boiler (Unit D1) are minimal (less than 0.25 tons per year), the initial and annual source testing requirements for PM and PM₁₀ emissions from Unit D1 be eliminated.

Response: On May 6, 2010 EPA held a conference call with the applicant to discuss this issue. We acknowledge that Unit D1’s potential to emit PM/PM₁₀ is less than one ton per year, which contributes to the annual facility emission limits in Condition X.A.1 of not more than 80.7 tons per year of PM and of PM₁₀. While we agree that the unit is very small, we do not agree that we should eliminate the testing requirement altogether as suggested by the Applicant. In the interest of issuing an accurate and enforceable permit

that does not raise operating costs unnecessarily, we have reviewed requirements in prior PSD permits for similarly-sized combustion equipment at power plants, and we agree that testing does not need to occur annually, given the size of the boiler. Therefore, we are revising the permit to allow for testing every five years after the initial source test, rather than annual testing after the initial source test. We have made changes consistent with this approach in condition X.G.1.a.ii of the Final Permit.

In reviewing this portion of the permit, we noted that we inadvertently omitted emissions limits for this emission unit in the proposed permit. Thus, we are also making an administrative correction by adding a PM/PM₁₀ emissions limit of 0.0034 gr/dscf for the unit, consistent with the permit application, under Condition X.E.1 in the final permit.

46. **Comment:** With regard to Table 7-1 of the AAQIR, the Applicant requested that we a) correct statements pertaining to the CEMS to reflect the provisions of 40 CFR 60 Appendix B and Appendix F, which require quarterly cylinder gas audits (CGAs) and annual relative accuracy test audits (RATAs), and b) eliminate the requirement for annual performance testing for NO_x and CO emissions from the gas turbines/HRSGs since these units will be monitored continuously, and the Applicant will be required to perform initial certification tests, quarterly CGAs and annual RATAs on the CEMS.

Response: EPA agrees with the concept of the comment. We note, however, that modification of the permit is unnecessary because Condition X.F already includes requirements for the quarterly CGAs and annual RATA, and Condition X.G.1.f includes an option to request waiver of a specific annual test after the Project is in operation and after the initial source test has been performed.

47. **Comment:** With regard to Table 7-1 of the AAQIR, the Applicant requested that we change the 1-hour averaging period for NO_x and CO emissions from the auxiliary boiler to 3 hours since compliance will be determined through source testing, which will involve the average of three test results. The commenter also noted that the BACT analysis does not make any findings regarding the averaging period in establishing BACT for NO₂ and CO from the auxiliary boiler.

Response: We agree with the Applicant regarding compliance demonstration of the NO₂ and CO emission limits through performance testing and we have revised Condition X.E.1 to include a 3-hour averaging period.

48. **Comment:** The Applicant noted an error in Table 7-1 of the AAQIR regarding the PM and PM₁₀ emission limit for the natural gas-fired IC engine. The applicant stated that the emissions limit should be 0.34 g/hp-hr instead of 0.034 g/hp-hr.

Response: EPA agrees with the Applicant's correction. We note that the correct limit is already reflected in Condition X.E.1 of the permit. Thus, no change to the permit is necessary.

49. **Comment:** The Applicant commented that combined “startup/shutdown” duration does not seem meaningful, given that a shutdown may not occur until days or weeks before or after a startup. The Applicant stated that it is not clear how such a limit would be interpreted, monitored, or enforced. The Applicant requested that the reference to “startup/shutdown” be replaced with “startup” only in the second table of Condition X.D.2.

Response: In the interest of developing an accurate and enforceable permit, on May 6, 2010 EPA held a conference call with the applicant to discuss this issue. The relevant provisions of the table at issue from the proposed permit are presented below for convenience.

	Event Duration	Annual Limit for Both CTG Combined
Each CTG and HRSG Startup/Shutdown	6.0 hours	1,248 hours/yr
Each CTG and HRSG Shutdown	2.0 hours	

It is our understanding that APC will minimize the duration of startups and shutdowns as part of BACT for NO_x and CO emissions. The 6.0 hour event duration limit in the proposed permit covered the duration of each startup period for a CTG combined with the duration of the subsequent shutdown period for that CTG. We have considered the applicant’s request and reviewed permit requirements for similar facilities, and on that basis we have made revisions to the permit conditions, as follows. We will decouple the startup and shutdown limits, as requested by the applicant. In addition, the event duration for startup will be changed from 6 to 4.5 hours and the event duration for shutdown will be changed from 2.0 to 0.5 hours, as was required in the recent PSD permit issued by EPA for the Colusa Generating Station. These changes are reflected in Condition X.D.3 of the final permit.

Comments Submitted by Ruthie Gilmore

50. **Comment:** The commenter states that an affected population in the area of the proposed facility includes approximately 7400 men at the Avenal State Prison. The commenter states that the prisoners should have an opportunity to respond to the proposed siting of the facility which poses a threat to their health. The commenter notes that most prisoners come from low-income communities that are identical to communities where EJ has its roots, and states that given the prisoners’ immobility, perhaps a public hearing should be held there at the prison.

Response: We appreciate the commenter’s input concerning the nearby prison population. Inmates at the Avenal State Prison may obtain access to newspapers, including the ones in which we published our public notices. As a result, we believe the inmate population at the prison had the same opportunity as the general public to receive notice of our proposed action. Although inmates at the prison may not have been able to attend our public

information meeting or public hearings, they had the opportunity to request information and submit written comments on our proposal by mail, as could members of the general public who may have had difficulty attending the public meetings. Please see our response to comment 3 in Section II.A.1. above. We believe that our public participation process was appropriate to address this commenter's concerns, and will continue to consider whether there are additional ways in which we can enhance our public involvement process in this regard for future permitting actions.

2. Comments Received at EPA's October 1, 2009 Public Hearing

1. **Comment:** Several commenters at EPA's October 1, 2009 public hearing expressed support for the project. The commenters noted the following considerations as the basis for their support:
 - The community suffers from 25.7% unemployment and this project would help the state economy and contribute to local economic growth by employing around 300 people during construction and another 26 people permanently;
 - The Project site was well chosen as it will have easy access to water, natural gas and the electricity grid, and may serve as an anchor to a new industrial park;
 - The Project will add to the tax base;
 - The Project will provide needed electricity to the grid;
 - The Project will emit less pollution than older plants; and
 - The Project reflects environmental sensitivity and stewardship for the land.

Response: EPA acknowledges the commenters' support for the Project.

2. **Comment:** Multiple commenters stated that a new power plant is not needed in the area where the Project would be located. One commenter who also submitted written comments asked why a rural area in particular would need 600 MW of new fossil fuel generation. Referencing a 2003 study by LBNL, which this commenter says deserves special consideration, the commenter argued that new natural gas-fired power plants are not needed in California. The commenter says the Avenal project is in direct conflict with AB32 and the State's renewable portfolio standard, which the commenter noted was recently raised by the California Governor to a level of 33%. The commenter also says that the project would put the health of Avenal citizens at risk by negatively impacting the region's air basin and that the 26 jobs to be created by the Project are not worth the impacts on air quality. The commenter stated that areas that are investing in "green collar jobs" such as solar panel manufacturing, installation and efficiency technologies have had an economic boom, and that the 26 jobs are negligible in comparison to what the region could do.

Another commenter reiterated these comments and questioned how many of the 26 permanent jobs at the plant would be available to Avenal residents. This subsequent commenter further stated that a solar farm would be a logical alternative because it would

not have the same level of criteria pollutant and CO₂ emissions but it would still create jobs.

Response: With regard to the comments pertaining to the need for the Project, the 2003 LBNL study, the State's renewable portfolio standard, concerns that the immediate area would not benefit from the electricity generated by the Project, and concerns regarding impacts on air quality, see our responses to comments 6 and 7, respectively, in Section II.A.1.

To the extent the commenters argue that a solar facility would be a preferable alternative, please refer to the discussion in response 7 in Section II.A.1 concerning the need for a natural gas-fired facility versus a renewable energy facility.

With respect to the comment regarding AB32, we note that this is a State requirement and it is not applicable to EPA's decision to issue this PSD permit. Furthermore, EPA has determined that the Project's GHG emissions are not subject to PSD requirements for the reasons set forth in our Supplemental SB for the Project and further elaborated on in our responses to comments 1-10 in Section II.B.1.

Finally, the commenter has not illustrated how the impact of the Project or alternatives thereto on the local job market or economy are relevant to EPA's decision to issue this PSD permit under applicable criteria in the CAA and EPA regulations.

3. **Comment:** One commenter expressed his opinion that the 2009 public information meeting and public hearing were poorly attended and suggested that for future events, EPA consider placing a one-page flyer in local residents' utility bills because announcements in the newspaper can be easy to overlook.

Response: EPA believes that transparency, access to information and the ability of the public to participate in the decision making are important and valuable elements of our permitting process. We appreciate the commenter's suggestion and will consider it further. We do note, however, that EPA is required to follow certain regulatory procedures concerning public notice of proposed permitting actions at 40 CFR 124.10, which include, among other things, a requirement to notify the public of proposed actions by publication of a notice in a daily or weekly newspaper within the area affected by the Project. EPA issued the appropriate notices in newspapers, provided mail and email notices to extensive lists of stakeholders, posted notices on our website and provided information to libraries in the area. See Section I.B and our responses to comments 1, 2, 3, 20, and 24 in Section II.A.1 for more information regarding our public involvement process.

4. **Comment:** One commenter expressed surprise that EPA did not coordinate with the CEC to identify people who commented at the CEC hearings so we could notify these people of our public hearing.

Response: EPA appreciates the commenter's suggestion. EPA's procedures for providing the public with notice of our proposed PSD permitting actions are set forth at 40 CFR Part 124. Among other things, Part 124 specifies who should receive notice of a proposed action. In addition to sending the notice to the required parties, EPA also sent copies of our notices to select recipients from the mailing list maintained by the CEC for this project. In addition to that, we coordinated with other offices internal to EPA Region 9 to identify other parties in the nearby City of Avenal who may have been interested in our permitting action. See Section I.B and our responses to comments 1, 2, 3, 20, and 24 in Section II.A.1 for more information regarding our public involvement process.

3. Comments Received at EPA's October 15, 2009 Public Hearing

1. **Comment:** A few commenters at the hearing expressed (both orally and in written comments) support for the project because the plant will provide jobs and other [unspecified] benefits to the community, provide needed energy and will not emit significant amounts of pollution, particularly in comparison to older power plants and the emissions from traffic on I-5.

Response: EPA acknowledges the commenters' support for the Project.

2. **Comment:** Several commenters stated that the project area is an environmental justice community, and without the additional emissions associated with the Project, the area is already overburdened by impacts from existing air pollution, pesticides, a landfill and energy production. One commenter in particular stated that five of the six congressional districts in the San Joaquin Valley rank among the lowest with respect to income, education and health.

On the subject of health, multiple commenters expressed concern about the emissions from the Project and the associated health impacts such as asthma, impaired lung development, impaired lung function, cardiovascular disease, stroke and premature death. One commenter stated that the San Joaquin Valley has the highest rates of asthma and that many families do not have health insurance. Another commenter provided information about a recent stillbirth in Kettleman City, and multiple commenters noted the recent number of stillbirths, birth defects and cancer clusters in the area. Another commenter stated that we are encouraging children to be physically active to prevent obesity and diabetes but at the same time, children cannot be active outdoors because of poor air quality.

One commenter stated that EPA cannot proceed with the permitting of the Project until pollution is ruled out as a factor in negative public health effects and outcomes within the environmental justice communities of Kettleman City, Huron and Avenal. This commenter stated that EPA should investigate the health effects further by conducting an analysis that includes community health surveys and discussions with local residents. This group of commenters generally stated that it would be irresponsible and disrespectful to permit another large source of emissions such as the Project in the area.

Response: Regarding the comments that the community is already burdened by a number of other impacts and that EPA cannot proceed with the permit for the Project until pollution is ruled out as a factor in negative public health effects, see our response to comment 23 in Section II.B.1 and our response to comment 4 in Section II.A.1.

Regarding the comment about children not being able to be active outdoors, we note that the permit decision at issue here pertains to emissions of pollutants for which the project area meets (or is unclassifiable for) our health based air quality standards. As discussed in our responses to comments 8, 11, 12 and 17 in Section II.A.1, a separate permitting process conducted by the District governs the nonattainment pollutants in the San Joaquin Valley. In addition, EPA, the State of California and the District are working diligently through the ongoing State/District air quality planning process to address the nonattainment pollutants in this area. See the response to comment 29 in Section II.B.1.

3. **Comment:** The commenter stated that the Project did not appear to be an economically feasible option for the project area. The commenter further stated that the power plant is not going to create jobs for residents in the area, as employees would come from elsewhere, and will only create pollution problems for the area. The commenter suggested that the community should instead provide jobs related to clean energy.

Response: The economic feasibility of a proposed project and its implications on the local job market are outside the scope of the considerations EPA may make when determining whether or not to issue a permit under the PSD program. In addition, the types of industries and jobs a given community seeks to attract are also not matter over which EPA has authority.

4. **Comment:** Several commenters state that Avenal does not need 600 MW of energy and that the plant should be located where the power is needed or in less populated areas.

Response: The selection of sites for individual power plants is generally an issue of state and local land use planning. Siting is not addressed in the federal PSD permitting process unless raised as an “alternative” or “other appropriate consideration” by a commenter under CAA section 165(a)(2). The commenter does not seem to suggest that we consider alternative project sites under section 165(a)(2) here. Even if the commenter did intend to suggest that, this comment does not provide enough information for EPA to make a reasoned determination on this issue and EPA is not required to conduct an independent analysis of alternatives (see our response to comment 34 in Section II.B.1). See also our discussion of project need in our response to comment 7 in Section II.A.1 above.

5. **Comment:** One commenter states that the District’s permitting process and the CEC’s licensing process violate the Executive Order on Environmental Justice to provide materials in Spanish and to give proper notification to the public.

Response: EPA understands the importance of providing the public with adequate notice about permitting activities and we appreciate the commenter’s concern. However, the

commenter submitted this comment in response to a public notice issued by EPA regarding our own permit for the Project, which is independent of the processes governing the permit issued by the District and the license issued by the CEC. As a result, we do not believe the concerns raised by this comment suggest that our own permit is flawed.

6. **Comment:** One commenter states that that EPA’s hearing for the Project occurred within the same time period as other hearings related to the Project and hearings related to other matters. The commenter states that the timing did not encourage as much public involvement as possible as required by the Executive Order on Environmental Justice. The commenter requested that EPA extend our process by another 60 days. Another commenter also requested an extension of the public comment period and asked that an additional public hearing be held in Kettleman City.

Response: Our responses to comments 1 and 2 in Section II.A.1 of this document address this issue.

7. **Comment:** One commenter asserts that EPA did not conduct a proper top-down BACT analysis. In particular, the commenter states that the BACT analysis prepared by the permit applicant for the PSD permit was conducted according to the District’s BACT rules, which are different than the federal top-down BACT guidelines. The commenter also says that EPA merely agreed with what the applicant proposed and the commenter disputes a statement made by EPA that the controls for the Project are similar to those that achieve LAER. On this point, the commenter says there are a number of control technologies that could be used at the Project but are not because the applicant and EPA determined they were too costly.

With regard to the controls EPA is requiring, the commenter asserts that 2.0 ppm is not BACT for CO because lower emission rates have been achieved and that other control technologies such as a thermal oxidizer or regenerative thermal oxidizer (RTO) could be analyzed. With respect to PM, the commenter states that EPA is only requiring the use of natural gas as BACT but electrostatic precipitators or baghouses could be used and should be evaluated in the BACT analysis.

This commenter also noted that the PSD permit does not address GHG emissions, which are subject to regulation under the CAA, and which therefore must be controlled by BACT.

Response: Our response to comment 9 in Section II.A.1 addresses the comment about our adherence to the top-down BACT process.

With respect to the comment that our BACT analysis is flawed because we did not consider controls for CO and PM emissions such as a thermal oxidizer, an electrostatic precipitator, or a baghouse, we disagree. The commenter has not shown that it is technically feasible for the Project to install such controls. Since we are not aware of any combustion turbine that is equipped with the controls suggested by the commenter, it not clear this has been demonstrated in practice on the type of source at issue here. We also note that the

commenter did not provide any such examples for us to consider or other information to suggest that such technologies might be applicable to a combustion turbine.

The issue of BACT for GHG emissions is addressed in our Supplemental SB for the proposed permit and our responses to comments 1-10 in section II.B.1 of this document.

8. **Comment:** One commenter spoke about the issue of interpollutant trading, including the project's use of a one-to-one ratio to offset PM emissions with SO₂ emissions. The commenter stated that EPA itself recognizes a ratio of 40-to-1 is more appropriate. The commenter further noted that the health effects of SO₂ and PM are very different and that reducing SO₂ is not going to have the same health impact as it would if there was direct PM mitigation. The commenter finally stated that there is no evidence in the permit record that proves PM and SO₂ reductions will be equal. The commenter therefore concludes that the PSD permit is not legally sufficient and that EPA should look at the Project in a broader context considering the hazardous waste facility and cumulative impacts. The commenter also requested that EPA review the District's NSR permit.

Response: PM offsets are not required under the PSD permitting program. Our responses to comment 8, 11, 12 and 17 in Section II.A.1 address this issue. Our response to comment 12 in Section II.A.1 addresses the concern about interpollutant trading for PM and SO₂ emissions. Our response to comment 23 in Section II.B.1 addresses the comment that EPA should look at the Project in a broader context considering the hazardous waste facility and cumulative impacts.

9. **Comment:** One commenter asked whether the plant would be sited in the proposed location because there is a concentration of Hispanic people in the area. The commenter stated that there is great pollution already in the area of Kettleman City, and raised a concern about possibly polluted soil and vapors near the dump. The commenter stated his concern about adding more contamination in the area, and suggested that the socioeconomic status of the population in the area made it difficult for people in the area to exert influence to locate the plant elsewhere. The commenter asked for EPA to consider looking for another area to locate the project far away from Avenal.

Response: Regarding the commenter's concern about the burden due to existing sources of pollution in the area, see our response 23 in Section II.B.1 of this document. EPA notes that our environmental justice analysis acknowledges that minority communities live in the area that may be impacted by emissions from the Project. EPA is not aware of information indicating that the demographics of these communities were a factor in the siting of the Project. Regarding the commenter's desire for an alternative location, this issue is addressed in our responses to comments 7 in Section II.A.1, comment 4 in Section II.A.3 and comment 34 in Section II.B.1.

10. **Comment:** One commenter stated that he had not received notice of the hearing in the mail but was invited to the meeting by a friend. The commenter asked to be notified of future meetings.

Response: We regret that the commenter did not receive our notice about the hearing. It is unclear to us why that was the case. In addition to following our required public notice procedures at 40 CFR Part 124, we went beyond those requirements and made our public notices available to a broader group whom we thought might be interested in our proposed action, and our March 2011 public notice was sent to all post office boxes in Kettleman City and the city of Avenal. The introductory discussion about our public participation process in Section I of this document, and our responses to comments 1, 2, 3, 20, and 24 of Section II.A.1 provide additional information about our public involvement process.

11. **Comment:** One commenter provided a written statement that EPA is anti-business, anti-job and against making a living for the people of California. The commenter also noted that the majority of the people at the hearing are not from the community of Avenal.

Response: We appreciate hearing the commenter's views, but the commenter has not illustrated how these concerns relate to the criteria applicable to this permitting decision.

B. Comments Submitted During the Second Public Comment Period (March 4, 2011 - April 12, 2011)

1. Written Comments

Comments Regarding EPA's Proposal to Grandfather the Project from 1-hour NO₂, 1-hour SO₂ and GHG Provisions

1. **Comment:** EPA received comments both opposing and supporting our proposal to grandfather the Avenal permit application from specific requirements.

Response: EPA continues to find it appropriate and equitable, under the particular circumstances present in this instance, not to require a demonstration (consistent with EPA modeling guidelines) that the proposed Project will not cause or contribute to a violation of the 1-hour NAAQS for NO₂ and SO₂ or a demonstration that the Project will be capable of meeting emissions limitations for GHG based on the BACT requirement. The responses that follow provide additional detail on the basis for this conclusion.

STATUTORY AUTHORITY TO GRANDFATHER PERMIT AND RELEVANT JUDICIAL DECISIONS

2. **Comment:** EPA received several comments addressing EPA's authority (or lack of authority) under the CAA to grandfather the Avenal permit application.

Several commenters stated that EPA may not grandfather the Avenal permit application by waiving the statutory requirements in sections 165(a)(3) and 165(a)(4) of the CAA, which require that a source will not cause or contribute to a violation of NAAQSs and will apply BACT for each pollutant subject to regulation. One of these commenters points to the language of CAA 165(a), which the commenter says defines applicability of PSD requirements based on when construction of a source commences, not when a permit application is deemed complete. Thus, the commenter believes the CAA provides no authority for EPA to require compliance only with requirements that applied at the time the permit application was deemed complete or upon the 1-year anniversary of such a completeness determination. This commenter also stated that when Congress adopted the PSD program, it understood that certain sources might get caught by changing permit requirements and it offered specific grandfathering relief to certain sources under section 168(b) of the Act. The commenter argues that this situation is governed by a Supreme Court precedent (*Andrus v. Glover Construction Co.*) which says that where Congress has provided an express grandfathering exemption and not others, additional exemptions are not to be implied in the absence of contrary legislative intent.

However, another commenter argues the opposing proposition that EPA lacks any statutory authority to apply requirements related to NAAQS or a pollutant subject to regulation where those requirements take effect after the 1-year period specified in section 165(c) of the CAA has expired. This commenter argues that EPA has no statutory authority to penalize a PSD permit applicant by imposing additional requirements that arise after EPA

has defaulted on our statutory duty to grant or deny a complete permit application within one year. Thus, according to this commenter, there is no conflict of the type EPA describes between requirements in the CAA to make a decision on a permit application within one year and to ensure that new and modified sources may only obtain a permit to construct after showing they can meet the substantive PSD permitting criteria. In addition, this commenter argues, based on section 161 of the CAA, that the Act does not authorize EPA to require a demonstration that a source will not cause a violation a particular NAAQS until the affected area is designated as attainment or unclassifiable.

Another commenter said that EPA properly concluded the PSD permit application should be grandfathered from demonstrating compliance with the 1-hour NO₂ standard. The commenter argues that nothing in the CAA or in EPA regulations allows the retroactive application of new requirements after a complete permit application has been submitted. The commenter claims such retroactive application would be inconsistent with CAA section 165(c) and it would potentially create a permitting process that could continue in perpetuity without resolution. The commenter further states that Congress added section 165(c) as part of the 1977 Amendments to the Act to address its concern that the PSD program could fall prey to unreasonable bureaucratic delays. The commenter further notes that EPA has previously exercised the discretion not to require pending permit applications to meet new permitting requirements.

Response: EPA does not agree with the interpretations of the CAA offered by these commenters, except to the extent that EPA agrees we have the discretion to grandfather pending permit applications from new requirements in appropriate circumstances. As noted in the Supplemental SB (page 5) and the April 1, 2010 memorandum from the Director of the Office of Air Quality Planning and Standards cited there, EPA has previously exercised this discretion to establish grandfathering provisions in regulations. Indeed, EPA has done so where provisions of the CAA contradict each other, citing the authority under section 301(a)(1) “to set transitional rules which accommodate reasonably the purpose and concerns behind the two contradictory provisions.” 45 FR 52676, 52683 (Aug. 7, 1980). Furthermore, EPA has noted and continues to recognize that even in the absence of a conflict between sections of the Act, “EPA would have the authority under section 301(a)(1) to exempt those projects in order to phase-in new requirements on a reasonable schedule.” *Id.* at 52683 n. 5.

EPA believes that there is a conflict or tension between provisions of the CAA that EPA must reconcile in this situation where the Agency has failed to complete action on a complete permit application within one year and new requirements have become applicable after that time period. We do not agree with the commenters’ arguments to the contrary. The CAA does not provide clear direction concerning how EPA should apply sections 165(a)(3) and 165(a)(4) of the Act to NAAQSs that become effective or pollutants that become subject to regulation after the 1-year time period has run on a particular application. As one court has observed, the CAA does not specify a consequence for failure to comply with the one-year deadline in section 165(c). *Hancock County v. EPA*, 1984 U.S. App. Lexis 14024, 22 ERC 1714 (6th Cir. 1984). The fact that commenters have offered opposing arguments that Congressional intent is clear helps to illustrate that the Act is

ambiguous on this question. Since Congress has not precisely spoken to this issue, EPA has the discretion to apply a permissible interpretation of the Act that balances the requirements in the Act to make a decision on a permit application within one year and to ensure that new and modified sources will only be authorized to construct after showing they can meet the substantive permitting criteria. *Chevron, U.S.A., Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 843-44 (1984).

EPA has not proposed to waive the statutory requirements in section 165(a)(3) and 165(a)(4) in the case, as some commenters assert. The issue presented by the Avenal permit application is which NAAQS and which pollutants are covered by these applicable provisions of the Act when applied to a permit application that was determined complete before the effective date of particular NAAQS and the date when a particular pollutant becomes subject to regulation under the CAA. No one has disputed that section 165(a)(3) applies to all NAAQS in effect at the time Avenal's permit application was determined complete, and EPA is not exempting this permit application from the requirements of section 165(a)(3) with respect to all such NAAQS. Likewise, no one disputes that the BACT requirement in section 165(a)(4) applies to each pollutant subject to regulation at the time Avenal's permit application was complete. The issue is thus how EPA should interpret and apply these sections of the Act in the situation presented here considering the requirement of section 165(c) of the Act that EPA make a decision on a permit application within one year of the date the application was determined complete. This is not a question of whether sections 165(a)(3) and 165(a)(4) apply; it is a question of which NAAQS and which pollutants these provisions cover when EPA has not completed our review of an application in a timely manner and additional NAAQS have become effective and additional pollutants have become subject to regulation.

EPA agrees that as a general rule, sections 165(a)(3) and 165(a)(4) apply to "any NAAQS" that is effective and "each pollutant" that is subject to regulation as of the date a final PSD permit is initially issued (before any administrative appeal proceeding commences). However, these provisions cannot be read in isolation and should be construed in the context of other provisions in section 165 of the Act, such as section 165(c). Since EPA is required to give effect to all provisions of the Act, in those circumstances where a strict reading of sections 165(a)(3) would frustrate Congressional intent that EPA act in a timely manner, the Agency has the discretion to interpret the reach of section 165(a)(3) to be limited to particular NAAQS that were proposed or effective prior to specific milestones in the permitting process. The same reasoning may apply to particular pollutants that become subject to regulation and hence subject to section 165(a)(4) of the Act while an application is pending.

Thus, EPA does not agree with the view expressed by some commenters that section 165(a)(3) and 165(a)(4) must be read strictly in all circumstances to apply to all NAAQS in effect and all pollutants subject to regulation on the date EPA issues a final permit decision, regardless of other circumstances or other requirements of the CAA. Such a reading fails to acknowledge or give meaning to section 165(c) of the Act. As one commenter has pointed out, legislative history illustrates Congressional intent to avoid delays in permit processing. S.Rep. No. 94-717, at 26 (1976) ("nothing could be more detrimental to the intent of this

section and the integrity of this Act than to have the process encumbered by bureaucratic delay”).

Furthermore, EPA is not persuaded that the first clause in section 165(a) of the Act requires that EPA base applicability of PSD requirements on the date when construction of a source commences. Read together with the first clause in section 165(a)(1), it is apparent that section 165(a) establishes only that construction may not commence without a permit issued “in accordance with the requirements of this part.” This language does not define “the requirements of this part” that are applicable when a permit is issued or establish that the applicable requirements under the PSD program are those in effect when construction commences, rather than those applicable when the permit is issued. This interpretation of the Act as requiring compliance with standards in effect when construction commences is inconsistent with the view expressed by this same commenter, based on *Ziffrin v. United States*, 318 U.S. 73, 78 (1943), that courts have consistently recognized that an agency is required to apply the law in effect at the time it renders a decision on a permit application.

EPA is not persuaded that the presence of a grandfathering provision in section 168(b) precludes EPA from establishing grandfathering exemptions in other circumstances. The commenter’s reference to the Supreme Court’s observation that when “Congress expressly enumerates certain exceptions to a general prohibition, additional exceptions are not to be implied in the absence of evidence of a contrary legislative intent,” *Andrus v. Glover Construction*, 446 U.S. 608, 616-17 (1980), is not persuasive here. The court applied this principle in a circumstance where there was a provision of law “expressly relating to contracts of the sort at issue here.” *Id.* These are not the circumstances here. Section 168(b) of the Act does not expressly relate to the application of PSD permitting requirements to an application pending at the time of the promulgation of a new NAAQS or the regulation of an additional pollutant under the CAA. Section 168(b) exempted facilities that were subject to permitting requirements under an earlier version of the PSD program created solely by EPA regulation prior to the enactment of section 165 of the CAA and other provisions that expressly authorized and established the requirements of the PSD permitting program applicable today to Avenal and other sources. This exemption operated to continue existing requirements for certain sources after a fundamental change in the statutory and regulatory regime under which such sources were required to obtain authorization to construct or modify major stationary sources of air pollutants. Such an exemption does not expressly relate to the incorporation of a new requirement into the PSD program, under existing statutory authority, when EPA promulgates a regulation that creates such a requirement. In this case, EPA is not grandfathering the APC permit application from the general prohibition in section 165(a) against commencing construction in the absence of a permit issued “in accordance with the requirements of this part.” The CAA does not contain any express exemptions to the phrase “the requirements of this part” or from section 165(a)(3) of the Act or section 165(a)(4) of the Act that apply when EPA promulgates an additional NAAQS or additional pollutant becomes subject to regulation. Furthermore, section 168(b) applied to sources that had commenced construction before new provisions of the CAA were enacted, whereas the grandfathering that EPA is applying in this instance is applicable to changes in regulatory requirements prior to the issuance of a permit. Thus, the adoption of a one-time grandfather provision upon enactment of the statutory PSD program is clearly

different from grandfathering when EPA promulgates a new NAAQS or regulates a new pollutant, which the Act does not address. The fact that Congress expressly enumerated an exemption in section 168 intended to ease transition upon enactment of the PSD provisions in the Act does not constrain the Agency with respect to offering reasonable transitional exemptions provisions when EPA regulations create new PSD program requirements under those statutory provisions.

Likewise, EPA does not agree that the Act clearly prohibits EPA from requiring PSD permit applicants to meet new requirements that take effect after the first anniversary of the date of filing of a completed application. The statute does not expressly bar applying new requirements after one year has passed and is ambiguous with respect to the necessary remedy in this circumstance. The CAA provides that “[a]ny completed permit...shall be granted or denied not later than one year after the date of filing” of a complete PSD permit application. The Act does not specify a consequence for failure to comply with this 1-year deadline in section 165(c). *Hancock County v. EPA*, 1984 U.S. App. Lexis 14024, 22 ERC 1714 (6th Cir. 1984). While there may be circumstances where it may appear unfair to subject a permit applicant to a new requirement that would not apply had the Agency met our mandatory duty, it does not necessarily follow that the terms of the Act compel fair treatment to permit applicants in such circumstances. EPA retains the discretion to deny a permit application within one year should the applicant fail to demonstrate compliance with all applicable PSD requirements within that period. This would require the applicant to reapply after new requirements become effective, thus achieving the same outcome that this commenter argues is prohibited by the Act when EPA fails to make any decision within one year. It does not follow that an applicant should be affected by a new requirement when EPA fulfills our mandatory duty on time while an applicant is relieved of this same requirement when EPA does not.

While one can infer that EPA should be precluded from applying new requirements that take effect after the 1-year period has run in order to achieve an equitable outcome, this is not the only inference that one may draw from the context of the Act. Another inference that can be drawn is that Congress expected EPA, in these circumstances, to strike a balance between the dual Congressional goals of timeliness and protecting air quality from construction or modification of major sources after promulgation of additional NAAQS to protect public health and welfare. Absent clear language requiring a particular remedy in these circumstances, EPA retains the discretion to adopt transitional exemptions to achieve fair and equitable results for all parties. The interests of communities affected by the pollution from a new or modified source merit consideration as well as the interests of the permit applicant. As discussed further below, EPA believes the balance of interests may shift depending on the amount of time that an application remains pending beyond the 1-year deadlines and other factors.

EPA also disagrees with the argument that PSD requirements should not apply to the 1-hour NO₂ NAAQS until the area in which a source proposes to locate and other areas of the country have been designated as attainment or unclassifiable for this particular NAAQS. Section 161 of the CAA requires that states prevent significant deterioration of air quality “in each region (or portion thereof) designated pursuant to section 107 as attainment or

unclassifiable.” The provision does not explicitly require that an area be attainment or unclassifiable for a particular NAAQS or pollutant before the NAAQS or pollutant is covered by the provisions of the PSD program. The express terms of section 165(a)(3) and 165(a)(4) apply to “any NAAQS” and “each pollutant subject to regulation.” EPA has a longstanding interpretation that the CAA requires applying the PSD requirements in accordance with section 161 of the CAA in any area that is formally designated by the state as either “attainment” or “unclassifiable” for any pollutant for which a NAAQS exists. However, an otherwise eligible source is exempt from PSD review, with respect to a particular pollutant, if the area in which the source would locate is designated “nonattainment” for that pollutant. 45 FR 52676, 52677 (August 7, 1980). The reasoning provided in prior EPA actions remains valid and applicable in this particular permitting action. 75 FR 31514, 31560 (Jun. 3, 2010) (and response to comments document); EPA, Director of EPA’s Office of Air Quality Planning and Standards, *Applicability of the Federal Prevention of Significant Deterioration Permit Requirements to New and Revised National Ambient Air Quality Standards* (April 1, 2010) (and references cited therein).

EPA does not agree that we are compelled to grandfather this permit application because regulations may not be construed to have retroactive effect absent express statutory authority. The application of new regulations to a pending permit application does not implicate questions of retroactive rulemaking. A retroactive requirement is one that “takes away or impairs vested rights acquired under existing laws, or creates a new obligation, imposes a new duty, or attaches a new disability in respect to transactions or considerations already past.” *Landsgraf v. USI Film Products*, 511 U.S. 244, 269 (1994). Where new regulations take effect prior to a decision to grant or deny a permit application, the application of such regulations to a decision on such an application is prospective rather than retroactive. Retroactive effect does not occur where an agency applies current requirements to a decision to issue a permit for future operations (rather than the law in effect at the time of filing a permit application). *Kaiser Aluminum & Chemical Corp. v. Bonjorno*, 494 U.S. 827, 847-48; 110 S.Ct. 1570, 1582 (1990) (Scalia, J. concurring); see also, *Fassilis v. Esperdy*, 301 F.2d 429, 432 (2d Cir. 1962). Agency action that upsets expectations based on prior law is not retroactive. *National Cable & Telecommunications Ass’n v. FCC*, 567 F.3d 659, 670-71 (D.C. Cir. 2009).

3. **Comment:** One commenter claims that EPA’s proposed interpretation of the Act is inconsistent with the purposes of the PSD program that are expressly outlined in section 160 of the Act, and with the policy choices that Congress made in adopting the PSD program. The commenter states that EPA’s decision to grandfather the Avenal Project cannot be reconciled with any of the stated purposes of the PSD program and that there is nothing in the Act which suggests that Congress intended for those purposes to be waived or trumped by considerations that elevate procedure over substance. The commenter says EPA previously rejected similar requests for grandfathering based on these purposes of the PSD program (citing 45 FR 52676, 52683 (Aug. 7, 1980)).

The commenter further states that EPA’s proposed approach here undermines the policy choices made by Congress in adopting the PSD program that 1) it is preferable to prevent air pollution from becoming a problem in the first place, and 2) controls should be installed

when new sources are being constructed rather than as retrofits on existing sources. The commenter claims the lack of a demonstration that Avenal will not cause or contribute to a violation of the 1-hour NO₂ standard would defeat the first goal as it would undermine the “prevention” purpose of the PSD program. The commenter also claims that in the absence of modeling to show compliance with the NAAQS, the possibility of violations and the future need for reasonably available control technology requirements on existing major sources is inconsistent with the second goal.

Response: EPA agrees the PSD program is based on the goals of preventing air pollution and installing controls when new sources are being constructed, but Section 160(3) of the Act also states that a purpose of the PSD program is to “insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources.” EPA continues to construe this provision to call for a balancing of economic growth and protection of air quality. *See*, 70 FR 59582, 59587-88 (Oct. 12, 2005).

Legislative history illustrates Congressional intent to avoid a moratorium on construction and delays in permit processing. The House Committee report describes how “the committee went to extraordinary lengths to assure that this legislation and the time needed to develop and implement regulations would not cause current construction to be halted or clamp even a temporary moratorium on planned industrial and economic development.” H.R. Rep. No. 95-294, 95th Cong., 1st Sess., at 171 (1977). As an illustration of the lengths to which the committee went, the report lists five elements of the legislation, including the following statement: “to prevent disruption of present or planned sources, the committee has authorized extensive ‘grandfathering’ of both existing and planned sources.” *Id.* Furthermore, as one commenter has noted, the Senate Committee report specifically discusses concerns about delays in program implementation. S.Rep. No. 94-717, at 26 (1976) (“nothing could be more detrimental to the intent of this section and the integrity of this Act than to have the process encumbered by bureaucratic delay”).

As in the case of the Avenal permit, in the 1980 regulation cited by commenters, EPA sought to strike a balance between competing goals of the CAA. 45 FR 52683. EPA explained that delaying certain construction “by imposing new PSD requirements could frustrate economic development” and noted that the grandfathered projects “have a relatively minor effect on air quality.” *Id.* As a result, EPA adopted a grandfathering provision that “would strike a rough balance between the benefits and costs of applying PSD to those projects.” *Id.* Although EPA used issuance of permits previously required under the SIP in that case to determine eligibility for grandfathering, this precedent does not preclude EPA from using another milestone in the permit process to determine eligibility to strike the appropriate balance in a different situation. In 1980, EPA concluded that determining eligibility for grandfathering based on a complete application might “exempt many more projects from review” in one particular situation addressed in 1980 and that this “would fail to give adequate expression to the interests behind section 165, especially the goal of protecting air quality.” *Id.* This precedent does not preclude EPA from using the date of a complete application in another circumstance where such a date would not exempt a large number of projects or have an adverse impact on air quality. The interests behind section 165 include both protection of air quality and timely decisionmaking on pending permit applications. As discussed in the SB, EPA is seeking

here to give effect to balance the requirements in the Act to make a decision on a permit application within one year and to ensure that new and modified sources will only be authorized to construct after showing they can meet the substantive permitting criteria.

4. **Comment:** One commenter argues that a Supreme Court decision (*General Motors Corp v. United States*) previously rejected EPA's reasoning that we must reconcile the statutory obligations to issue a permit within one year and to ensure that the permitting requirements of section 165 are fulfilled. The commenter says that the court held in this case that a delay on EPA's part does not affect the ability or obligation of EPA to enforce other requirements of the Act. According to the commenter, the Supreme Court's conclusion in the *General Motors* case was based in part on the presence of other statutory remedies for delay by EPA. Since such a remedy is available under section 304(a)(2) of the CAA, this does not entitle a permit applicant to cut off its obligation to comply with the CAA.

Response: We note first that *General Motors Corp v. United States*, 496 U.S. 530, 540-41 (1990), concerned enforcement of a SIP, not issuance of a permit. That is a key difference. In *General Motors Corp. v. United States*, the Supreme Court held that enforcement of an existing state implementation plan is not barred by EPA's unreasonable delay in acting on a proposed revision of the SIP. The situation presented in the case of the Avenal permit application is distinguishable. The question presented by the Avenal permit application is whether EPA should apply the law in effect at the time the Agency reaches a final decision to grant or deny the application or the law in effect at an earlier time due to EPA's failure to reach this decision in a timely manner. In the case of the Avenal permit application, additional legal requirements have taken effect while the Agency was reviewing the application and such requirements would clearly not have applied to this application had EPA completed our review within the 1-year period of time established in the Act. Thus, the question presented for EPA in the Avenal situation is whether EPA's failure to complete action within the statutory time frame bars the Agency from applying the new legal requirements to the Avenal permit application. In *General Motors*, the court addressed a different question, which was whether the Agency's delay in approving a change in law (a revision of a SIP) barred the Agency from applying the previously applicable law (the earlier version of the SIP). EPA does not contend in this instance that our delay justifies declining to apply the permitting requirements in effect at an earlier time. EPA is still requiring Avenal to obtain a PSD permit, and has not suggested that our delay justifies declining to enforce any requirement to obtain a permit. Indeed, since EPA is seeking to apply the law in effect prior to the time of our delay, the holding in *General Motors* is in fact consistent with EPA's view in this instance.

5. **Comment:** Several commenters believe EPA must apply the applicable standards in effect at the time the permit is issued. Citing prior court decisions (*Ziffrin v. United States*, *State of Alabama v. EPA*) and opinions of the EAB (*In Re Dominion Energy Brayton Point*, *In re Phelps Dodge Corp.*), one commenter states that the courts have consistently recognized that an agency is required to apply the law in effect at the time it renders a decision on a permit application. The commenters state that regardless of whether a permitting authority meets its obligation to grant or deny a permit application within the time period specified in the CAA, the permit must comply with all applicable standards in

effect at the time the permit is issued and that EPA cannot use our failure to make a timely permit decision in this case to justify exempting the Project from substantive applicable standards that protect public health. Other commenters cite additional EAB decisions (*In Re Vulcan Construction Materials* and *In re Shell Gulf of Mexico, Inc. & Shell Offshore, Inc.*).

Response: EPA agrees that as a general rule, an agency is required to apply the law in effect at the time it reaches a decision on a permit application. In the Supplemental SB, EPA explained that we have previously relied on the judicial opinions cited by commenters to support the general principle that a decision on an application for a government license, permit, or other type of authorization must be based on the law in effect at the time of the decision of the reviewing authority. *See Ziffrin, Inc. v. United States*, 318 U.S. 73, 78 (1943); *State of Alabama v. EPA*, 557 F.2d 1101, 1108 (5th Cir. 1977). However, EPA went on to explain how some courts have also recognized an exception to this principle in circumstances where there has been a significant and prejudicial delay by the government agency reviewing an application. For reasons discussed in our response above, EPA continues believe the circumstances present in this instance fit within an exception to this general rule recognized by the courts and that EPA’s proposed action to grandfather this permit application is not precluded by the judicial decisions cited by commenters. Furthermore, the EAB’s orders in the *Shell* and the *Vulcan Materials* appeals recognize that “EPA has the authority to lawfully exercise, through an appropriate process, whatever discretion EPA has to interpret what ‘all applicable standards’ means with the respect to a particular source being permit.” *In re: Vulcan Construction Materials, LP*, PSD Appeal No. 10-11, Slip. Op. at 39 n. 41 (Mar. 2, 2011) (internal quotations omitted).

6. **Comment:** One commenter notes that in response to the deadline litigation brought forth by Avenal, EPA argued the opposite of what we are now proposing – that the case law says EPA must apply the law in effect at the time the Region makes a decision on a permit, rather than the law in effect at the time the permit application is deemed complete.

Response: EPA continues to agree that, as general rule, the issuance of a PSD permit must be based on the law in effect at the time of such action. However, as EPA explained in the Supplemental SB, the Agency is refining our interpretation to recognize an exception to this general principle in a case where application of new requirements may result in a significant delay in issuance a decision on a PSD permit application that is pending when new requirements become effective. EPA has informed the court that we no longer assert that we must apply each NAAQS in effect at the time we make a final decision on Avenal’s permit application.

7. **Comment:** The commenters claim that in the absence of statutory authority, EPA has attempted to create “equitable” authority for our grandfathering proposal and that can only be exercised by a court. Multiple commenters state that EPA has misapplied *Mitchell v. Overman* because that case speaks only to the powers of the judicial branch and administrative agencies do not have the same inherent equitable powers as the courts, and because there has been no court action here except to ensure EPA makes a final permit decision in a timely manner. The commenters criticize EPA’s reliance on *Application of*

Martini and *Fassilis v. Esperdy* as the basis for our proposition that *Mitchell* might be applicable to an administrative agency. According to the commenters reliance on those cases is misplaced and incorrect because they do not speak to the power of an agency to fashion and administer its own remedy, nor do they permit the agency to violate any statutory mandates. Further, a commenter states that even if EPA did possess powers available only to the judiciary, the Agency's decision in this case cannot be reconciled against the clear Congressional intent that sources must apply best available controls for all regulated pollutants and demonstrate they will not cause or contribute to the violation of any NAAQS.

Response: EPA's grandfathering action is not based on assertion of equitable power to disregard or override law, but rather on an interpretation of our statutory authority. In so doing, EPA has in this case determined which regulatory requirements (regulations) are covered by the statutory requirements that apply to an application that was pending when the regulatory requirement was established and an application that EPA has failed to grant or deny within the 1-year time period set forth in the statute. EPA does not dispute that administrative agencies only have the powers conferred by statute. However, EPA may interpret the statutory requirements consistent with Congressional intent and exercise its discretion in a thoughtful way in doing so. Thus, while an administrative agency in the executive branch does not have the equitable powers of a court, this does not necessarily mean an administrative agency cannot interpret its statutory authority to achieve equitable outcomes consistent with Congressional intent.

The court's holding in the *Martini* case was not solely based on the equitable powers of the court. In that decision, the court held that an individual was entitled to have his petition for naturalization granted under the expired law because of the government's delay in the approval of his application. *Application of Martini*, 184 F.Supp. 395, 401-402 (S.D.N.Y. 1960). The court observed that "[t]he unexplained administrative delay following Martini's filing if given controlling weight *would frustrate Public Law 114.*" 184 F.Supp. at 401 (emphasis add). This indicates the court was concerned that Congressional intent would be frustrated if the applicant were denied the benefit of Public Law 114 by virtue of the inaction of the administrative agency. Thus, the court extended the principle of "the act of the court shall prejudice no man" to the act of an administrative agency (not just the act of the court) in order to effectuate Congressional intent with respect to individuals like Martini who applied for naturalization "within the original time limited by the statute." *Id.* at 400.

Likewise, in *Fassilis*, the court also focused on Congressional intent. Here, the Second Circuit upheld several denials of applications for permanent residency status based in part on a change in law that occurred during administrative appeals of the denials. *Fassilis v. Esperdy*, 301 F.2d 429, 434 (2d Cir. 1962). This result was based on the court's conclusion that there were "no substantial delays on the part of the administrative agency which operated to deprive the applicants of any right to which any of them was entitled." *Id.* Although noting that it was not determinative of the result, the court also found significance in the fact that Congress did not enact a savings clause to protect pending administrative proceedings. 301 F.2d 433. The court concluded in that case that

Congressional intent was clear that the change in law should apply to pending applications and it was not faced with “a question of policy or of judgment committed by Congress to the expertise and decision of administrative tribunals.” *Id.* at 434. However, in *Fassilis*, the Second Circuit was not faced with a provision that established a mandatory duty for the Immigration and Naturalization Service to Act on the pending applications within a specific period of time. The court’s conclusion in that case that Congressional intent was clear was based on the language in the relevant law and the absence of a savings clause does not mean that EPA cannot weigh Congressional intent differently where it has a mandatory duty to act in a timely manner on PSD permit application.

Thus, EPA continues to believe that the court precedents in *Martini* and *Fassilis* support grandfathering under the circumstances presented here for the Avenal permit application. EPA is not relying directly on *Mitchell v. Overman* to establish that it has the equitable powers of a court. Rather, EPA is relying on the subsequent reasoning in *Martini* that extended the principal of “the act of the court shall prejudice no man” to administrative agencies when necessary to effectuate Congressional intent. *Fassilis* did not question this reasoning, but made clear that the Second Circuit would not apply it where (1) Congressional intent is clear that a change in law attaches to a pending application and (2) there is no prejudicial delay in an administrative proceeding.

Congress’ intent to require BACT for all regulated pollutants and to require sources to show they will not cause or contribute to a violation of a NAAQS is not so clear as to direct how EPA should apply these requirements in a case such as this where EPA has exceeded the statutory deadline in the Act by more than two years. Congress clearly established a mandatory duty for EPA to act on a PSD permit application within one year. But Congress did not address how EPA should reconcile this duty with a situation such as this where the Agency’s delay leads to the potential application of a series of new requirements to the permit application.

In the case of the Avenal permit application, Congressional intent for timely action would be frustrated if EPA did not take action to grandfather this permit application. Avenal’s and EPA’s effort to assess compliance with the hour NO₂ NAAQS has at this point added one additional year to the time it has taken for EPA to process this permit application. This delay has extended EPA’s review of this application beyond the effective date of the 1-hour NO₂ concentration and the date GHG became subject to regulation. This delay has now swept in two additional requirements (for GHG and SO₂) that would not have applied had the NO₂ analysis been completed sooner. In the face of the potential need to consume additional time to obtain better information on 1-hour NO₂ concentrations and to prepare a BACT analysis for GHG and the absence of information to suggest this source will have a major impact on air quality (discussed elsewhere in this response to comment document), Congressional intent is best fulfilled in this instance by relieving Avenal of the need to demonstrate compliance with additional requirements that have become applicable only as a result of EPA’s delay.

8. **Comment:** With respect to EPA’s application of *Martini* and *Fassilis*, one commenter states that although EPA has attempted to create an equitable test which would allow the

Agency to grandfather a source from CAA requirements in some circumstances, EPA never shows that the facts in this particular case support the application of such a test. First, the commenter states the Supplemental SB never established that there were substantial delays on the part of the administrative agency (in this case EPA) as was the case in *Fassilis*. In particular, the commenter points to declarations made by EPA as part of the deadline litigation, that the commenter says show the bulk of the delay was the result of the section 7 consultation under the ESA. Other commenters argue that EPA's reasoning fails to recognize that the required ESA consultation was not completed until after both the NO₂ and SO₂ standards had already been adopted and after the GHG requirements had been proposed. One commenter asserts that because the delay which held the permit beyond the promulgation date of the 1-hour NO₂ NAAQS was not within the control of EPA, there is no basis for treating this case in the same way as the delay in *Martini*. Noting that the ESA consultation was not completed until August 9, 2010, the commenter says that delay alone was enough to push the permit application process beyond the 1-year mark EPA seeks to protect.

Response: Webster's dictionary provides two basic meanings of the term "delay." One is to put off, postpone. The other is to stop, detain or hinder for a time. Merriam-Webster's Collegiate Dictionary, at 304 (10th Edition, 2001). EPA intended to apply the second meaning the term "delay" in the Supplemental SB. It has taken a long time for EPA to take action on this application. EPA has used the term "delay" in this context simply to describe the passage of time, not to pass judgment on whether the time required was a reflection of EPA's or any other parties' failure to act diligently. EPA has acknowledged the amount of time that has passed despite our best efforts, and that this delay has exacerbated EPA's noncompliance with a mandatory duty.

Grandfathering a permit application to remedy the extended delay and eliminate an obstacle to EPA fulfilling our statutory duty is not inconsistent with EPA's position that we have acted with diligence and proceeded as quickly as we could under the circumstances. When a person is driving a car and gets caught in a traffic jam, he or she may be delayed, but that does not mean the delay is the fault of the driver. The delay that occurred in *Martini* is described in the court's opinion as an "unexplained administrative delay." 184 F.Supp. 395, 401 (S.D.N.Y. 1960). The court's reasoning did not depend on a determination of whether the delay was justified or not. As described by the Supreme Court, the power of a court to issue a judgment retrospectively in cases of delay applies where the delay has been caused by "the multiplicity or press of business" or the "intricacy of the questions involved." *Mitchell v. Overman*, 103 U.S. 62, 64-65 (1880). Under the reasoning of these cases, substantial delay justifies the type of grandfathering action EPA is taking in the case of this permit application, regardless of whether the cause of that delay is a backlog of work or challenging issues that required significant time and effort to overcome.

The reasoning of the judicial decisions that recognize it may be appropriate to apply legal requirements in effect at an earlier time when there has been a substantial delay by a government agency apply equally to any government agency or multiple agencies that are required to take steps to approve an applicant. The United States Fish and Wildlife Service

is a United States government agency. In this case, there has been a delay in this instance by the United States government, regardless of whether the cause of that delay is attributable to EPA or another agency. The permit applicant experiences the effects of delay regardless of which agency is responsible. Thus, EPA is not persuaded that grandfathering is not justified because another agency required significant time to fulfill its responsibilities under applicable requirements.

9. **Comment:** The commenters additionally argue that the permit applicant does not have a right to a PSD permit after the statutory 1-year period has passed and that such a delay does not entitle the applicant to cut off the obligation to comply with the statute. The commenters assert that if a permit application is inadequate to meet all applicable statutory requirements and EPA is compelled to act on the permit, then the permit must be denied. The commenters state that in this case EPA could have denied the permit for a number of reasons, including the fact that the formal consultation under the ESA had not concluded until well after the required 1-year period. One commenter additionally argues that EPA cannot claim the delay here operated to deprive the applicant of any right to which it was entitled as was the case in *Fasillis*. Again pointing to documents submitted by EPA in the deadline litigation, the commenter claims that we ourselves have recognized that Avenal has no right to comply with less protective air quality requirements based on the date of its permit application. Further, the commenter states that Avenal's ability to pursue a permit has not been denied in any way and that it is still free to submit the required demonstrations and attempt to show that the Project will comply with the requirements of the CAA. The commenter concludes that EPA cannot reasonably claim that the test in *Martini* has been met where no rights have been denied as a result of a delay.

Response: EPA agrees that a permit applicant does not obtain a right to a PSD permit after the one-year deadline the Act has passed, and that a failure to meet this deadline by EPA does not automatically cut off the obligation to comply with the CAA. EPA retains the discretion to deny a permit application if the Agency is compelled to Act on the permit on the basis of section 165(c) of the Act. However, EPA must have a reasoned basis to deny a permit application and base that decision on the applicable in section 165 of the Act and, in this case, section 52.21 of EPA's regulations.

The CAA establishes a mandatory duty for EPA to grant or deny a completed permit application within one-year. A permit applicant is thus entitled to a decision from EPA in this time frame, and EPA cannot deny a permit without grounds. In ordinary circumstances, such grounds clearly include failing to show a source will not cause a violation of the NAAQS or meet the BACT requirement for each pollutant subject to regulation. However, in the extraordinary circumstances present in the case of the Avenal permit application, denying this permit on the basis for the 1-hour NAAQS for NO₂ and SO₂ and the BACT requirement for GHG would frustrate Congressional intent.

Furthermore, the relationship between EPA's authority under the PSD provisions in the CAA and the Agency's obligations under the ESA when issuing a PSD permit is complex. Commenter has not demonstrated how EPA would have grounds to deny a PSD permit

simply because the completion of a consultation under the ESA takes longer than one-year after the PSD permit application is complete.

10. **Comment:** One commenter claims that even if EPA were to apply only the emissions standards and requirements in effect on March 18, 2009, Avenal's final permit must still demonstrate the use of BACT to limit CO₂ emissions. The commenter provides a line of reasoning to argue that CO₂ has been "subject to regulation" within the meaning of Sections 165(a)(4) and 169(3) since 1993. The commenter also argues that EPA's interpretation of when a pollutant becomes "subject to regulation" as it has been laid out in recent rulemakings is arbitrary and capricious, and that it should not be used now to avoid the application of BACT to limit CO₂ emissions from the Project. Finally, one commenter states that EPA dismisses possible concern over the SO₂ NAAQS by stating that the Project will emit a *de minimis* amount of SO₂ but EPA does not elaborate in a similar way with respect to the Project's GHG emissions. In particular, the commenter states that EPA should comment on features of the Project that are consistent with GHG BACT requirements that would otherwise apply.

With respect to the Project's GHG emissions, another commenter states that the circumstances in this case strongly support EPA's decision not to subject those emissions to PSD review. The commenter states that it is important to acknowledge the extensive GHG analysis conducted by the CEC. Notably, the CEC's Final Decision found the Project will displace older and less efficient power plants in the dispatch order and reduce overall GHG emissions from California's electrical system. As a result, the commenter says the CEC found that the Project's operational GHG emissions will not cause a significant adverse environmental impact.

Response: EPA is not modifying our interpretation of when GHG become subject to regulation. EPA carefully considered this issue in a reconsideration proceeding that concluded in April 2010. The Agency's notice of final action contains detailed discussion of the Agency's reasoning. 75 FR 17004 (April 2, 2010). Parties that contend EPA's interpretation is arbitrary and capricious had the opportunity to raise that issue in court challenges to that action that are currently pending before the United States Court of Appeals for the District of Columbia Circuit.

A combined cycle, natural gas-fired electric generating facility is an efficient means for producing electric power and minimizing GHG emissions. EPA has emphasized in recent guidance the importance of applying the most energy efficient technology to meet the BACT requirement for GHG. At least one permitting authority (the Bay Area Air Quality Management District) has concluded that the installation of a highly-efficient natural gas-fired turbine is BACT for GHG at a natural gas-fired electric generating facility. Thus, in the event that EPA were to require a demonstration that the Project applies BACT for GHG, EPA would expect that the technology that this applicant proposes to install would be ranked highly and that the applicant might be able to demonstrate that it meets the BACT requirement for GHGs. However, since EPA is not applying the BACT requirement to GHGs in this instance, EPA has not conducted sufficient analysis to establish that the technology applied by this permit applicant is BACT for GHGs in this instance. Because

EPA has determined that it would be inequitable under the circumstances to apply this requirement to Avenal, a detailed discussion of whether this technology is BACT for GHG at this source is not necessary. Since the completion of such an analysis would extend the time needed for EPA to complete action on this permit application, EPA is declining to do so in this circumstance.

RULEMAKING REQUIREMENTS

11. **Comment:** Several commenters urged EPA to undertake a notice and comment rulemaking process and some argue that such a process is required before EPA can grandfather the Avenal permit application. One commenter raised a general concern that EPA's proposal to grandfather Avenal will have national implications and that the policy should be addressed through general rulemaking. This commenter questions whether and how the factors considered by EPA in this case would apply to other permits. The commenter questions whether a proposed permit would need to meet only a few of the criteria considered by EPA or all five. The commenter suggests explicitly stating that this is a case-specific action and that this should not be used as a precedent for future permitting actions. Other commenters claim that EPA's proposal to grandfather Avenal violates the Administrative Procedure Act and that in order to apply our new statutory interpretations EPA must conduct a national rulemaking in accordance with APA requirements (citing court decisions in *Paralyzed Veterans of America v. D.C. Arena L.P.*, *Shell Offshore Inc. v. Babbitt*, and *Shalala v. Guernsey Memorial Hospital*). In particular, one commenter states that while EPA acknowledges public comment is necessary to revise certain prior interpretations, the circulation of a supplemental statement of basis in the context of a permitting action does not satisfy APA rulemaking requirements. The commenter claims that because EPA is attempting to reverse national policies, notice of a rulemaking must be published in the *Federal Register*. Additionally, the commenter states that such rulemakings cannot be conducted either by the Regional Administrator or the Assistant Administrator for the Office of Air and Radiation (OAR) as these officials do not have delegated authority to adopt or revise national rulemakings governing the implementation of the PSD program or the new NAAQS. Other commenters state that whether an agency action must satisfy the APA's formal rulemaking requirements turns on whether the agency intends the rule to create new rights or duties. These commenters claim that EPA's grandfathering proposal seeks to create a right to a PSD permit and that formal rulemaking is thus required.

One commenter argues that, as an alternative to writing regulations that establish a generally-applicable transition provision, EPA may take the sort of individualized, adjudicatory action that we have proposed in the context of the Avenal permit application. This commenter cites a fundamental principle of administrative law that an agency has the discretion to proceed either by general rule or by individual order (citing the Supreme Court decision in *SEC v. Chenery Corp.*).

Response: EPA is currently evaluating whether we should engage in a notice and comment rulemaking process to establish a national transition policy for implementing the 1-hour NO₂ NAAQS and providing equal treatment for applications that have

characteristics similar to the Avenal permit application. However, EPA does not believe it is necessary to complete such an action before grandfathering this particular permit from requirements to demonstrate the source will not cause or contribute to a violation of the 1-hour NO₂ and SO₂ NAAQS or apply BACT for GHG. As one commenter points out, a fundamental principle of administrative law is that an agency may rely on ad hoc adjudication to formulate standards of conduct. *SEC v. Chenery Corp.*, 332 U.S. 194, 199-203 (1947). The Supreme Court recognized the need for this practice in the following discussion:

Not every principle essential to the effective administration of a statute can or should be cast immediately into the mold of a general rule. Some principles must await their own development, while others must be adjusted to meet particular, unforeseeable situations. In performing its important functions in these respects, therefore, an administrative agency must be equipped to act either by general rule or by individual order. . . . [P]roblems may arise in a case which the administrative agency could not reasonably foresee, problems which must be solved despite the absence of a relevant general rule. Or the agency may not have had sufficient experience with a particular problem to warrant rigidifying its tentative judgment into a hard and fast rule. Or the problem may be so specialized and variable as to be impossible to capture within the boundaries of a general rule. In those situations, the agency must retain power to deal with problems on a case-by-case basis if the administrative process is to be effective. There is thus a very definite place for case-by-case evolution of statutory standards. And the choice made between proceeding by general rule or by individual, ad hoc litigation is one that lies primarily in the informed discretion of the administrative agency.

Id. at 202-203.

The “problem” EPA has encountered in the case of the Avenal permit exhibits many of these characteristics. For reasons discussed in the Supplemental SB and this response to comments document, EPA did not initially foresee the challenges Avenal and we would face with completing a timely analysis to address the 1-hour NO₂ NAAQS in the context of this permit application. EPA did not initially perceive that a general transitional rule for application of the 1-hour NO₂ NAAQS to pending permit applications would be necessary, but the Agency must nonetheless deal with the present problem of completing action on this permit application that is long overdue.

While EPA interprets the law to provide EPA discretion to grandfather a permit on a case-by-case basis, this is a unique and unforeseen circumstance. Thus, EPA does not intend or expect to make widespread use of this discretion. EPA is separately considering whether a rulemaking process or another mechanism may be a more appropriate means to develop a nationwide transition policy for the 1-hour NO₂ NAAQS.

EPA recognizes that challenges with implementing this standard in PSD permitting are more widespread and varied than the particular circumstances present in the Avenal situation, but we have not yet had sufficient experience with this issue to crystallize our approach to this specific permit application into a general rule. As stated in Gina McCarthy's declaration of January 31, 2011, we are considering how the Agency should extend the grandfathering approach for the Avenal permit application to other proposed sources that may be experiencing circumstances similar to Avenal. As explained in the Supplemental SB, the proposed approach of grandfathering the permit for Avenal in particular is the result of EPA's responsibility to balance the statutory obligations to issue decisions on permit applications in a timely manner and to implement the substantive requirements of the Act. While EPA has reached a conclusion on the proper balance in the particular case of Avenal, we have not yet determined where the proper balance falls for other permits, all or most of which will differ from the Avenal case in at least some aspects. Other interested permit applicants should not assume that matching one particular or even several of the process or factual aspects of the Avenal case will qualify a source for grandfathering. Thus, this decision in the context of Avenal should not be viewed as establishing a general rule or precedent applicable to any other permit application.

Furthermore, EPA does not read judicial precedents to require a national rulemaking process before EPA can modify the Agency's interpretation of the PSD regulations and the CAA that EPA communicated in two documents in early April 2010. Some courts have limited an Agency's ability to change a long-standing, definitive and authoritative interpretation of a regulation without engaging in a notice and comment rulemaking. *See, e.g., Alaska Professional Hunters Ass'n v. FAA*, 177 F.3d 1030, 1033-34 (D.C. Cir. 1999); *Paralyzed Veterans of Am v. D.C. Arena L.P.*, 117 F.3d 579, 586 (D.C. Cir. 1997). The commenter, however, does not address subsequent decisions by the D.C. Circuit and other courts that have applied a less rigid standard when upholding actions by administrative agencies to change prior interpretations without a formal rulemaking process.

In most respects EPA's interpretation of the PSD program regulations is unchanged by this action. On April 1, 2010, the Director of EPA's Office of Air Quality Planning and Standards issued a memorandum entitled *Applicability of the Federal Prevention of Significant Deterioration Permit Requirements to New and Revised National Ambient Air Quality Standards*. This memorandum reminded EPA Regional Offices that EPA interprets the phrase "any NAAQS" contained in the PSD provisions of the Act and EPA regulations to cover any NAAQS in effect at the time of a final permit decision. The memorandum cited prior instances where EPA has applied this interpretation, including one where EPA also issued a rule to grandfather some pending applications from the requirement to show the source would not violate the NAAQS for PM₁₀. 52 FR 24672 (July 1, 1987). Thus, the April 1, 2010 memorandum primarily repeated EPA's established interpretation that as a general rule, the phrase "any NAAQS" describes any NAAQS in effect at the time a PSD permit is issued. However, the memorandum recognized that EPA has not previously applied that interpretation of the CAA rigidly and has recognized the discretion under the statute to grandfather pending permit applications from a new NAAQS. The April 1, 2010 memorandum was unique in one respect, however. It described for the first time a natural inference from EPA's prior interpretation and actions – that if EPA did not establish a

grandfathering provision by rule, then the phrase “any NAAQS” in 40 CFR 52.21(k) should be interpreted strictly and with no exceptions. EPA made a similar statement in the April 2, 2010 final decision published in the Federal Register on the topic of the pollutants subject to the requirements of the PSD program. 75 FR 17004 (April 2, 2010) (“unless EPA promulgates a grandfathering provision that allows pending applications to apply standards in effect when the application is complete, a final permit decision issued after the effective date of a NAAQS must consider such a NAAQS.”)

Thus, in this action on the Avenal permit, EPA is not changing our overall interpretation that the CAA provides discretion for EPA to grandfather pending permit applications when we establish new requirements applicable under the PSD program. Even if EPA were doing so, to EPA’s knowledge, no court has required a rulemaking procedure when the Agency seeks to issue or change our interpretation of a statute.

In an abundance of caution, EPA previously acknowledged the need for a notice and comment process in this instance of the Avenal permit application because the Agency desired to change our prior interpretation that the regulation at 40 CFR 52.21(k) applies to “any NAAQS” in effect on the date a permit is issued unless EPA has established an express exemption by rule to allow grandfathering. This unique aspect of the April 1, 2010 and April 2, 2010 interpretive statements is the only element that EPA is changing in this permitting action. After considering the judicial decisions cited in the Supplemental SB as well as the Agency’s power to proceed through ad hoc adjudication described above, EPA no longer subscribes to the strict reading of 40 CFR 52.21(k) announced in the April 2010 actions in circumstances such as this where a decision on a permit application has extended far beyond 1-year period established in the Act.

Since those portions of the April 2010 interpretive statements that EPA is changing in this action are just over a year old, EPA’s statement that grandfathering is not permissible without rulemaking is not well-established and has not been substantially relied upon by affected parties. More recent cases since *Paralyzed Veterans* have recognized that notice-and-comment rulemaking is not required to modify interpretations of regulations that exhibit these characteristics. *MetWest Inc. v. Secretary of Labor*, 560 F.3d 506 (D.C. Cir. 2009). In this case, the court upheld an interpretative statement where the Petitioners failed to show a “substantial and justifiable reliance on a well-established agency interpretation” of the sort evident in *Alaska Hunters*. 560 F.3d at 511. The court called this reliance a “fundamental rationale” of *Alaska Hunters*. Describing the reliance analysis as “crucial,” the court noted that to ignore it would be to “misunderstand *Alaska Hunters* to mean that an agency’s initial interpretation, once informally adopted, freezes the state of agency law, which cannot subsequently be altered without notice-and-comment rulemaking.” *Id.* at 511 n. 4.

To the extent that a party can show “substantial and justifiable reliance” on the April 2010 interpretations of EPA’s regulations and that the 1-year life of these documents is sufficient to make them well-established, the notice and comment process EPA provided in the context of this permit is sufficient to protect the interests of parties that may have relied on EPA’s prior interpretation in this instance. Since EPA has not yet taken any action to apply

this interpretation beyond this particular permit application, this action does not implicate *Shell Offshore, Inc. v. Babbitt*, 238 F.3d 622 (5th Cir. 2001). As of this point, this is a situation where the facts of this particular case have caused EPA to re-interpret our rule.

Furthermore, the United States Court of Appeals for the Ninth Circuit, which would have jurisdiction over any appeal of this permitting decision, does not follow the reasoning of *Paralyzed Veterans*. The Ninth Circuit has held that notice-and-comment rulemaking is required only for substantive change to a regulation, not prior interpretations. *Miller v. California Speedway Corp.*, 536 F.3d 1020, 1033 (9th Cir. 2008).

12. **Comment:** The commenters claim that the delegation EPA's Assistant Administrator for OAR has received for making the final permit decision in this case is unlawful and that a final permit decision must come from the Regional Administrator. In particular, the commenters state that the regulatory authority to issue PSD permits is specifically granted to regional administrators and that a formal notice and comment rulemaking is required to change the codified delegation. One commenter argues that any attempt by EPA to assert that this public notice and opportunity to comment (referring to the public notice EPA recently released regarding the Supplemental SB is sufficient for the Administrator's redelegation of authority is defeated by the notice's clear directive that comment was limited to topics that do not include this issue. The commenters also claim that delegation of the final permit decision to the Assistant Administrator of OAR is inappropriate as, unlike the regional offices, OAR has no established procedures for or historical practice of reviewing PSD permit applications.

Response: EPA addressed this subject in a memorandum to the permit file dated March 3, 2011 that is entitled *Delegation of PSD Permit Authority to Assistant Administrator*. This memorandum was in the docket for this permit throughout the public comment period on the Supplemental SB. The memorandum explains that a one-time delegation of this nature is a procedural rule that modifies the requirements of Part 124 in this case. As explained in the memorandum, such a procedural rule need not be adopted through a notice-and-comment process or published in the Code of Federal Regulations. Commenters have not provided any information or analysis to undermine the reasoning in the March 3, 2011 memorandum to the permit file.

EPA headquarters offices have substantial experience with PSD permits. These offices oversee and coordinate the PSD program on nationwide basis and are well-acquainted with the procedures and practices for reviewing PSD permit applications applied across all Regions in EPA, as well as many states.

EQUITABLE TREATMENT FOR OTHERS AND CONSTITUTIONAL CONCERNS

13. **Comment:** Several commenters expressed concern about unequal treatment of other permit applicants or communities affected by proposed facilities. One commenter is concerned that minority residents will bear disparate impacts because Avenal will be grandfathered from applicable requirements while other PSD projects that are not located in disadvantaged communities will not be grandfathered. This commenter believes that

EPA's proposal violates the Due Process Clause of the Fifth Amendment to the U.S. Constitution. In particular, the commenters state that while EPA is proposing to exempt the Project from requirements pertaining to NO₂, SO₂ and GHG, every other PSD permit applicant who applied for a permit application prior to the effective dates of those requirements must comply with them. The commenters claim that such unequal treatment violates the tenets of equal protection. Another commenter urged EPA to acknowledge that all similarly situated facilities are entitled to the same relief as Avenal. On the subject of grandfathering in particular, these commenters note that EPA has failed to notify states of how we intend to treat similarly situated sources and that while EPA seeks to grandfather one source where we are the permitting authority, states and local agencies are struggling with the implementation of the new NAAQS. These state commenters urge EPA to give them the opportunity to grandfather similarly situated sources.

Response: EPA has made clear that we intend to enable similarly situated permit applications to receive the same treatment as Avenal. However, as discussed in the response above, EPA has not yet determined the exact form or scope the action that we intend to take to more precisely define similarly situated sources. Until EPA completes that action, claims of unequal treatment by EPA are premature.

Generally, under equal protection jurisprudence, in order to establish a claim, a party must show that it has intentionally been treated differently than others with whom it is "similarly situated." *Engquist v. Ore. Dep't of Agric.*, 128 S.Ct. 2146, 2153 (2008). In addition, a party must show that there is no rational basis for the government's differential treatment. *Id.* Commenters have not shown that EPA has intentionally treated anyone differently from others similarly situated. EPA has indicated that we intend to apply the same transition policy to others who are in a similar situation to Avenal, but as discussed above, defining precise criteria for identifying such permit applicants will take some additional time for EPA. Further, EPA will ensure we have a rational basis to distinguish between permit applications that are eligible for grandfathering under this policy and those that are not.

To establish a due process claim, a party must establish three things: (1) it has "a life, liberty, or property interest protected by the Due Process Clause"; (2) it was deprived of that protected interest within the meaning of the Due Process Clause; and (3) the government did not afford it adequate procedural rights prior to depriving it of that protected interest. *Hahn v. Star Bank*, 190 F.3d 708, 716 (6th Cir. 1999), *cert. denied*, 529 U.S. 1020 (2000). Commenters have not identified a property interest that has been affected by EPA's action or explained how this action would deprive anyone of such a property interest without adequate procedural rights.

FACTORS EPA IDENTIFIED AS GROUNDS FOR GRANDFATHERING

14. **Comment:** Several commenters questioned the five factors EPA identified as the basis for grandfathering this particular permit application. One commenter summarized these factors as follows: (1) emissions from the proposed facility; (2) permit timing; (3) unanticipated challenge; (4) the additional delay caused by addressing NO₂, and (5) legal precedence. This commenter argued that EPA has no authority or discretion to invent factors that would

exempt any facility from compliance with CAA requirements and that even if we did, the factors applied here are flawed. Another commenter questions whether and how the factors considered by EPA in this case would apply to other permits. The commenter questions whether a proposed permit would need to meet only a few of the criteria considered by EPA or all five. The commenter suggests explicitly stating that this is a case-specific action and that this should not be used as a precedent for future permitting actions.

Response: EPA maintains our view that the grandfathering of this particular permit from the identified requirements is justified by the combination of the five factors listed on page 6 of the Supplemental SB and discussed further on subsequent pages. However, in the response to comments reflected in this document, EPA is supplementing our explanation for why the combination of these factors and other considerations support grandfathering in this instance.

As explained in the Supplemental SB, the proposed approach of grandfathering the permit for Avenal in particular is the result of EPA's responsibility to balance the statutory obligations to issue decisions on permit applications in a timely manner and to implement the substantive requirements of the Act. While EPA has reached a conclusion on the proper balance in the particular case of APC, we have not yet determined where the proper balance falls for other permits, all or most of which will differ from the APC case in at least some aspects. Other interested permit applicants should not assume that matching one particular or even several of the process or factual aspects of the APC case will qualify a source for grandfathering. EPA will provide further information in the near future as to how we propose to identify permit applications in similar situations that are eligible to be grandfathered from these requirements as well.

15. **Comment:** One commenter finds fault with EPA's consideration of the fact that the source will not cause or contribute to a violation of any NAAQS regulated under the permit that was in effect at the time EPA originally proposed the permit for this Project. The commenters state this does not address the fact that the applicable standards are those which are in place at the time the permit is issued. Further, commenters refer to a statement made by EPA when we adopted the revised NO₂ NAAQS on February 9, 2010 that the annual standard alone is not sufficient to protect public health from short-term exposures to NO₂, and the commenters state that the permit will therefore not ensure the protection of public health as required by the CAA. Another commenter notes that the 1-hour NO₂ NAAQS would not be relevant to this permit if EPA had met our obligation to grant or deny this permit application within one year of completeness. Another commenter observed that grandfathering a source from an element of the permitting program during a transition period does not mean that a violation of the NAAQS will result.

Response: As discussed above in response to comment 2 in Section II.B.1, EPA believes we have the discretion under the circumstances here to apply an exception to the general principle that the applicable standards are those in place at the time a permit is issued. EPA has previously supported grandfathering provisions when it appears a source will have a relatively minor effect on air quality. 45 FR 52683. Although EPA does not have an acceptable analysis that enables us to reach any conclusions regarding impacts of this

source on hourly NO₂ concentrations, the information that is available for other NAAQS indicates that the Project will have a relatively minor effect on air quality. The Project impacts are well below (in all cases, less than 6 percent of) the applicable NAAQS for the PSD pollutants addressed in the PSD permit. When this expected air quality impact is balanced against the amount of time that EPA has been considering this permit application and the impact this delay has had on the permit applicant, EPA believes grandfathering is justified in this instance to balance the competing statutory obligations that EPA must meet in this circumstance. EPA agrees with the observations of one commenter that grandfathering does not necessarily mean that a violation of the NAAQS will result. EPA had not yet concluded that the 1-hour NO₂ NAAQS was necessary at the time that we were required to Act on this permit application.

16. **Comment:** Two commenters questioned the relevance of the fact that the Project would be fired on natural gas. The commenters claim that the nature of the Project should have no bearing on EPA's action in this case and that citing the nature of the Project as justification sets a bad precedent. In particular, one commenter states that EPA's proposal here may undercut our past statements that we are not attempting to define natural gas as BACT.

Response: EPA's focus in the Supplemental SB was on emissions from this proposed source. EPA highlighted the fact that the applicants seeking authorization to construct a "state-of-the-art natural-gas fired electric generating facility *that will achieve the lowest levels of air pollutant emissions achievable in this instance.*" Supplemental SB at 6 (emphasis added). EPA has previously justified grandfathering where the covered sources would have a minor effect on air quality, 45 FR 52683, and also finds it justified in this instance.

EPA agrees with the commenters that the use of natural gas fuel alone should not be a relevant consideration in determining whether grandfathering is justified in a given instance, but grandfathering of this source is supported by the emissions profile and relatively small impact of this type of source on air quality, among other factors. The level of emissions from a source is a relevant consideration, because it provides some information, in the absence of a modeling analysis for all averaging times that is consistent with EPA guidelines, to indicate that the source will have a relatively low impact on air quality in the local area. As discussed in the Supplemental SB, the record for this permit demonstrates that the source will not cause or contribute to a violation of any NAAQS regulated under the permit that was in effect at the time EPA issued a proposed permit for this Project. EPA has determined from the modeled results for the facility that the Project's impacts will be well below (in all cases, less than 6 percent of) the applicable NAAQS for the PSD pollutants addressed in the PSD permit.

Furthermore, EPA's reference to the fuel used by the Project was not intended by EPA to modify or alter views previously expressed by EPA regarding consideration of alternative fuels other than those proposed by a permit applicant in the context of the BACT analysis. EPA recently addressed the topic of "clean fuels" and whether they could be eliminated from further consideration on "redefining the source" grounds in our PSD and Title V Permitting Guidance For Greenhouse Gases at 27-28 (March 2011). EPA continues to hold

the views expressed in that document regarding consideration of alternative fuels in the BACT analysis.

17. **Comment:** Some commenters questioned the relevance of the fact that the Avenal permit application was complete over a year before the 1-hour NO₂ NAAQS was proposed. One commenter said that the relevance of the one-year time frame is unclear and questions whether a grandfathering exemption would apply in cases where a proposal came out in less than one year after a completeness determination. This commenter said that these circumstances are not unusual and it is not uncommon for EPA to publish a proposal and final rule during the time it takes for a permitting authority to resolve issues with a PSD permit. According to another commenter, because the NO₂ standard was not proposed until June 2009, if EPA had complied with our obligation under CAA section 165(c) to make a final permit decision, there would be no question regarding the relevance of the 1-hour NO₂ standard. One commenter said that EPA's statement that APC lacked notice that the 1-hour NO₂ NAAQS would apply to the Project is contradicted by our statement on page 8 of the Supplemental SB that APC's efforts to complete a sufficient modeling demonstration for the 1-hour NO₂ standard is what delayed our review of the permit application.

Response: EPA is grandfathering this permit in this action and developing a transition policy that will apply to similarly situated sources in an effort to treat permit applicants fairly, reduce a backlog in permitting, and to resolve the most egregious failures to comply with our statutory deadline. The fact that the APC permit application was complete at least one full year before the EPA proposed the 1-hour NO₂ NAAQS is one relevant factor, but not the only factor on which EPA's decision to grandfather this permit is based. EPA believes this is a relevant factor for several reasons. First, as discussed in the Supplemental SB, this illustrates that Avenal did not have notice of the potential for the 1-hour NO₂ NAAQS requirement to become applicable when its permit application was completed. However, this would be the case for a permit application that was determined complete at any time before July 15, 2009. EPA agrees with the commenter who pointed out that APC eventually received notice of the 1-hour NO₂ standard and that this is substantiated by APC's effort to provide a demonstration that it would not violate this standard. However, the relevant consideration to EPA from an equitable standpoint is that the applicant did not have advance notice of this requirement when it was preparing its application and planning the design for the Project. This is not changed by the fact that the applicant obtained notice of the 1-hour NO₂ NAAQS after EPA determined the application was complete.

Second, in considering how to define sources that are similarly situated, EPA is seeking to use objective criteria to identify permit applications that have been pending for a prolonged period of time and would suffer additional undue delay if required to address the 1-hour NO₂ and SO₂ NAAQS and the GHG permitting requirements. A permit application that was complete one year before EPA proposed the 1-hour NO₂ NAAQS would have been at least 9 months overdue at the time that the 1-hour NO₂ NAAQS became effective in April 2010 and such delay would be further exacerbated by application of new requirements after that date in contravention of Congressional intent to avoid delay. Moreover, where a draft permit has been issued before the proposal of a regulation that creates additional requirements in the PSD program, there has been no opportunity for the permit application

or statement of basis to address the potential applicability of that requirement or whether such requirements would be satisfied if applicable. To the extent that the application of a new requirement at this stage of the process raises a substantial new question that warrants an additional period of public comment, the application of the new requirement will further extend time required to reach a decision on an application. This may be one of several factors that partially supports grandfathering in circumstances such as this where a permit application has already been pending for a long time, analysis required to address an additional requirement has been unexpectedly time-consuming, and the emissions from the source are unlikely to have a large impact on air quality.

Third, EPA is seeking to identify objective criteria that will limit the number of applications eligible for grandfathering in order to avoid the potential for a widespread impact on air quality from multiple sources across the country. In our previous action to establish grandfathering provisions in 1980, EPA declined a request to use one particular milestone in the permitting process as a criteria for grandfather because it would “exempt many more projects from review” and thus would, in this particular situation “fail to give adequate expression to the interests behind section 165, especially the goal of protecting air quality.” 45 FR 52683. EPA highlighted the milestone of one year before proposal of the 1-hour NO₂ standard because it is an objective criterion applicable to the Project that is unlikely to be shared by many other permit applications, thus keeping the number of permits eligible for grandfathering relatively low. EPA also believes that there are only a small number of PSD permit applications for which a draft permit was issued prior to the proposal of the one-hour NO₂ standard. Basing a grandfathering policy on completing an application or proposing a draft permit before the NO₂ NAAQS was proposed would thus give greater expression to the goal of protecting air quality but also provide a means to remedy the most egregious circumstances where EPA or state permitting authority had been unable to complete action on a permit in a timely manner. Further prolonging a delay to require satisfaction of additional requirements would arguably not give expression to Congressional intent to avoid delays.

18. **Comment:** The commenters noted that EPA based our proposal in part on unanticipated challenges associated with NO₂ modeling. One commenter states that the issues associated with the Avenal Project are not unique and that most permitting authorities experience modeling issues with PSD applications, and particularly for revised NAAQS. This commenter states that while state and local permitting agencies experience the same sorts of delays in issuing PSD permits, EPA requires the permits from those agencies to meet the NAAQS at the time of permit issuance. This commenter finally states that compliance with the 1-hour NAAQS may have been technically impossible in the absence of the implementation guidance, which was just released on March 1, 2011, and that standard setting and implementation guidance must be synchronized. Other commenters claim that although EPA says in general that some PSD permit applicants have experienced unforeseen challenges, EPA does not in fact explain how any of these challenges relate to the Avenal permit and EPA failed to demonstrate the applicant met the purported difficulties in this case. Additionally, one commenter points to other facilities that have been able to model 1-hour NO₂ concentrations and this commenter claims that the Supplemental SB provides no basis for the conclusion that Avenal also could not have done

so and does not bear responsibility for failure to show compliance with standard. This commenter also points to declarations submitted by EPA regarding the deadline litigation which state that the Agency expended significant effort in an attempt to help Avenal identify what it needed to do to show compliance with the NAAQS, and the commenter states that the record for this case does not explain what part of the overall delay was due to actual complications and what part was caused by the applicant itself. Finally, the commenters argue that even if Avenal had encountered problems, modeling challenges do not allow EPA to select which facilities do and do not have to meet the law, and they do not constitute grounds for grandfathering the Project from applicable requirements. The commenters also question why, if the applicant attempted to satisfy the new NO₂ standard, it should now be exempted from that requirement.

One commenter concurs that the “complications” EPA describes warrant the action EPA proposes to take with respect to the Avenal permit. However, this commenter disputes the Agency’s representation that the “challenges” permit applicants are now facing were “unforeseen.” The commenter points to a petition it submitted for reconsideration of the final NO₂ NAAQS Rule, which notes that EPA received comments on the proposed NO₂ NAAQS Rule that pointed to the need for a regulation to address implementation of any new NO₂ NAAQS through the PSD program. The commenter states it has requested that EPA both acknowledge the lack of screening and refined air quality models that have been validated for predicting 1-hour NO₂ concentrations, and defer any requirement that PSD permit applicants model compliance with the 1-hour NO₂ NAAQS until models suitable for that purpose have been developed, demonstrated, and incorporated into EPA’s Guideline on Air Quality Models, using appropriate rulemaking procedures. The commenter asserts that EPA has conceded that these issues are implicated in the continuing delay in completing action on the Avenal permit applications.

Response: The complication that Avenal experienced was that the analysis of 1-hour NO₂ concentrations that Avenal attempted to perform consumed a substantial amount of time, and significantly more than EPA expected when we initially asked the applicant to address this requirement for an application that had been pending for more than a year at the time EPA made this request. EPA is not grandfathering Avenal because the Agency believes this analysis is impossible or that Avenal is unable to complete such an analysis. As discussed in the Supplemental SB, the 1-hour NO₂ analysis has produced unanticipated delays in the review of the PSD permit application submitted by APC that have exacerbated EPA’s failure to comply with the statutory deadline for action on this permit application.

EPA explained in the Supplemental SB that some applicants seeking PSD permits to construct or modify stationary sources of air pollution have experienced unforeseen challenges with the timely preparation of sufficient information to demonstrate that emissions from the proposed source will not cause or contribute to violations of the 1-hour NO₂ NAAQS. These challenges have resulted from the fact that to address the 1-hour NO₂ NAAQS, many permit applicants need to conduct a cumulative air quality impact assessment. This has also necessitated the application of modeling techniques that are more refined than those that have previously been adequate to demonstrate compliance with the

annual NO₂ standard. These refined modeling techniques require consideration of the chemical transformation of NO_x emissions through the Ozone Limiting Method or Plume Volume Molar Ratio Method under the third and most-refined Tier of EPA's modeling guidelines applicable to NO₂. Additional refinements in the determination of background concentrations based on modeling of nearby sources and ambient monitoring data may also be necessary in many cases. This level of refinement requires acquisition and analysis of additional data inputs that are available but not as readily accessible to permit applicants as has been the case with the more limited set of data that is typically sufficient in air quality modeling for annual NO₂ concentrations. In most cases in which a proposed source must show that it does not cause or contribute to a violation of the annual NO₂ standard, the source can show that by itself it does not exceed the significant impact level even when using a simple, conservative modeling approach. Thus, it does not need information on emissions of nearby sources or on background concentrations. These are more commonly needed when showing compliance with the 1-hour standard. Also, refined, less conservative modeling methods that may be needed for the 1-hour standard require information on ozone concentrations at the proposed source location.

Permit applicants and permitting authorities have needed more time than EPA expected to develop familiarity with these refined approaches and to obtain and analyze the necessary data.

In this instance, EPA called for Avenal to complete a cumulative air quality impact assessment of 1-hour NO₂ concentrations. Avenal could not show that its impact alone would be less than the significant impact level for 1-hour NO₂ concentrations reflected in EPA guidance. In this circumstance, EPA modeling guidelines call for gathering information on nearby sources to support the cumulative modeling analysis. Additional complexity arose because Avenal found it necessary to use refined, less conservative approaches instead of simpler, more conservative approaches. Under EPA's modeling guidelines, it is necessary to provide more detailed justifications to support the application of refined modeling.

The interaction between EPA and Avenal progressed steadily, but each step consumed a significant amount of time because of the complex material being prepared and reviewed. EPA first requested that Avenal provide a demonstration that it would not violate the 1-hour NO₂ NAAQS on May 6, 2010. Over the course of the next 5 months, Avenal made four separate submissions of information to EPA. EPA responded with two detailed analyses of Avenal's submissions which identified additional information that was necessary to justify Avenal's conclusions. EPA did not anticipate the difficulty EPA and Avenal would face regarding preparation of the necessary supporting information, and the time it would take to go back and forth with Avenal to acquire the necessary information. EPA asked for a second round of modeling which Avenal supplied in its fourth submission on September 13, 2010. EPA determined that this submission did not meet applicable EPA guidelines.

Avenal's and EPA's effort to assess compliance with the hour NO₂ NAAQS has at this point added one additional year to the time it has taken for EPA to process this permit

application. EPA first requested that Avenal address this requirement in May 2010. At that time, EPA was already more than one year overdue in completing action on the permit application, but did not expect it would take significant additional time for Avenal to complete a satisfactory analysis of its impact on 1-hour NO₂ concentrations. However, EPA and Avenal then consumed the next 9 months preparing and reviewing information. The refined nature of the analysis required that Avenal take more time to prepare its submissions and EPA staff more time to review these submissions than EPA first expected. This delay then extended EPA's review of this application beyond the effective date of the 1-hour SO₂ NAAQS and the date GHG became subject to regulation. In the face of the potential need to consume additional time to obtain satisfactory justifications for various aspects of Avenal's analysis of 1-hour NO₂ concentrations and to prepare a BACT analysis for GHG, EPA identified the option of grandfathering this application as a more equitable approach to avoid further delays in completing action on this permit in contravention of Congressional intent.

EPA has not conceded the points raised in the Petition for Reconsideration cited by one commenter, which alleges that no screening and refined air quality models have been validated for predicting 1-hour NO₂ concentrations. EPA has approved the AERMOD dispersion model for use in several regulatory applications, including use by permit applicants to demonstrate that the sources they propose to build will not cause or contribute to violations of the 1-hour NO₂ standard. On February 25, 2010, before the 1-hour NO₂ standard became effective, EPA issued a *Notice Regarding Modeling for New Hourly NO₂ NAAQS*, which explained that the current AERMOD model should be used in accordance with established guidelines on the application of this and other air quality models contained in 40 C.F.R. Part 51, Appendix W. In addition, after the 1-hour NO₂ NAAQS became effective, EPA issued two additional guidance memoranda on June 29, 2010. One of those memoranda, entitled *Applicability of Appendix W Modeling Guidance for the 1-hour NO₂ National Ambient Air Quality Standard*, provided additional technical guidance on using AERMOD to demonstrate that emissions from a proposed stationary source will not cause or contribute to a violation of the 1-hour NO₂ standard. On March 1, 2011, EPA provided additional guidance in a memorandum entitled *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO₂ National Ambient Air Quality Standard*. Collectively, these documents illustrate how the AERMOD model may be used successfully to complete an analysis to demonstrate that a proposed facility will not cause or contribute to a violation of the 1-hour NO₂ standard.

19. **Comment:** With respect to the fifth factor, agency delay, one commenter requested an elaboration of the causes of the delay in the Avenal permit application to help understand why EPA has singled out this permit for grandfathering. This comment observed that the multiple public comment periods for this Project do not seem to have yielded insurmountable issues and that the administrative record is inadequate to explain why EPA did not issue the final permit before our statutory deadline or at least before the effective date of the 1-hour NO₂ NAAQS.

Response: As long as they are not attributable to actions of the permit applicant, EPA does not consider the causes of delay material to determining whether a source is eligible to

be grandfathered. EPA's focus in this instance, and in our evaluation of how best to define the scope of our grandfathering policy, is on the duration of the delay that preceded the effective date of the 1-hour NAAQS rather than the cause. Congressional intent would be especially frustrated by imposing additional delays associated with meeting the 1-hour NO₂ NAAQS and other requirements on a permit application that has been pending for an extended period of time before the 1-hour NO₂ NAAQS became effective. EPA's response to comments regarding the judicial precedents that EPA cited to justify grandfathering on the basis of this degree of administrative delay are given in responses to comments 2, 4, 5, 7 and 8 of Section II.B.1.

PRIOR EPA GRANDFATHERING POLICIES

20. **Comment:** Some commenters argue that EPA's proposal in this instance is contrary to previously adopted policies and statements regarding the meaning of the phrase "subject to regulation" in the PSD provisions and associated regulations; the commenters state that EPA may not ignore those policies. With respect to BACT requirements in particular, the commenters state EPA took the position in our April 2010 reconsideration of the PSD Interpretive Memo (75 FR 17004), that GHG effectively became subject to regulation on January 2, 2011 and that the permit is flawed because EPA failed to consider the GHG emissions from the Project or analyze options to control them as part of the BACT analysis. Commenters note that, with respect to GHG, we specifically said in April 2010 that we did not see any grounds to establish a transition period for pending permit applications. The commenters note that EPA had already reviewed the Avenal application when we made this determination. This notice also states that the effective date of a NAAQS is also the date a NAAQS takes effect through the PSD permitting program. Further, a commenter points out that in EPA's reconsideration of the PSD Interpretive Memo we clearly stated that unless we promulgate a grandfathering provision that allows pending applications to apply standards in effect when the application is complete, a final permit decision issued after the effective date of a NAAQS must consider such a NAAQS. A commenter notes that EPA again adopted the same conclusions when we issued the final Tailoring Rule in June 2010.

Response: EPA acknowledged these prior policies and interpretive statement in the Supplemental SB. We explained that we were seeking to establish an exception in this circumstance to the general policies and interpretive statements announced in two separate actions in April 2010. EPA explained that, at the time of the earlier action, EPA had not adequately considered the judicial decision supporting such an exception and the time that would be required to address the 1-hour NO₂ NAAQS. EPA continues to feel that these grounds and others cited in the Supplemental SB justify this action to establish an exception to those prior policies and interpretations in the identified circumstances. EPA's overall interpretation of the phrase "subject to regulation" in section 52.21(b)(50) of our regulations, as described in the PSD Interpretative Memo and April 2, 2010 final action on reconsideration of the memo, is unchanged by this decision to grandfather the Avenal permit. However, with respect to grandfathering from GHG requirements, EPA is excepting Avenal from the general policy statements and interpretation of regulations

described in the April 2, 2010 notice of final action on the reconsideration of the PSD Interpretive Memo.

21. **Comment:** One commenter points out that EPA previously rejected the notion of grandfathering on the same grounds at issue here. Specifically, the commenter points to EPA's final rulemaking to adopt the PSD regulations after the 1980 CAA amendments in which we declined to promulgate a grandfathering provision based on the date of a complete permit application rather than the date of permit issuance because the use of such a date would give inadequate expression to the interests of Section 165 to protect air quality (citing 45 FR 52676, 52683 (Aug. 7, 1980)).

Response: As with the APC permit application, in the 1980 regulation cited by commenters, EPA sought to strike a balance between competing goals of the CAA. 45 FR 52683. EPA explained that delaying certain construction "by imposing new PSD requirements could frustrate economic development" and noted that the grandfathered projects "have a relatively minor effect on air quality." Id. As a result, EPA adopted a grandfathering provision that "would strike a rough balance between the benefits and costs of applying PSD to those projects." Id. Although EPA used issuance of permits previously required under the SIP in that case to determine eligibility for grandfathering, this precedent does not preclude EPA from using another milestone in the permit process to determine eligibility to strike the appropriate balance in a different situation. In 1980, EPA concluded that determining eligibility for grandfathering based on a complete application might "exempt many more projects from review" in one particular situation addressed in 1980 and that this "would fail to give adequate expression to the interests behind section 165, especially the goal of protecting air quality." Id. This precedent does not preclude EPA from using the date of a complete application (or another milestone) in another circumstance where such a date would not exempt a large number of projects or have an adverse impact on air quality. The interests behind section 165 include both protection of air quality and timely decisionmaking on pending permit applications. As discussed in the SB, EPA is seeking here to balance the requirements in the Act to make a decision on a permit application within one year and to ensure that new and modified sources will only be authorized to construct after showing they can meet the substantive permitting criteria.

22. **Comment:** Another commenter stated more generally that it supports reasonable grandfathering provisions, such as those proposed in this case, to allow for smooth transitions to new requirements in the NSR program. The commenter states it is unlikely that such transitions would result in any environmental degradation over instant enforcement of a newly promulgated NAAQS since projects must apply BACT, protect air quality related values in Class I areas, and comply with all existing NAAQS and PSD increments among other things. In addition, this commenter argues that the CAA provides for compliance with all NAAQS by mechanisms in addition to the NSR permitting program such as State Implementation Plans, which specify how national primary and secondary ambient air quality standards will be achieved and met.

Response: EPA believes we have the discretion to adopt reasonable grandfathering provisions in regulations, and to grandfather without such provisions in unforeseen or

unique circumstances (as occurred in the case of the Avenal permit) when EPA is unable to promulgate regulations in time or to crystallize general criteria. See the responses to comments 3, 5 and 11 in Section II.B.1. However, a determination of whether grandfathering is appropriate should be made on case-by-case basis when new requirements are incorporated into the PSD permitting regulations. EPA does not agree with the commenter's suggestion that one can always conclude that there would not be any environmental degradation in applying a transition policy as compared to immediately enforcing a newly promulgated NAAQS.

Comments Regarding Environmental Justice Issues

23. **Comment:**¹¹ The commenters state that environmental justice concerns justify rejection of the proposed permit. Even without a new power plant, the commenters say that the nearby communities of Avenal, Huron and Kettleman City are burdened by a number of environmental harms including: some of the highest ozone and PM_{2.5} levels in the country, drinking water contamination, exposure to pesticides and other agricultural chemicals, near roadway exposure to diesel particulate emissions from the I-5 freeway, defunct oil and gas extraction operations, risk associated with proximity to a hazardous waste facility, impacts associated with composting and the application of biosolids sludge from LA, immunocompromised health associated with a spike in birth defects and a high number of miscarriages. The commenters state that these impacts contribute to higher-than-average asthma prevalence, and asthma-related hospitalizations and emergency room visits. Further noting high unemployment rates in these areas and a lack of access to healthcare, the commenters state that the residents of Avenal, Huron and Kettleman City do not have the resources to cope with the above factors, and that the NAAQS do not provide an adequate margin of safety to account for those factors. The commenters state that although EPA's EJ analysis acknowledges that many of the above factors in isolation increase vulnerability to the health effects of air pollution, EPA does not analyze these factors in combination. The commenters conclude that adding another major source of pollution in this area would make existing problems worse and would be the very definition of environmental injustice.

Response: EPA agrees that communities near the Project face a number of environmental concerns, including those identified by the commenters, and that those factors in some cases may increase vulnerability to the health effects of air pollution. However, we disagree that environmental justice concerns justify denial of the application for a PSD permit for the Project.

Executive Order 12898 provides that “[t]o the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and

¹¹ These or similar statements were also made by individuals during a meeting Administrator Jackson and Regional Administrator Blumenfeld held with the Central Valley Air Quality Coalition on March 23, 2011, or in correspondence following that meeting.

possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the [Northern] Mariana Islands.” Section 1-101 of Exec. Order 12898, 59 FR 7629 (Feb. 16, 1994). “Federal agencies are required to implement this order consistent with, and to the extent permitted by, existing law.” *Id.* at 7632. EPA has recognized that it is appropriate to consider environmental justice in PSD permitting actions. *See, e.g., In re Prairie State Generating Company*, 13 E.A.D. 1, 123 (EAB 2006); *In re Knauf Fiber Glass, GmbH*, 8 E.A.D. 121, 174-75 (EAB 1999) (“Knauf I”). Moreover, the opportunity for the public to comment on “alternatives” and “other appropriate considerations” under section 165(a)(2) of the CAA provides EPA with a basis for incorporating environmental justice considerations into PSD permitting decisions in appropriate circumstances. *See, e.g., EPA General Counsel Gary Guzy Memorandum: “EPA Statutory and Regulatory Authorities Under Which Environmental Justice Issues May be Addressed in Permitting.”* (Dec. 1, 2000). EPA reads the language in the Executive Order directing federal agencies to identify and address impacts “as appropriate,” and “[t]o the greatest extent practicable and permitted by law,” to afford considerable discretion to the Agency in determining how to address any impacts that we may identify. In addition, since this Executive Order references all of the programs, policies and activities of each federal agency to which it applies, EPA may consider how best to respond to the environmental justice concerns raised in public comments within the larger context of all the actions EPA is taking to reduce environmental hazards in the communities potentially affected by emissions from the Project. EPA also believes it is appropriate to consider actions being taken by state and local government agencies to address these concerns.

In implementing Executive Order 12898, EPA believes it is appropriate for the Agency to consider the best available data that are germane in light of the scope and nature of the action before us in analyzing whether there may be disproportionate adverse impacts on minority communities and low-income communities. *See, e.g., In re: Shell Gulf of Mexico, Inc. and Shell Offshore, Inc.*, OCS Appeal Nos. 10-1 to 10-4, Slip Op. at 80, fn. 87 (EAB December 30, 2010) (“*Shell II*”) (“ . . . the permit issuer must endeavor to include and analyze in its environmental justice analysis available data that are germane to the environmental justice issue raised during the comment period.”) After preparing our analysis based on the best available data, and considering comments received, EPA has not identified disproportionate adverse impacts on minority communities and low-income communities that would result from our proposed PSD permitting action that should affect issuance of this PSD permit, though EPA acknowledges that in light of the limited data available, EPA is not able to reach any definitive conclusion about the specific human health or environmental impacts of short-term NO_x emissions associated with the Project.

Considering the environmental conditions of greatest significance in this region and the range of actions EPA and state and local government agencies are currently taking to reduce the risks these conditions pose to health and welfare in these communities, EPA’s judgment is that, despite some uncertainties and limitations in available data, emissions from this source are unlikely to add significant environmental harms to the local community. EPA has not identified disproportionate adverse impacts on minority communities and low-income communities that should affect issuance of this permit. To the extent such conditions already exist, EPA believes they are more effectively addressed

through other actions EPA and state and local agencies are taking outside the context of this permit application. EPA has met with community representatives regarding a number of those concerns, outside the context of EPA's PSD permitting action for the Project, and a number of EPA Program Offices have focused resources on following up appropriately on the community concerns raised by the commenters, as described below.

EPA and the State have recently undertaken several actions relevant to community concerns about birth defects, stillbirths and miscarriages in the area, as well as concerns about the potential for releases from the Kettleman Hills hazardous waste facility. First, EPA requested a comprehensive sampling and analytical study, including a risk assessment, of the possible off-site impacts that the PCB disposal operations at the Chemical Waste Management Facility may present to human health or the environment, and that study was completed, with extensive EPA oversight. In addition, the State of California recently completed studies on reports of increased birth defect incidences and potential environmental exposure sources within Kettleman City. CDPH analyzed birth records and interviewed mothers who agreed to participate. Cal/EPA also conducted testing of air, water and soil gas in Kettleman City.

Further, on February 8, 2010, EPA Region 9 began an extensive (RCRA and TSCA investigation of the CWM) Kettleman Hills facility. The TSCA investigation discovered non-compliance with PCB requirements, including PCB releases at the facility. CWM cleaned up those PCB releases under a cleanup plan approved by EPA and the State of California, DTSC. On November 29, 2010, EPA Region 9 completed a TSCA enforcement action against CWM whereby CWM paid more than \$300,000 in penalties. On February 25, 2010, EPA issued a RCRA investigation report and Notice to CWM identifying areas of non-compliance with hazardous waste management requirements, including disposal of waste not properly treated for metals and failure to comply with federal requirements for analyzing hazardous waste. This RCRA report is part of an ongoing enforcement process which includes both compliance and potential penalties. EPA has no information that any of the violations identified during these extensive investigations present a risk to the community.

With respect to PM_{2.5} and ozone levels in the San Joaquin Valley, EPA, the State of California and the District are working diligently through the ongoing State/District air quality planning process to address these nonattainment pollutants. A detailed discussion of this process is included in the response to comment 29 in Section II.B.1.

At the same time, a number of government bodies and others are providing significant funding for a wide variety of emissions reductions projects in the San Joaquin Valley that will contribute to substantial emissions reductions for PM_{2.5} and ozone in the Valley, among other pollutants.

Through the Federal Highway CMAQ program, Kings County is spending \$6,439,000 on projects in the years 2010-2014. These projects include sealing unpaved roads, purchase of compressed natural gas equipment and buses, signal timing projects and replacement of

particulate filters for buses operating in Kings County. These projects will reduce emissions of reactive organic gases, CO, NO_x, PM₁₀ and PM_{2.5} throughout the county.

Further, the West Coast Collaborative, a partnership between leaders from federal, state and local government, the private sector and environmental groups committed to reducing diesel emissions along the West Coast, has provided funding to the District, the Kern County Superintendent of Schools and the California Air Resources Board (ARB) for a variety of diesel emission reductions projects throughout the San Joaquin Valley. Since 2008, we have provided over \$10,000,000 in Diesel Emissions Reductions Act funds to reduce diesel emissions throughout the Valley. We estimate that these funds result in approximately 130 tons of PM and 7 tons of NO_x reductions annually, affecting over 250 diesel engines throughout the Valley.

Other sources of funds that have been applied to diesel emission reduction projects in the Valley include the following: (1) Prop 1B Goods Movement Emission Reduction Funds, funded by ARB and administered by the District in the San Joaquin Valley; (2) the Zero Emission Agriculture Utility Terrain Vehicle Rebate Program, funded by ARB and administered by the District; (3) Air Quality Improvement Program funds - includes the Hybrid Truck and Bus Voucher Program (HVIP), Clean Vehicle Rebate Program, Lawn and Garden Equipment Replacement Project, the Hybrid Off-Road Equipment Pilot Project and Advanced Technology Demonstration Projects; and (4) the Technology Advancement Program, the District's strategic approach to encouraging innovation and development of new emission reduction technologies.

EPA and the State of California have also recently taken action to address drinking water concerns in the area. On March 25, 2011, EPA issued an administrative compliance order under the federal Safe Drinking Water Act to the City of Avenal to address the City's violation of the Safe Drinking Water Act Disinfectants and Disinfection By-Products Rule. In addition, in January 2009, the State of California issued a compliance order to the Kettleman City Community Services District to address its violations of the California Safe Drinking Water Act's maximum contaminant level for arsenic.

Next, with respect to the commenter's conclusion that the NAAQS do not provide an adequate margin of safety to account for the environmental issues faced by the communities near the Project, EPA disagrees. As stated in EPA's Environmental Justice Analysis at pages 12-13:

For purposes of the Executive Order on environmental justice, EPA has recognized that compliance with the applicable NAAQS is emblematic of achieving a level of public health protection that demonstrates that EPA's issuance of a PSD permit for a proposed facility will not have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. See, e.g., *Shell II*, Slip Op. at 74; *In re Shell Offshore Inc.*, 13 E.A.D. 357, 404-5 (EAB 2007) ("*Shell I*"); *In re Knauf Fiber Glass, GmbH*, 9 E.A.D. 1, 15-17 (EAB 2000) ("*Knauf I*"); *In re AES Puerto Rico, L.P.*, 8 E.A.D. 324, 351 (EAB 1999). This is because the NAAQS are health-based standards, designed to protect public health

with an adequate margin of safety, including sensitive populations such as children, the elderly and asthmatics. As the EAB recently observed, “[i]n the context of an environmental justice analysis, compliance with the NAAQS is emblematic of achieving a level of public health protection that, based on the level of protection afforded by the NAAQS, demonstrates that minority or low-income populations will not experience disproportionately high and adverse human health or environmental effects due to exposure to relevant criteria pollutants.” *Shell II*, Slip Op. at 73. This is supported by the fact that “[t]he Agency sets the NAAQS using technical and scientific expertise, ensuring that the primary NAAQS protects the public health with an adequate margin of safety.” *Shell II*, Slip Op. at 73.

However, EPA has also recognized that there are circumstances when it would be unreasonable to rely solely on compliance with the applicable NAAQS to support the conclusion that issuance of a PSD permit will not have disproportionately high and adverse human health or environmental effects on minority and low-income populations. *Shell II*, Slip Op. at 71-75. In the case of this permit issued to APC, EPA’s Environmental Justice Analysis considered not only the Project’s compliance with the applicable NAAQS, but also the potential impacts of the facility on short-term NO₂ concentrations. EPA examined short-term NO₂ concentrations – even though EPA proposed, and has ultimately decided, not to apply the new one-hour NO₂ NAAQS to this permit application – because the Agency recently determined that the annual NO₂ standard alone is not sufficient to protect public health with an adequate margin of safety against adverse respiratory effects associated with short-term exposures to NO₂. Final Rule, 75 FR 6474 (Feb. 9, 2010). Therefore, EPA’s Environmental Justice Analysis considered whether short-term exposures to NO₂ emissions from the Project may result in disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

24. **Comment:** The commenters state that EPA is required to identify and address disproportionately high and adverse human health or environmental effects of our permitting decision on minority and low-income populations, and that Executive Order 12898 prohibits EPA from approving the PSD permit for the Project without making a determination that our decision will not disproportionately impact minority populations. The commenters state that because EPA proposes to exempt the Project from demonstrating compliance with the 1-hour NO₂ standard, EPA may not rely on the presumption that NAAQS compliance avoids disproportionate impacts on minority and low-income populations. Further, the commenters state that the EJ analysis prepared by EPA contains no information upon which to judge the impacts of increased NO₂ on low-income and minority communities around the Project site and that EPA must analyze those impacts. The commenters state that EPA admitted our EJ analysis is inconclusive when EPA stated in the Supplemental SB that we cannot reach any definitive conclusion about the specific health or environmental impacts of short term exposure to NO_x emissions on minority and low-income populations. The commenters further state that EPA’s inability to make a determination about impacts associated with hourly NO_x emissions, coupled with evidence of the high vulnerability of nearby populations, makes EPA’s proposal to exempt

the Project from demonstrating compliance with the 1-hour NO₂ NAAQS especially egregious.

Response: While we recognize the commenters' concerns regarding the limited NO₂ data available for consideration in our Environmental Justice Analysis, we disagree with the commenters that EPA's decision to grandfather the Project from demonstrating compliance with the NO₂ NAAQS is inappropriate, for the reasons stated in EPA's Supplemental SB for the action and in the responses to comments 1-10 in Section II.B.1.

In this situation where the available data are limited, and where EPA has determined that it is appropriate to grandfather this permit from demonstrating that the source will not cause or contribute to a violation of the 1-hour NO₂ NAAQS, EPA does not read the Executive Order to call for EPA to draw a specific conclusion regarding compliance with the 1-hour NO₂ NAAQS or that we reach a definitive determination that the Project will not result in disproportionate adverse impacts with respect to short-term NO_x emissions. As noted above, in implementing this Executive Order, EPA believes it is appropriate for the Agency to consider the best available data that are germane in light of the scope and nature of the action before us in analyzing whether there may be disproportionate adverse impacts on minority communities and low-income communities. Moreover, the language in the Executive Order directing federal agencies to identify and address impacts "as appropriate," and "[t]o the greatest extent practicable and permitted by law," affords considerable discretion to the Agency in determining how to address any impacts that we may identify in light of uncertainties regarding those impacts. EPA believes that in conducting our Environmental Justice Analysis for the Project, and considering the comments on the analysis, we are appropriately exercising our discretion in implementing the Executive Order in the context of this permit application under the CAA, which does not preclude EPA from approving this PSD permit in the face of uncertainty concerning the impacts of short-term NO_x emissions associated with the Project on the community.

As discussed in the response to comment 23 in Section II.B.1 above, for purposes of Executive Order 12898, EPA has generally recognized that compliance with the applicable NAAQS is an appropriate benchmark to support a determination that EPA's issuance of a PSD permit for a proposed facility will not have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. The commenter is correct that we have not determined whether the Project in this case will comply with the 1-hour NO₂ NAAQS. Therefore, EPA has conducted a separate review of the issue of impacts from short-term emissions of NO_x in our Environmental Justice Analysis. EPA disagrees with the commenters' statements that EPA's Environmental Justice Analysis provides no information upon which to judge the impacts of increased short-term emissions of NO_x on environmental justice communities. The analysis describes what EPA believes is the best available data concerning the impacts of the Project's short-term NO_x emissions in the absence of an approved PSD modeling analysis. However, we recognize that the available data concerning impacts associated with the Project's short-term NO_x emissions are very limited, and concur with the commenter that our analysis is inconclusive in this regard. Nevertheless, we believe that our Environmental Justice Analysis and our consideration of public comments on the Analysis

are appropriate and satisfy the requirements of the Executive Order. In addition, as discussed in Section I.A of this document, emissions from mobile sources account by far for the majority of NO_x emissions in Kings County. Emissions inventory data from ARB indicate that mobile source emissions in 2010 resulted in 25.2 tons per day of NO_x as compared with 2.2 tons per day for all stationary sources combined (the total inventory for 2010, including area sources, was 27.8 tons per day). In comparison, emissions of NO_x from the Project authorized by this permit are limited to 0.395 tons per day.

25. **Comment:** A commenter states that EPA should not move forward with approving the PSD permit for the Project because EPA failed to provide adequate notice of our public hearing, in that our public notice placed information on the hearing date, time and place in the third page of dense text, and because residents of Kettleman City have reported that they did not receive the notice.

Response: EPA believes that the notice we provided of our April 12, 2011 public hearing was adequate and appropriate. EPA not only followed our regulations at 40 CFR 124.10 governing public notice, but we went well beyond those regulatory requirements in providing notice of our recent proposed action on the Project and the related public hearing to ensure that local communities were informed of our proposed action.

The text of EPA's March 2011 public notice itself is consistent with the content requirements at 40 CFR 124.10, none of which specify the placement of necessary information in a particular location within a public notice. EPA also translated the public notice and our Supplemental SB for the action, including the Environmental Justice Analysis, into Spanish.

EPA's methods for notifying interested parties and the public of our recent proposed action and the related public hearing also went well beyond the regulatory requirements for notice at 40 CFR 124.10. EPA published our public notice in English and Spanish in appropriate newspapers, including a Spanish-language newspaper, mailed and emailed the notice to an extensive list of parties consistent with 40 CFR 124.10, and also mailed the notice (in English and Spanish) to every post office box in the City of Avenal and Kettleman City. EPA also posted the public notice and the Supplemental SB on our Region 9 website. Further, EPA mailed and emailed the public notice and the Supplemental SB to the Avenal, Kettleman City and Hanford branches of the Kings County Library, and confirmed with library staff that the information would be displayed for the public.

26. **Comment:** Commenters state that data indicate that emissions from the Project will result in a violation of the 1-hour NO₂ NAAQS and that EPA's EJ analysis must disclose the likelihood of that occurrence. Specifically, the commenters state that EPA has acknowledged an assessment of 1-hour ozone¹² demonstrated that the Project may result in a maximum 1-hour NO₂ impact of 44 ppb. The commenters state that when combined with background levels found throughout California, this additional NO₂ would result in a violation of the 100 ppb standard.

¹² We assume the commenter meant to refer to NO₂ rather than ozone here.

Another commenter disagrees, specifically referring to the 1-hour NO₂ NAAQS analysis conducted by the District for the Avenal minor source permit as evidence supporting the conclusion that the Project will *not* create any disproportionately high and adverse human health or environmental impacts on any population, including minority and low income populations. The commenter states that the District has concluded that the Project's emissions will not cause or contribute significantly to a violation of the 1-hour NO₂ NAAQS.

Response: EPA does not believe that the available data provide sufficient information to determine that the Project's emissions would cause the 1-hour NO₂ NAAQS to be exceeded. NAAQS compliance determinations in the context of the PSD program involve very complex modeling demonstrations that must consider a variety of technical and site-specific factors and data. To make such a determination here under section 165(a)(3) of the Act and section 52.21(k), EPA would need a comprehensive cumulative impact analysis, consistent with section 52.21(l) and the guidelines in 40 CFR Part 51, Appendix W, that provides, justifies and considers detailed data addressing monitored background levels and nearby source emissions, in addition to emissions from the Project itself. The analysis would need to follow acceptable methods for modeling, described in EPA's Guideline on Air Quality Models, as well as methods for combining model and background data, that EPA has determined are consistent with PSD modeling guidelines and guidance. Such an analysis has not been provided to EPA. We note that prior to EPA's proposal to grandfather the Project from demonstrating compliance with the 1-hour NO₂ NAAQS, the applicant provided a number of submittals to EPA for purposes of demonstrating compliance with the standard. EPA determined that the earlier of those submittals was insufficient to demonstrate compliance with the 1-hour NO₂ NAAQS, as described in detail in correspondence to the applicant dated June 15, 2010 and August 12, 2010. The applicant then provided another 1-hour NO₂ NAAQS submittal to EPA dated September 13, 2010. EPA does not consider this analysis sufficient to demonstrate compliance or noncompliance with the 1-hour NO₂ NAAQS because it was not supported by data and justifications that are called for in EPA's modeling guidelines in 40 CFR Part 51 Appendix W and related EPA guidance. Because of the limitations in this analysis, EPA does not believe it is sufficient to enable us to draw any conclusions regarding whether this source would cause or contribute to a violation of the 1-hour NO₂ NAAQS.

As noted earlier, we believe that it is appropriate to use the best available data in considering whether the Project may result in disproportionate adverse impacts to environmental justice communities. EPA's Environmental Justice Analysis described what EPA believes is the appropriate best available data concerning the Project's short-term NO_x emissions in the absence of a PSD modeling analysis that is consistent with the Guidelines in 40 CFR Part 51, Appendix W.

We also disagree that the District's 1-hour NO₂ analysis prepared in the context of the Avenal minor source permit demonstrates that the Project complies with the 1-hour NO₂ NAAQS for purposes of EPA's analysis conducted in conjunction with our PSD permit decision for the Project. We note that the District followed its own modeling approach and guidance that it issued specific to minor source projects, which in some respects differ from

EPA's guidance and recommendations for modeling for PSD permits governing major sources. The District's analysis was not intended to serve as a PSD modeling analysis for a major source.

However, for the reasons explained in EPA's Supplemental SB and the responses to comments 1-10 of Section II.B.1, EPA believes it is appropriate to issue the permit for the Project despite the absence of a comprehensive cumulative impact analysis for the 1-hour NO₂ NAAQS prepared for PSD purposes.

27. **Comment:**¹³ The commenters state that EPA accepted for investigation a Title VI complaint alleging that issuance of an NSR permit for the Project will result in adverse health impacts on residents of color in the area, and that EPA's proposal to take a similar action creates a conflict of interest since the Agency will be investigating the same activity in which we are participating. The commenters assert that relying on a flawed state analysis (referring to the EJ analysis provided by the CEC) as the basis for EPA's own EJ analysis is unreasonable and that EPA must conclude the Title VI investigation prior to making a final decision on the PSD permit.

Response: As discussed above (see our response to comment 5 in Section II.A.1), EPA notes that the OCR has accepted for investigation a portion of a Title VI complaint relating to the District's NNSR permitting process for the Project. OCR has also referred to the U.S. Department of Energy the portion of the complaint relating to the state licensing process for the Project.

EPA disagrees that OCR must conclude its Title VI investigation prior to EPA's final decision on the PSD permit.¹⁴ EPA also disagrees that our proposed PSD permit action creates a conflict of interest given OCR's pending investigation of the Title VI complaint. EPA's Title VI investigation is an administrative process separate from EPA's PSD permit decision, is carried out independently of the CAA PSD permitting program, and pertains to a local permitting process that is also outside the scope of EPA's PSD permit decision action.¹⁵

Further, EPA is not relying on the CEC's environmental justice analysis as the basis for EPA's Environmental Justice Analysis but rather has provided a brief discussion of that analysis in EPA's analysis for informational purposes.

28. **Comment:**¹⁶ The commenters state that monitoring data cited in EPA's EJ assessment are not reflective of conditions in communities near the Project site. In particular, the commenters point to statements made by EPA that NO₂ concentrations on or near major

¹³ Refer to footnote 11.

¹⁴ We note that CAA section 165(c) requires that EPA grant or deny a PSD permit application within one year of application completeness, and the PSD permit application for the Project was determined by EPA to be complete as of March 19, 2008.

¹⁵ We also note that Title VI is inapplicable to EPA actions, including EPA's issuance of permits, because it applies only to the programs and activities of recipients of federal financial assistance, not to federal agencies. See 42 U.S.C. 2000d-4a.

¹⁶ Refer to footnote 11.

roads have been measured to be 30 to 100% higher than those measured away from major roads. The commenters state that while Kettleman City is adjacent to I-5 and is bisected by a smaller highway, the Hanford and Visalia sites cited in EPA's EJ analysis are many miles from the proposed Project location and several miles from the nearest major highway. The commenters provide a variety of reasons why failing to account for near roadway impacts is likely to be significant, including, for example, truck traffic associated with the nearby Kettleman Hills Hazardous Waste landfill, and they assert that without identifying the likely background levels of NO₂ in Kettleman City, EPA is unable to determine the health impacts associated with the additional NO_x emissions from the Project. Based on the data that EPA did provide and the assumption that NO₂ levels in Kettleman City are 30-100% higher than those in Hanford and Visalia, the commenters assert there is no reasonable basis for believing that Kettleman City or the other communities in the vicinity of the proposed Project would not be disproportionately impacted by NO_x emissions from the plant. Commenters also state that background information from Hanford and Visalia is not representative in this case because Hanford and Visalia do not experience the same level of economic and racial disadvantage as other San Joaquin Valley communities and therefore do not represent the pollution burden borne by more the marginalized communities. Finally, commenters believe that EPA's analysis is contradictory because on one hand, EPA concluded that background levels of 1-hour NO₂ in the area surrounding the site are not disproportionately high compared with communities elsewhere in the State, and on another hand, EPA stated that the nearest monitors to the Project are located outside of the 25-kilometer boundary to determine disproportionate impacts.

Response: EPA believes that the data we cited in our Environmental Justice Analysis concerning short-term NO_x emissions from the Project and NO₂ levels in the area near the Project are the best data available at this time, and therefore appropriate to consider for purposes of our analysis, as discussed in response to comment 24 in Section II.B.1.

While EPA's Environmental Justice Analysis described the limited available data regarding NO₂ levels in the general area near the Project, EPA's analysis did not portray that data as necessarily being representative of the levels in Kettleman City or other local communities, and EPA has insufficient information at this time to determine whether or not it is in fact representative of that area in terms of air quality. EPA's analysis stated simply that "[t]he Agency currently has limited data as to the impacts of NO_x emissions from the Project or existing sources on the communities of interest. As previously discussed, there is limited hourly NO₂ monitoring data in California from EPA-approved monitoring network sites, and the closest monitoring sites are 28 miles and 46 miles from the proposed Project. The limited data indicate that background levels at the monitors closest to the Project are on par with measured levels of NO₂ statewide, and that background levels of 1-hour NO₂ in the general area surrounding the Project are not disproportionately high as compared with communities elsewhere in the State." EPA agrees with the commenters that the social vulnerabilities of the communities nearest the Project differ from those of the communities of Hanford and Visalia, and that the monitoring sites in the latter locations are located more than 25 kilometers from the Project.

EPA disagrees with the comment that, based on the data that EPA did provide and the assumption that NO₂ levels in Kettleman City are 30-100% higher than those in Hanford and Visalia, there is no reasonable basis for believing that Kettleman City or the other communities in the vicinity of the proposed Project would not be disproportionately impacted by NO_x emissions from the plant. While EPA agrees with the commenters that in general NO₂ concentrations on or near major roads have been measured to be 30 to 100% higher than those measured away from major roads, EPA has insufficient information to determine whether in this particular case the levels in Kettleman City would necessarily be at levels 30 to 100% higher than those measured in Hanford or Visalia; EPA lacks adequate information to make that determination. For example, EPA does not have an acceptable analysis comparing the level of impact from vehicle emissions at the monitors to that at the Project site. EPA agrees that it would be appropriate to obtain additional NO₂ monitoring data in the local area, and in order to do so, EPA intends to site an NO₂ monitor in the area, as discussed in our Environmental Justice Analysis and in the response to comment 31 in Section II.B.1. Further, as previously mentioned, as stated in EPA's Environmental Justice Analysis and in the response to comment 24 in Section II.B.1, EPA does not believe that the data available provides a sufficient basis on which we can reach a conclusion regarding whether or not the emissions from the Project would exceed the 1-hour NO₂ NAAQS and thereby be of a magnitude that would cause impacts of concern associated with short-term NO_x emissions on local minority communities and low-income communities.

29. **Comment:** Regarding analysis of NAAQS other than the standard for 1-hour NO₂, the commenters state that EPA admitted we did not address whether there will be disproportionate impacts on the surrounding communities due to elevated ozone and fine particulate impacts and that instead of providing our own analysis, EPA presented a summary of an analysis conducted by the State (referring to the CEC analysis). The commenters raise several issues with this.

As a general matter, the commenters state that the CEC based its findings that air pollution would be mitigated on the purchase of ERCs. The commenters state that EPA may not base our EJ findings on ERCs that will do little to reduce pollution in the communities closest to the Project site.

The commenters also state that while the CEC identified the amount of nonattainment pollutants that would be emitted by the Project, it did not identify the impact those emissions would have on nearby communities. Instead, the CEC considered whether the emissions would cause or contribute to a violation of the district-wide NAAQS and the commenters argue that the CEC's focus on district-wide impacts ignores the local impacts of the emissions.

With regard to the State's claims that PM_{2.5} impacts will be insignificant compared to applicable ambient air quality standards and current levels, a commenter states that the modeling analysis that formed the basis for this conclusion is flawed. The commenter states that the modeling results do not account for the contribution of secondary PM_{2.5} formation as a result of the NO_x emissions from the source and that there is no basis for refusing to include secondarily formed PM_{2.5} in the assessment of ambient impacts. The commenter

states the lack of such considerations is especially troublesome here since the District has acknowledged that secondary PM_{2.5} in the form of ammonium nitrate is a major component of ambient PM_{2.5} concentrations in the San Joaquin Valley.

Again with regard to the State's EJ analysis of PM, a commenter cites to *In re: Shell Gulf of Mexico, Inc.* and states that the analysis is flawed because it relies on compliance with outdated science and fails to account for updated scientific and technical reviews. In particular, the commenter states that both the PM_{2.5} and PM₁₀ standards are undergoing review and have been called into question by EPA's Clean Air Scientific Advisory Committee. The commenter also states that EPA's analysis includes virtually no discussion of disproportionate PM₁₀ health impacts based on new available health data.

The commenters assert that the CEC did not provide sufficient information to determine whether the ERCs are spatially, temporally and qualitatively equivalent to the Project's actual emissions to demonstrate that those ERCs would adequately mitigate the Project's impacts on air quality. On this point, the commenters state that the CEC's Final Staff Assessment does not demonstrate how ERCs from as far away as 150 miles will mitigate local impacts. The commenters further state that while the CEC required that ERCs located 15 miles from the Project be used at a ratio of 1.5 to 1, the CEC did not increase the ratio for ERC's located more than 15 miles away and that the CEC had no support that ERCs located 15 miles from the Project will have the same mitigation value as ERCs located 150 miles away.

The commenters state that the Project proposes to meet 98% of its PM₁₀ offset requirements from SO₂ offsets at a ratio of 1 to 1 and that neither EPA nor the CEC analyzed the difference in health effects caused by exposure to PM compared to SO₂. The commenters cite several pieces of evidence which they say indicate that this ratio is insufficient and they state that EPA should explain why we do not object to the use of the 1 to 1 ratio in our EJ analysis.

The commenters assert that even with the flawed analysis prepared by EPA, it is clear that the Avenal Project will have disproportionate impacts on surrounding EJ communities. As a result, the commenters state that EPA should deny Avenal's application for a PSD permit. The commenters say that at a minimum, EPA must redo our defective and incomplete EJ analysis.

Response: As discussed in the response to comment 27 in Section II.B.1, EPA is not relying on the CEC's environmental justice analysis as the basis for our own Environmental Justice Analysis but rather has provided a brief discussion of that analysis in EPA's own analysis for informational purposes. The CEC's environmental justice analysis was conducted in the context of the State licensing and District permitting processes for the Project, and issues concerning that process and the State's analysis, including the manner in which those agencies addressed various pollutants, including nonattainment pollutants, i.e., PM_{2.5} and ozone, and related issues such as ERCs and offsets, are not among the parameters that the PSD provisions of the CAA direct EPA to consider in this action. We

also note that the State and District approval processes for the Project are the subject of a Title VI complaint pending before EPA and DOE.

Further, issues concerning how nonattainment pollutants are addressed are extremely complex and must be considered in the context of the larger ongoing State/District planning process established under separate provisions of the CAA to address nonattainment pollutants, in addition to the specific state and local approval processes governing the facility. As mentioned in EPA's Environmental Justice Analysis, EPA is working with ARB and the District to ensure that there is a comprehensive plan with adequate controls for attaining the 15 $\mu\text{g}/\text{m}^3$ annual and 65 $\mu\text{g}/\text{m}^3$ 24-hour $\text{PM}_{2.5}$ ambient air quality standards. EPA's proposed action on ARB's 2008 plan for attaining the $\text{PM}_{2.5}$ standards in the San Joaquin Valley was published on November 30, 2010 (see 75 FR 74,518), and California has recently adopted revisions to the plan to address concerns identified by EPA and require additional reductions of air pollutants that adversely affect public health. EPA expects to re-propose action on the plan seeking additional public comment in the near future, before taking final action on the plan by September 30, 2011. EPA will also be working closely with both agencies as they develop a plan to meet the 35 $\mu\text{g}/\text{m}^3$ 24-hour standard, which the State must submit to EPA by December 2012, following reasonable notice and public hearings. In addition, EPA is working with ARB and the District to ensure that there is a comprehensive plan with adequate controls for attaining the 1997 8-hour ozone air quality standard by the CAA's deadline of 2024. To that end, later this year, EPA intends to propose action on ARB's 2007 plan for attaining the 1997 8-hour ozone NAAQS in the San Joaquin Valley and to request public comment before taking final action on that plan by December 15, 2011. We note that both the 2008 $\text{PM}_{2.5}$ plan and the 2007 ozone plan were subject to State/local public participation procedures and public hearings prior to adoption and submittal to EPA.

The provisions in the CAA and EPA regulations do not expressly contemplate that PSD permits will contain conditions addressing air pollutants for which an area is in nonattainment. EPA interprets the Act and court precedents to establish that emissions of nonattainment pollutants (and their precursors) from the Project should be directly addressed in the nonattainment New Source Review permits that are issued in this instance by the District. Nevertheless, EPA has considered in the context of our Environmental Justice Analysis for this permit the nonattainment conditions in the local area and strategies in place to achieve attainment with the $\text{PM}_{2.5}$ and ozone NAAQS in the San Joaquin Valley. Given the larger context in which the commenters' concerns regarding nonattainment pollutants has been raised, EPA's judgment is that it is not appropriate to address these issues further in the context of this PSD permitting action.

With respect to the comment that EPA should conduct a further analysis of impacts associated with PM_{10} emissions in the context of EPA's Environmental Justice Analysis based on new available health data concerning PM_{10} and the CASAC review, EPA disagrees that further analysis of PM_{10} impacts is necessary in this case. As discussed in detail above in response to comment 23 of Section II.B.1, in conducting an environmental justice analysis for a PSD permit decision, it is appropriate for the Agency to look at compliance with the currently applicable NAAQS for pollutants regulated under the permit

to determine whether there may be adverse impacts associated with exposure to those pollutants.

EPA does not agree with suggestion that the EAB decision in *Shell II* supports further analysis concerning PM₁₀ impacts in this case. In the *Shell II* case, the EAB determined that additional analysis of impacts associated with short-term NO_x emissions was warranted as part of the Agency's environmental justice analysis for a PSD permit where EPA had issued a final rule establishing a new 1-hour NO₂ standard based on a final determination that the existing annual NO₂ standard alone was not sufficiently protective of public health, even though the 1-hour standard was not yet effective and therefore was not directly applicable to the permit at issue.¹⁷ In contrast, in this case, EPA is still in the midst of conducting our NAAQS review process for PM₁₀, and the Administrator has not yet issued a final decision on whether revisions to the PM₁₀ NAAQS are appropriate under CAA section 109, or even proposed any such decision regarding the currently applicable PM₁₀ NAAQS. While EPA acknowledges that the CASAC has recommended revisions to the existing PM₁₀ NAAQS, the Agency has neither proposed a decision nor made a final decision on the issue. In order to determine whether revisions to the currently applicable PM₁₀ NAAQS are appropriate under CAA section 109 to ensure the protection of public health, including the health of vulnerable subpopulations, EPA must follow our statutorily mandated and well-established NAAQS rulemaking process. EPA does not believe that it would be reasonable or appropriate to prejudge the outcome of EPA's standard-setting process in the context of this individual PSD permit decision by proceeding upon the premise that the currently applicable standards are not adequately protective. Until this ongoing process is completed, EPA believes that in this case consideration of compliance with the currently applicable NAAQS for PM₁₀ provides an appropriate benchmark for determining whether PM₁₀ emissions from the Project may have adverse impacts in the context of our Environmental Justice Analysis.

30. **Comment:** The commenters state that what they characterize as EPA's assumptions in the EJ analysis regarding reduced NO₂ concentrations due to recent State and federal mobile source engine and fuel standards contradict recent studies. In particular, the commenters cite to a traffic study prepared by Kings County in 2009, which found significant traffic increases due to growth in the region. The commenters assert that this study and an addendum to it are contrary to EPA's assumption that NO₂ concentrations will continue to decrease due to new fuel and truck standards. The commenters argue that EPA should address the likely increase in mobile vehicle traffic along the I-5 corridor.

Response: EPA believes that our statement in the Environmental Justice Analysis indicating that EPA anticipates that NO_x, including NO₂ concentrations, will continue to decrease as a result of State and federal mobile source engine and fuel standards already in effect and being phased in as new vehicles replace older ones is accurate based on available data. The estimated 60% reduction in truck emissions described in EPA's analysis took into account the cumulative growth in the area and the associated traffic increases discussed in the study cited by the commenters. In the study, the "significant traffic increase from

¹⁷ The facility in *Shell II* was subject to NO₂ NAAQS review as part of the Outer Continental Shelf/PSD permitting process as it was located in an area designated attainment/unclassifiable for NO₂.

significant growth in the region" is the general anticipated growth in the County and overall region rather than previously unanticipated growth from specific projects. (Recirculated Portions of the Draft Subsequent EIS, KHF B-18/B-20, p. 3.11-10). This general growth is already incorporated into ARB's projected inventories from which EPA drew the estimated 60% reduction in emissions from trucks in Kings County by 2020. In other words, the 60% reduction was calculated after taking the growth noted in the study into account.

We also note that mobile sources account by far for the majority of NO_x emissions in Kings County. Emissions inventory data from ARB indicate that mobile source emissions in 2010 resulted in 25.2 tons per day of NO_x as compared with 2.2 tons per day for all stationary sources combined (the total inventory for 2010, including area sources, was 27.8 tons per day). In comparison, emissions of NO_x from the Project are limited to 0.395 tons per day. The emissions inventory data for 2020 projects emissions from mobile sources at 14.7 tons per day as compared with all stationary sources combined at 2.3 tons per day (with a total inventory of 17.3 tons per day).

31. **Comment:** Some commenters state that they support the placement of NO₂ monitors near the Project site but they assert that a proposal to place monitors and gather additional data on local NO_x emissions does not fulfill EPA's mandate to determine potential adverse impacts of the Project on minority communities before approving a PSD permit for the facility.

Another commenter states that given its proximity to I-5, it is doubtful whether an ambient monitor in the vicinity of the Project would prove useful for measuring the Project's impacts. The commenter notes that near-roadway concentrations have been measured at approximately 30% to 100% higher than those measured away from roads; given the substantial NO₂ levels attributable to I-5, the commenter states that it seems unlikely the proposed monitor would be helpful in evaluating the Project's comparatively small NO₂ impacts.

Response: EPA appreciates the commenters' input supporting our plans to place an NO₂ monitor in the vicinity of the Project. In our Environmental Justice Analysis, we noted that in light of the existing conditions in the local communities where this source proposes to construct, EPA intends to place an ambient NO₂ monitor in an appropriate location in the vicinity of the proposed source to gather more information about the local NO₂ concentrations, using the discretion provided to EPA Regional Administrators in EPA's recent NO₂ monitoring rule, to site monitors in areas with minority and low income populations. EPA noted that this monitor, along with other NO₂ monitors that exist or may be sited in the District, will be used by ARB, the District and EPA to determine whether air quality in the region meets or exceeds the NAAQS for NO₂, and will inform governmental plans to address any identified concerns. Any such plans would consider all contributing sources in the air shed, including the Avenal facility, in the effort to address any identified nonattainment challenges.

As discussed in the response to comment 28 in Section II.B.1, above, EPA agrees that near-roadway concentrations of NO₂ may be considerably higher than those measured away

from roads, and will give due consideration to this factor in determining the appropriate placement of the NO₂ monitor in the area.

EPA agrees with the commenter that an ambient NO₂ monitor in the vicinity of the Project will not necessarily identify Project-specific impacts, for a number of reasons, including that provided by the commenter. However, EPA believes that placement of an NO₂ monitor in the area would prove useful in providing information about NO₂ concentrations in the area. As noted above in the response to comment 30 in Section II.B.1, NO_x emissions in Kings County are overwhelmingly from mobile sources. Having additional NO₂ monitoring data from this area will help to ensure that any additional measures necessary to reduce NO_x emissions and improve air quality and public health are put in place.

In addition to discussing the ambient NO₂ monitor that EPA would place in the area using the discretion provided to EPA Regional Administrators in EPA's recent NO₂ monitoring rule, EPA's Environmental Justice Analysis also requested comment on whether EPA should consider establishing a condition in the PSD permit for the Project that would require the applicant to monitor NO₂ after construction of the Project under 40 CFR 52.21(m)(2), which provides that EPA can require a PSD permit applicant to conduct ambient monitoring "after construction of the stationary source ... as the Administrator determines is necessary to determine the effect emissions from the stationary source ... may have, or are having, on air quality in any area." None of the public comments we received suggested that we establish a condition in the PSD permit for the Project that would require monitoring under 40 CFR 52.21(m)(2).

After further consideration of this issue, we have determined that it is not necessary or appropriate in this case to require post-construction monitoring by the permit applicant for NO₂ to characterize air quality conditions in the area, in light of EPA's current plans to site an ambient NO₂ monitor in the area using our discretion under the recent NO₂ monitoring rule.

Last, with respect to the comment that EPA's proposal to site an NO₂ monitor in the area does not fulfill EPA's mandate to determine potential adverse impacts of the Project on minority communities before approving a PSD permit for the Project, EPA believes that our consideration of the best available data concerning NO₂ impacts of the Project, in addition to our plan to site an ambient NO₂ monitor in the area to gather additional data, are appropriate and consistent with the directive of Executive Order 12898 to identify and address impacts as appropriate, as discussed above in response to comments 23 and 24 of Section II.B.1.

32. **Comment:** One commenter states general support for EPA's environmental justice analysis. The commenter further states that there is sufficient evidence in the permit record to demonstrate that EPA has complied with Executive Order 12898 and that the Project will not create any disproportionately high and adverse human health or environmental impacts on any population, including minority and low income populations. The commenter specifically refers to the analyses completed by the CEC and the hourly NO₂ analysis completed by the District for the Avenal minor source permit as evidence which

supports this conclusion. The commenter also notes that the applicant evaluated the Project's impacts to potential environmental justice populations in its application for certification submitted to the Energy Commission. With regard to the CEC's environmental justice screening analysis, the commenter states it was conducted specifically to address environmental justice policies in federal Executive Order 12898 as well as additional California policies and the conclusion of the analysis was that the Project as mitigated will not have disproportionate impacts on low-income and minority populations. Where SO₂ emissions are concerned, the commenter further notes that the 1-hour SO₂ standard set a significance level below which no additional analysis is required since emissions below that standard do not subject any sensitive population to a significant health risk. The commenter additionally states that it is important to consider that the proposed location for this Project is in the industrial zoned area of the City of Avenal. The commenter states that the City carefully selected this area for industrial development for a variety of reasons.

With respect to GHG emissions, the commenter points to the informational proceeding the CEC conducted to evaluate how to address GHG impacts in the power plant siting process. The commenter says the CEC concluded that when assessing the impacts of an additional resource seeking to supply power to the integrated system, that resource must be considered in the context of the system as a whole. The commenter notes that it is important to keep in mind this Project is fired on natural gas and has the inherent reduction in GHG emissions based upon fuel choice when compared to power plants fired with coal.

Referencing the EAB's decision in *In re: Shell Gulf of Mexico, Inc. and Shell Offshore, Inc.*, the commenter asserts that EPA does not need further analysis to conclude that the Project will not have any adverse disproportionate impacts on EJ communities. The commenter notes what it says are important distinctions between the current case and the circumstances surrounding the permit in the Shell case. Notably, the commenter states that Region 10 relied on nothing more than the annual NO₂ standard for its EJ analysis while in this case there is an extensive EJ analysis in EPA's record. In addition, the commenter states that in the Shell case, Region 10 did not address the 1-hour NO₂ standard despite the fact that it had already been proposed at the time the Region issued the draft permit. In this case, the commenter points out that the District has analyzed Avenal's impacts in light of the new 1-hour NO₂ standard and concluded that the Project's emissions will not cause or contribute significantly to a violation of the State and National Ambient Air Quality Standards; the commenter also notes that the Supplemental SB devotes a great deal of analysis to the 1-hour NO₂ standard and to the EJ implications of that standard.

Response: EPA agrees with the commenter that the Environmental Justice Analysis conducted by EPA for the Project is consistent with the requirements of Executive Order 12898, and agrees with the commenter that our analysis considers short-term NO_x emissions consistent with the EAB's opinion in *Shell II*. EPA also agrees that because the potential emissions of the Project are below significance levels for SO₂, the Project is not expected to have a significant impact on the applicable SO₂ NAAQS and thereby would not subject any population, including a sensitive subpopulation, to an adverse impact.

As discussed above in response to comment 27 of Section II.B.1, EPA is not relying on the CEC's Environmental Justice Analysis, which was conducted in the context of the distinct State licensing and District permitting processes for the Project. Issues concerning that process and the State's analysis, including the manner in which those agencies addressed nonattainment pollutants, are not matters that the PSD provisions of the CAA direct EPA to consider in this action. EPA notes that the applicant's air quality analysis was also prepared in the context of the CEC licensing proceeding, and while it provides some relevant information, for the reasons stated above, EPA is not relying on the applicant's analysis here.

With respect to the commenters' view that the District's 1-hour NO₂ analysis prepared in the context of the Avenal minor source permit demonstrates that the Project will not create any disproportionately high and adverse human health or environmental impacts on any population, including minority and low income populations, please see response 24 of Section II.B.1.

Comments on Other Issues

33. **Comment:** One commenter stated that CAA section 165(a)(3) provides that a PSD permit may not be issued unless the facility proponent “*demonstrates...that emissions from the construction or operation of such facility will not cause, or contribute to, air pollution in excess of any...national ambient air quality standard in any air quality control region...*” The commenter stated that the proposed Avenal Project will result in PM_{2.5} and NO_x emissions above the significance thresholds at 40 CFR 52.21(b)(23)(i) and that the proposed permit and air quality analysis does not analyze the impact the Project will have on ambient concentrations of ozone or PM_{2.5}. The commenter discusses at length a number of issues associated with what the commenter characterizes as EPA's reliance on the District's nonattainment NSR program to satisfy the requirements of CAA section 165(a)(3).

Response: Please see the response to comments 8, 11, 12 and 17 in section II.A.1 regarding the distinction between the requirements applicable to this PSD application for pollutants other than ozone and PM_{2.5}, and the requirements that apply under the NNSR program for ozone and PM_{2.5}.

34. **Comment:** One commenter stated that according to CAA sections 165(a)(2) and 169(3), a permitting decision should consider “the air quality impact of [the] source, alternatives thereto and other appropriate considerations” in addition to consideration in the BACT analysis of alternatives based on energy, environmental and economic impacts. The commenter notes that Avenal has applied for and received a permit from the District that would limit emissions so as to avoid the necessity for a major source PSD permit. Accordingly, the commenter states EPA cannot claim that we fully complied with CAA sections 160(1), 165(a)(2) and 169(3) when we have failed to consider this alternative, which would lower total emissions. The commenter asserts that EPA should use our authority to consider environmental justice impacts and our authority to protect public

health and welfare as a basis for rejecting Avenal's PSD permit application since there is a demonstrated alternative that will lower emissions from the Project.

Response: The proposed permit and supporting documentation describe in detail all aspects of the proposed plant, its design and its control equipment, its costs and its environmental impacts, the amount of power it will generate, and many other features. This comment, on the other hand, does little more than identify one potential alternative in a few words, and provides only the very general argument that the alternative would "lower emissions" as compared with the proposed Project. It is our understanding that the Project for which the applicant has sought a minor source permit from the District¹⁸ is essentially the same as the Project for which the applicant is seeking a major source PSD permit from EPA, except that the minor source permit includes annual emission limits for NO_x and CO that would have the potential to result in some additional limitation on annual operations of the facility to ensure that the major source thresholds are not exceeded. While the annual emissions of the facility may be lower as a result of fewer hours of operation and/or a reduction in the average load factor on an annual basis, we note, that the equipment emitting NO_x from the minor source project would have the same permitted hourly emission rates as the major source project subject to PSD review.

As the permitting authority, EPA's obligation in responding to comments such as this, which suggest alternatives to the proposed Project, is limited to addressing whatever information is presented. EPA is not required to develop information beyond what the comments present. As the EAB stated in the *Prairie State* case --

[T]he PSD permit issuer . . . is not required to perform an independent analysis of alternatives. . . . [I]n the PSD context the extent of the permitting authority's consideration and analysis of alternatives need be no broader than the analysis supplied in public comments. [Internal quotation marks and citations deleted.] This conclusion flows naturally from our conclusion that Congress did not require the PSD permit issuer to undertake an independent investigation of alternatives. Indeed, more generally, the permitting regulations do not require the permit issuer's response to public comments "to be of the same length or level of detail as the comment." *In re NE Hub Partners*, 7 E.A.D. 561, 583 (EAB 1998). Instead, "[t]he response to comments document must demonstrate that all significant comments were considered." *Id.*; see also 40 C.F.R. § 124.17(a)(2).

In re Prairie State Generating Company (PSD Appeal #05-05, August 24, 2006), slip op. at 39-40 (*Prairie State*). The EAB went on to explain that administrative imperatives are a key reason why the permitting authority is not required to undertake an independent evaluation of alternatives:

These limits on the permit issuer's obligation to consider alternatives are particularly important where . . . a rigorous and robust analysis would be time-

¹⁸ We also note that while the District has issued a minor source permit for the Avenal minor source project, the applicant would need, and still has not obtained, a license amendment from the CEC to authorize the construction of the minor source project.

consuming and burdensome for the permit issuer. In this context, the permit issuer must be granted considerable latitude in exercising its discretion to determine how best to apply scarce administrative resources.

Id. at 43.

In the present case, the commenter has merely identified the minor source project as a potential alternative in its comments, but other than noting the different annual emission limits between the two projects, has provided no analysis or additional information to support the argument that EPA should deny the PSD permit application for the Project on the basis that the minor source project is a preferable alternative. EPA is not required to conduct further analysis of this “alternative,” as the EAB has held. We note that the major source project meets all applicable PSD requirements, and also note that the minor and major source projects would have the same permitted maximum 1-hour emission rates for NO_x. EPA believes that the limited information provided by the commenter does not demonstrate that the minor source project is a preferable demonstrated alternative to the major source project and therefore EPA does not agree with the commenter that we should deny the PSD permit for the Project on this basis.

35. **Comment:** Multiple commenters have noted that EPA has repeatedly established new or revised NAAQS without issuing necessary guidance and implementation rules in a timely manner and one commenter states that this practice creates unnecessary confusion for permitting authorities. The commenter requested that EPA commit to issuing all guidance for a new or revised NAAQS at the time the NAAQS is published and the commenter stated EPA should involve state and local permitting authorities in the standard setting and rulemaking processes as co-regulators. Another commenter states that guidance is not a substitute for rules; this commenter says EPA’s use of guidance denies states and other affected entities from the opportunity to provide input on the effective implementation of CAA requirements and that guidance should only be used to further explain or clarify what the rules already require. The commenter states that EPA has repeatedly required sources to comply with new or revised NAAQS without providing timely guidance on how to do so, and that this practice creates unnecessary confusion for permitting authorities.

Response: EPA recognizes that challenges have resulted in NSR permitting programs when EPA was unable to complete certain implementation rules and guidance at the same time a NAAQS became effective. EPA is endeavoring to better coordinate the promulgation of a NAAQS and the timing of our implementation rules and guidance to reduce these challenges.

36. **Comment:** One commenter expressed support for the proposed Project because it will generate income for the city and jobs for the community. This commenter believes that pollution from the San Francisco and Los Angeles areas create more health problems than the proposed plant will.

Response: EPA acknowledges the commenter’s support for the Project.

37. **Comment:** EPA received several comments by email from local residents who expressed opposition to the proposed Project. Some stated they opposed the Project because of EPA's proposal to grandfather it when the area already has high cases of asthma and the San Joaquin Valley has multiple cities that rank among the top 10 with the worst air quality. Given this, the commenters state that the highest and newest standards must be used to keep local residents healthy.

Another commenter stated his belief that no power plant is clean, and that a proposal to build a power plant without any type of research concerning the effects such a project will have on the surrounding ecosystem and the people is irresponsible and irrational.

Other commenters stated that new standards have been set to better accommodate findings and new understanding of the environment. The commenters also stated that the government must ensure businesses help the environment rather than hurt it, and that regardless of whatever kick-backs or threats the Avenal power plant group is issuing, EPA must live up to our moral standards and stand up for what is best for the people and the earth. One of these commenters stated that it is necessary to update all plants to the most current rules and regulations, and that we should ensure the longevity of not just the power plant but also the people around it.

One commenter asked why the Announcement of Public Hearing initially refers to NO_x and then later refers only to NO₂. The commenter also questioned how EPA's grandfathering proposal could be justified since we know air in Avenal sometimes violates NAAQS for NO_x, and the Project will increase NO_x in Avenal. This commenter submitted a separate comment asking EPA not to allow the Project to add NO_x to the San Joaquin Valley because environmental justice and protection of health in disadvantaged communities is a priority of ours, and because the commenter says the area might be in extreme nonattainment for ozone and PM_{2.5}. The commenter stated that many citizens in the surrounding area work outdoors and must breathe the polluted air and that it would be better to increase the expenses of the plant than to ask local residents to bear the increased burden associated with polluted air.

Response: Regarding the commenters' statements that EPA should deny the permit or apply the most stringent standards because the San Joaquin Valley has multiple cities with the worst air quality or is nonattainment for certain pollutants, we note that the permitting requirements under the CAA are implemented on a pollutant-specific basis, depending on whether the area in which the facility is located meets applicable air quality standards. The PSD permit being issued by EPA applies to pollutants for which the Project location is in attainment with (or is unclassifiable for) the NAAQS. At the same time, a separate permitting process called Nonattainment NSR (NNSR) applies to pollutants in an area that is designated "nonattainment" for the particular national air quality standard. The NNSR permitting program contains more stringent requirements to account for the less healthful air quality conditions. Because these permitting programs are implemented on a pollutant-specific basis, it is not uncommon for a facility to require both a PSD permit and a NNSR permit. See our responses to comments 8, 11, 12 and 17 in Section II.A.1 of this document

for a discussion about why nonattainment pollutants are not regulated under the PSD permitting process. The fact that a source is located in a nonattainment area for some pollutants and requires a NNSR permit is not an adequate basis in itself for EPA to deny a PSD permit or alter the requirements that must be satisfied in order to obtain a PSD permit. With respect to one commenter's statement about the lack of analysis regarding the effects of the plant on the surrounding ecosystem and community, we further note that the PSD permit for the Project includes a number of such analyses including a control technology analysis; an ambient air quality impacts analysis; an analysis of impacts on soils, vegetation and visibility; and an analysis to determine whether the Project will adversely affect visibility related values in certain areas called Class I areas.

With respect to the comments that EPA must ensure that businesses help the environment rather than hurt it, and that EPA must live up to our moral standards and stand up for what is best for the people and the earth, we note that the conditions in the permit are based on the use of BACT to limit emissions of CO, NO_x, PM and PM₁₀ to the greatest extent feasible. The available information indicates that with this technology installed, the Project will have a relatively minor effect on air quality. The Project's impacts are well below (in all cases, less than 6 percent of) the applicable NAAQS for the pollutants regulated under the PSD permit. We also note that one of the fundamental purposes of the PSD permitting program is to ensure that economic growth occurs in harmony with our clean air resources. One of the ways the PSD program accomplishes this goal is to require that new and modified sources demonstrate that their emissions will not adversely affect an area's compliance with health-based air quality standards. Thus, the PSD program inherently ensures that sources will not adversely affect human health or the environment, as desired by the commenter. Furthermore, considering the environmental conditions of greatest significance in this region and the range of actions EPA and State and local government agencies are currently taking to reduce the risks these conditions pose to health and welfare in these communities, EPA's judgment is that, despite some uncertainties and limitations in available data, the emissions from this source are unlikely to add significant environmental harm to the local communities.

Regarding the commenter's question about references in EPA's public notice to NO_x and NO₂, the commenter is correct that our notice uses both terms. NO₂ is one of multiple oxides of nitrogen that are encompassed by the term "NO_x." Where the term "NO_x" was used in EPA's public notice, we were referring to the fact that the control technology employed at the Project will reduce emissions of all oxides of nitrogen, including NO₂. Later in the document where we referenced NO₂, we were talking about a proposed action pertaining specifically to NO₂ and not the other NO_x constituents. We should also clarify that this commenter's statement regarding NO_x violations in or around the city of Avenal is factually incorrect. First, there is no standard for NO_x. There is an annual average standard for NO₂ for which the Project area is not designated nonattainment and for which there is no violation at any monitoring site anywhere in California. There is also a 1-hour average standard for NO₂ for which the Project area has not yet been designated and for which there is no violation at any monitoring site anywhere in California. We also note that while we regulate NO_x as a precursor to ozone, the Project area is nonattainment for ozone and the applicable permitting requirements are addressed through the nonattainment NSR program.

2. Comments Received at EPA's April 12, 2011 Public Hearing

1. **Comment:** The commenter expressed support for the Project, stating that we need more power and that the proposed Project should be better than nuclear power. This commenter also stated that the Project would provide jobs and be good for the California economy.

Response: We acknowledge the commenter's support for the Project.

2. **Comment:** Two commenters spoke at EPA's public hearing about EPA's environmental justice analysis. The first commenter stated that this analysis was nothing more than a summary of general population statistics and general information about the health impacts of pollution, and that it basically had zero information on the probable impacts of increasing the NO₂ pollution in the region around the Project. The commenter said the assessment acknowledges that EPA cannot reach any definitive conclusion about the specific human health or environmental impacts of short-duration NO_x emissions from the Project on minority and low-income populations but that was exactly what the EPA was tasked with doing.

The commenter says that a number of existing impacts on the communities of Kettleman City and Huron need to be addressed in the EJ analysis, including pollution from the nearby Highway 5, an unexplained birth defect cluster and expansion of a hazardous waste facility. The commenter stated that it does not make any sense to allow additional pollution in this area which is severely compromised by environmental pollution.

The commenter additionally stated that the new NO₂ standard was passed by the EPA to protect public health recognizing that the old standard failed to do so and that by the company's own calculation, the addition of the Avenal Power Plant will exceed the new standard.

The commenter noted that the EJ Assessment based its analysis on two other communities in the valley (Hanford and Visalia), which the commenter says are outside of the 25 kilometer radius EPA set for determining adverse impacts, and which the commenter says are not reflective of the conditions in Avenal and Kettleman, or Huron. The commenter says that the communities around the Project have minority populations of above 90 percent whereas Visalia and Hanford both are around 50 percent minority and are some of the more economically-successful communities in the area. Additionally, the commenter stated that neither Visalia nor Hanford sits adjacent to Interstate Highway 5, the largest interstate highway we have in California. In addition, with the expansion of the hazardous waste facility, the commenter asserts the area will see additional truck traffic and idling of trucks in Kettleman City. For these reasons, the commenter says the monitoring data in the EJ assessment are not reflective of conditions in the communities near the Project site. The commenter states that EPA must do a better job of determining what background levels of

pollution are felt by these communities. Further, the commenter said that even if EPA required the permit applicant to comply with air quality standards, they are still not sufficient to protect public health in this area given the other environmental burdens including the birth defects, high rates of asthma, contaminated drinking water, exposure to pesticides, the hazardous waste facility, the proximity to I-5 and Highway 41, and the area's nonattainment for both PM_{2.5} and ozone. The commenter concluded that this is the wrong place to site the Project.

The second commenter stated that EPA's proposal to approve the Avenal application without a demonstration that the source will not cause or contribute to a violation of the 1-hour NO₂ standard or SO₂ standard and to not require the source to meet the emissions limitation for GHG violates the CAA. The commenter stated the plain language of the Act defines the applicability of these requirements at the time construction commences prior to the issuance of the PSD permit and that neither the Act nor the regulations provide EPA with the authority to waive these requirements.

This commenter additionally stated EPA's stated grounds for grandfathering the Avenal Energy Project from these requirements are each fatally flawed. According to the commenter, the statement that the Project will satisfy the old requirements in no way provides a basis for exempting the Project from the current requirements. In addition, with regard to the timing of the permit, the commenter says the Supplemental SB fails to note that EPA could not have issued the permit prior to receiving the ESA analysis by the Fish and Wildlife Service, which was not concluded until August of 2010.

With regard to the modeling challenges EPA says were experienced, the commenter says that these same challenges must apply to all applicants and EPA cannot simply pick and choose who must comply and who is exempted from the requirements.

Regarding EPA's claim of equitable authority, the commenter says the case law from which this authority was derived is misapplied and inapplicable to the current situation.

The commenter argued that EPA's proposal creates a juxtaposition between two or more issues. Specifically, if the exemption creates a policy applicable to other permit applicants, then it violates the Administrative Procedure Act for failure to conform to the notice and comment rulemaking. On the other hand, if the exemption is only applicable to the Avenal Project, then it violates the Equal Protection Clause of the U.S. Constitution.

Finally, the commenter stated that EPA's attempts to remove authority from the Regional Administrator is unlawful because regulatory authority to issue PSD permits is specifically granted to Regional Administrators under 40 CFR Section 124 and to change this codified delegation requires formal notice and comment rule making under the Administrative Procedure Act.

Response: Regarding the commenters' concerns about environmental justice issues, including the content of our EJ analysis, existing impacts on the community, the possibility that the Project will exceed the 1-hour NO₂ standard, and various issues with monitoring

data used in the analysis, we refer to our responses to comments 23, 24, 26, 28 and 29 in Section II.B.1, above. Regarding the second commenter's concerns related to EPA's proposal to grandfather the Project from 1-hour NO₂ and SO₂ and GHG requirements, our responses to comments 1-10 in Section II.B.1 are applicable.

3. **Comment:**¹⁹ EPA received a number of additional comments at our April 12, 2011 public hearing expressing opposition to the Project and stating that EPA should not issue the permit. The reasons cited by the commenters include the following:
- People must comply with new laws when they are passed, and cannot choose which laws to comply with, so the applicant should also comply with the current law;
 - The San Joaquin Valley already has existing air quality problems including nonattainment for ozone and PM_{2.5}, and the pollution from the Project will be detrimental to the community;
 - EPA must take into account the best interests of the residents;
 - The Project is surrounded by communities of minorities, including farm workers, who do not have health insurance, who get paid minimum wage and who may not be able to afford medications or healthcare;
 - In addition to environmental injustice, this proposal represents economic injustice and environmental racism;
 - The power from the Project will not be for the community of Avenal but will be dispersed throughout the State. In addition, Avenal has a 10 MW solar farm and does not need the power plant;
 - The surrounding area including Kettleman City suffers from an unexplained high rate of birth defects and miscarriages;
 - The area already suffers from other environmental burdens including a large number of sources of pollution, proximity to I-5, potential exposure to pesticides, proximity to a hazardous waste dump, contaminated water and trash problems;
 - Some members of the community did not know about the Project and they have a right to know;
 - There have been no studies on the health of residents in Avenal;
 - EPA has never listened to residents in the local area; and
 - EPA is violating our own promise to uphold EJ.

Response: With regard to the comments about existing air quality and other environmental burdens in the area, our responses to comments 23 and 29 in Section II.B.1 are applicable. The response to comment 23 also addresses the notion that EJ concerns justify rejection of the PSD permit. With regard to comments about the need for the Project, our response to comment 7 in Section II.A.1 of this document is applicable.

Regarding the comment that some members of the community were not notified of the Project, we generally agree that interested residents should be given an opportunity to provide comments on EPA's proposal. That is why, for each PSD permit we propose, we carefully follow our regulations at 40 CFR Part 124, which set forth requirements for notifying the public of our actions. In this case, we not only met the requirements of Part

¹⁹ See footnote 11.

124 but we went substantially beyond those requirements. See our responses to comments 1, 2, 3, 20 and 24 in Section II.A.1 for information about additional efforts EPA made to provide additional public notice of our proposal.

Regarding the comment that there have been no studies on the health of residents in Avenal, we note that such studies are not among the requirements of the PSD program. We note that the permit ensures compliance with the NAAQS for the pollutants regulated under the permit. The NAAQS are health-based standards, designed to protect public health with an adequate margin of safety, including sensitive populations such as children, the elderly and asthmatics, as discussed in detail in response to comment 23 in Section II.B.1 above.

Finally, regarding the comments that the power from the Project will be dispersed throughout the State and that the city of Avenal already has a 10 MW solar plant and does not need the Project, please see response to comment 7 in Section II.A.1 above.

4. **Comment:** Two commenters stated the amount of security at the hearing was intimidating to the public.

Response: It is EPA's standard procedure to inform the local authorities when we hold an event in a given area; it is ultimately the decision of those authorities as to whether officers will be present at the event and, if so, how many. We regret that some people may have felt intimidated by the amount of security at the hearing but we believe the aspects of the hearing that we could control were conducive to public participation.

5. **Comment:** One commenter requested that EPA do a better job to make information available to the community about what is going on and when our public hearings occur.²⁰

Response: EPA appreciates this comment. While we note that, as discussed above in responses to comments 1, 2, 3, 20 and 24 in Section II.A.1, EPA went above and beyond the minimum requirements for providing the public with notice of our proposed action and an opportunity to comment, we continually look for ways to improve how we provide notice to the community concerning actions of local interest.

²⁰ Participants at the March 23, 2011 meeting held by Administrator Jackson and Regional Administrator Blumenfeld discussed in footnote 11 also requested a website the participants may refer to for updates about their demands.

III. Clarifications and Errata Corrections in Final Permit

The following is a list of clarifications and errata corrections for the *Avenal Energy Project (SJ 08-01) Prevention of Significant Deterioration Permit, Final Permit Conditions*. These corrections are in addition to those described above in this Response to Comments document.

1. COVER SHEET

The cover sheet titled “Prevention of Significant Deterioration Permit Issued Pursuant to the Requirements of 40 CFR § 52.21” has been added, and does not result in changes to the specific terms and conditions that were included in the proposed permit.

2. PROJECT DESCRIPTION

- We have added a brief description of the function of the natural gas-fired auxiliary boiler, which now reads as follows:

Additional equipment includes a natural gas-fired auxiliary boiler, which is used to provide steam for auxiliary purposes such as when the plant is off-line or during startup, equipped with an ultra low-NO_x burner, a natural gas-fired emergency generator ... an intercooler/aftercooler.

- We have refined the description of PM₁₀ to be more accurate; therefore, the last paragraph of this section now reads as follows:

The Facility is subject to the Prevention of Significant Deterioration (PSD) Program for emissions of Carbon Monoxide (CO), Nitrogen Dioxide (NO₂), Particulate Matter (PM), and Particulate Matter ~~under~~ of less than or equal to 10 micrometers (µm) in diameter (PM₁₀).

3. EQUIPMENT LIST, Condition X.C.1, and Condition X.F.1.d

- We have replaced, where applicable, the reference to “NO₂” with “NO_x”. Revisions have been made to the following sections of the permit:
 - In the Equipment List table, the fourth bullet for GEN1 and GEN2 now reads as follows:

Emissions of ~~NO₂~~ NO_x and CO controlled by Dry Low-NO_x (DLN) Combustors, Selective Catalytic Reduction (SCR), and an Oxidation Catalyst (Ox-Cat)
 - In the Equipment List table, the second bullet for D2 now reads as follows (along with revisions discussed in Response to Comment 37):

Emissions of ~~NO₂~~ NO_x and CO controlled by a ~~Non-Selective Catalytic Reduction (NSCR) system~~ post-combustion integrated SCR/oxidation catalyst system
 - In Condition X.C.1, Combustion Turbine Generator (CTG) Emission Limits, the excerpt below of the table of emission limits now reads as follows:

NO₂ <u>NO_x</u>	<ul style="list-style-type: none"> • 13.55 lb/hr • 1-hr average • 2.0 ppmvd @ 15% O₂ 	<ul style="list-style-type: none"> • 17.20 lb/hr • 1-hr average • 2.0 ppmvd @ 15% O₂
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- In Condition X.F.1.d, the first sentence of the condition now reads as follows:
The initial performance test conducted after initial startup shall use the test procedures for a “high NO₂ emission site,” as specified in San Diego Test Method 100, to measure ~~NO₂~~-NO_x emissions.

4. Condition II. PERMIT NOTIFICATION REQUIREMENTS

We have more accurately described the notification method; therefore, the first sentence now begins as follows:

Permittee shall notify EPA Region IX ~~in writing~~ by letter or by electronic mail of the:

5. Condition VI. TRANSFER OF OWNERSHIP

We have replaced the reference to facilities with “Facility.” The first sentence of this condition now reads as follows:

In the event of any changes in control or ownership of the ~~facilities~~ Facility to be constructed, this PSD Permit shall be binding on all subsequent owners and operators.

6. Condition X.D.1

We have revised this condition to describe more accurately the intent of the startup period definition. Therefore, Condition X.D.1. now reads as follows:

Startup is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit’s emission control system to reach full operations and demonstrate compliance with Conditions X.C ~~after startup has ceased.~~

7. Condition X.E.5

We have revised this condition to describe more accurately the intent of restrictions of the operations of Units D2 or D3. Therefore, Condition X.E.5 now reads as follows:

Units D2 or D3 shall not operate during ~~a~~ startup ~~hour~~ of GEN1 or GEN2, except when Units D2 or D3 are required for emergency operations.

8. Condition X.G.1.c.iv.

We have updated the particulate matter test requirements under this condition to reflect revisions to EPA Methods 201A and 202 that became effective on January 1, 2011. As a result of these revisions, OTM-027 no longer exists and we have therefore deleted the reference to OTM-027 from Condition X.G.1.c.iv. In addition, EPA’s revisions of Method 202 affected the three test procedures described in proposed permit Condition X.G.1.c.iv.a. through c. As a result, we have deleted those test methodology provisions. Condition X.G.1.c.iv now reads as follows:

- iv. EPA Methods 5 and 202, or Methods 201A and 202, for both PM and PM₁₀, in accordance with the test methods set forth in 40 CFR § 60.8, ~~and~~ 40 CFR Part 60 Appendix A, and 40 CFR Part 51 Appendix M. In lieu of Method 202, the Permittee

may use EPA Conditional Test Methods for particulate matter: CTM-039. ~~Or OTM-027. If Method 202 is used, the test methodology must include:~~

- ~~a. one hour nitrogen purge~~
- ~~b. the alternative procedure described in section 8.1 of Method 202 to neutralize the sulfuric acid~~
- ~~c. evaporation of the last 1 ml of the inorganic fraction by air drying following evaporation of the bulk of the 110mpinge water in a 105 degrees C oven as described in the first sentence of section 5.3.2.3 of Method 202.~~

=== END ===

Appendix A

Supplemental Evaluation of Best Available Control Technology

The Avenal Energy Project (Project) is required to use best available control technology (BACT) on the combustion turbine generators (CTGs)/heat recovery steam generators (HRSGs), the auxiliary boiler, and the air-cooled condenser (ACC) for regulated pollutants, in accordance with the requirements of the federal Prevention of Significant Deterioration (PSD) regulations. For sources subject to PSD, BACT is defined in 40 CFR 52.21(j) as:

“an emissions limitation...based on the maximum degree of reduction for each pollutant subject to regulation under the Clean Air Act 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...”

The regulated pollutants for which the federal PSD BACT requirement is applicable are nitrogen oxides (NO_x), carbon monoxide (CO), particulate matter (PM), and particulate matter with nominal aerodynamic diameter less than or equal to 10 microns (PM₁₀). The emission rates and control technologies determined to be BACT for this project are discussed in detail in the following sections. For the CTGs/HRSGs, separate determinations are provided for normal operation and startup/shutdown operation.

1 Steps in a Top-Down BACT Analysis

1.1 Step 1 – Identify All Possible Control Technologies

The first step in a top-down analysis is to identify, for the emissions unit and pollutant in question, all available control options. Available control options are those air pollution control technologies or techniques, including alternate basic equipment or processes, with a practical potential for application to the emissions unit in question. The control alternatives should include not only existing controls for the source category in question, but also, through technology transfer, controls applied to similar source categories and gas streams.

BACT must be at least as stringent as what has been achieved in practice (AIP) for a category or class of source. Additionally, USEPA guidelines require that a technology that is determined to be AIP for one category of source be considered for transfer to other source categories. There are two types of potentially transferable control technologies: (1) exhaust stream controls, and (2) process controls and modifications. For the first type, technology transfer must be considered between source categories that produce similar exhaust streams. For the second type, technology transfer must be considered between source categories with similar processes.

Candidate control options that do not meet basic project requirements (i.e., alternative basic designs that “redefine the source”) are eliminated at this step.

1.2 Step 2 – Eliminate Technologically Infeasible Options

To be considered, the candidate control option must be technologically feasible for the application being reviewed.

1.3 Step 3 – Rank Remaining Control Options by Control Effectiveness

All feasible options are ranked in the order of decreasing control effectiveness for the pollutant under consideration. In some cases, a given control technology may be listed more than once, representing different levels of control (e.g., the use of SCR for control of NO_x may be evaluated at 2 and 2.5 parts per million by volume, dry [ppmvd]). Any control option less stringent than what has been already achieved in practice for the category of source under review must also be eliminated at this step.

1.4 Step 4 – Evaluate Most Effective Control Technology Considering Environmental, Energy, and Cost Impacts

To be required as BACT, the candidate control option must be cost effective, considering energy, environmental, economic, and other costs. The most stringent control technology for control of one pollutant may have other undesirable environmental or economic impacts. The purpose of Step 4 is to either validate the suitability of the top control option or provide a clear justification as to why that option should not be selected as BACT.

Once all of the candidate control technologies have been ranked, and other impacts have been evaluated, the most stringent candidate control technology is deemed to be BACT, unless the other impacts are unacceptable.

1.5 Step 5 – Determine BACT/Present Conclusions

BACT is determined to be the most effective control technology subject to evaluation, and not rejected as infeasible or having unacceptable energy, environmental, or cost impacts.

2 BACT for the CTGs/HRSGs: Normal Operations

2.1 NO_x Emissions

2.1.1 Step 1 – Identify All Possible Control Technologies

The emissions unit for which BACT is being considered is a nominal 180 MW gas turbine operating in combined cycle with supplemental duct firing.

Potential control technologies were identified by searching the following sources for determinations pertaining to combustion gas turbines:

- South Coast Air Quality Management District (SCAQMD) BACT Guidelines;
- San Joaquin Valley Air Pollution Control District (SJVAPCD) BACT Clearinghouse;
- Bay Area Air Quality Management District (BAAQMD) BACT Guidelines;

- USEPA Reasonably Available Control Technology (RACT)/BACT/ Lowest Achievable Emission Rate (LAER) Clearinghouse;
- Other districts' and states' BACT Guidelines; and
- BACT/LAER requirements in New Source Review permits issued by District¹ or other air pollution control agency.

The following technologies for control of NO_x have been identified:

- A Selective Catalytic Reduction (SCR) system capable of continuously complying with a limit of 2.0 ppmvd @15% oxygen (O₂) (1-hour average).
- A SCONO_x system capable of continuously complying with a limit of 2.0 ppmvd @15% O₂ (1-hour average).
- Alternative Basic Equipment:
 - Renewable Energy Source (e.g. Solar, Wind, etc.)

It should be noted that the use of renewable energy in lieu of a combined-cycle gas turbine would “redefine the source.” Renewable energy facilities require significantly more land to construct, and need to be located in areas with very specific characteristics. Wind and solar facilities have power generation profiles that cannot match demand; conventional power plants are needed in order to follow demand. The capital costs for wind or solar facilities are substantially higher than for a comparable conventional facility, making financing of such a project significantly different. Nevertheless, these technologies are feasible, and the technical feasibility of renewable energy sources for this specific application will be considered in Step 2.

2.1.2 Step 2 – Eliminate Technologically Infeasible Options

2.1.2.1 Exhaust Stream Controls

The most recent NO_x BACT listings for combined-cycle combustion turbines in this size range are summarized in Table 1. The most stringent NO_x limit in these recent BACT determinations is a 2.0 ppm² limit averaged over a 1-hour averaging period, excluding startups and shutdowns. This level is achieved using DLN combustors and SCR. The La Paloma project was given the option of using SCONO_x instead of SCR, with a NO_x limit of 2.5 ppm; however, the La Paloma project was actually constructed, and is operating, with SCR.

SCONO_x is a NO_x reduction system produced by Goal Line Environmental Technologies. It is now distributed by EmeraChem as EMx. This system uses a single catalyst to oxidize both NO and CO, and then a regeneration system to convert the NO₂ to N₂ and water vapor. The system does not use ammonia as a reagent. The EMx process has been demonstrated in practice on much smaller gas turbines, including Redding Electric Utility’s (REU) Unit 5, a 43-MW Alstom GTX100 combined-cycle gas turbine. While the technology has never been demonstrated on a gas turbine the size of the 7FA, the technology is considered by the manufacturer to be scalable.

¹ Any Air Quality Management District or Air Pollution Control District in California.

² All turbine/HRSG exhaust emissions concentrations shown are by volume, dry corrected to 15% O₂.

TABLE 1 Recent NOx BACT Determinations for Combustion Turbines/HRSGs						
Facility	District/State	NOx Limit (ppmc ^a)	Averaging Period (hours)	Control Method Used	Date Permit Issued	Source
Gateway Generating Station	BAAQMD	2.0	1	DLN/SCR	July 2008 (proposed permit)	BAAQMD
Colusa Generating Station	EPA Region 9	2.0	1	DLN/SCR	May 2008	EPA AQIA
Russell City Energy Center	BAAQMD	2.0	1	DLN/SCR	June 2007	BAAQMD website
Blythe Energy LLC (Blythe II) ^b	MDAQMD	2.0	3	DLN/SCR	April 2007	PSD permit
San Joaquin Valley Energy Center	EPA Region 9	2.0	1	DLN/SCR	August 2006	PSD permit
Mountainview Power	SCAQMD	2.0	1	DLN/SCR	2004	PSD amendment
Magnolia Power Project	SCAQMD	2.0	3	DLN/SCR	February 2004	SCAQMD website
Vernon City Power & Light	SCAQMD	2.0	2	DLN/SCR	February 2004	SCAQMD website
PSO Southwestern Power Plant	Oklahoma	9.0	--	DLN	February 2007	EPA RBLC
Rocky Mountain Energy Center	Colorado	3.0	1	DLN/SCR	May 2006	EPA RBLC
Sierra Pacific Power Company	Nevada	2.0	3	DLN/SCR	August 2005	EPA RBLC
Wanapa Energy Center	Oregon	2.0	3	DLN/SCR	August 2005	EPA RBLC
Crescent City Power, LLC	Louisiana	3.0	Annual	DLN/SCR	June 2005	EPA RBLC
Berrien Energy, LLC	Michigan	2.5	24	DLN/SCR	April 2005	EPA RBLC
Turner Energy Center ^c	Oregon	2.0	1	DLN/SCR	January 2005	EPA RBLC
Notes:						
a. parts per million by volume, dry @ 15% O ₂						
b. Construction on hold.						
c. RBLC record indicates that project will not be built.						

The SCR system uses ammonia injection to reduce NO_x emissions. SCR systems have been widely used in combined-cycle gas turbine applications of all sizes, including the 7FA and the larger H-class. The SCR process involves the injection of ammonia into the flue gas stream via an ammonia injection grid upstream of a reducing catalyst. The ammonia reacts with the NO_x in the exhaust stream to form N₂ and water vapor. The catalyst does not require regeneration, but must be replaced periodically – approximately every 3 years.

Either SCR or SCONO_x technology, in combination with dry low-NO_x (DLN) combustion, is capable of achieving a NO_x emission level of 2.0 ppmvd@ 15% O₂. Neither has been demonstrated to consistently achieve lower emission levels in large turbines.

2.1.2.2 Alternative Basic Technology

Solar Thermal

Solar thermal facilities collect solar radiation, then heat a working fluid (water or a hydrocarbon liquid) to create steam to power a steam turbine generator. All solar thermal facilities require considerable land for the collection field and are best located in areas of high solar incident energy per unit area. In addition, power is only generated while the sun shines, so the units do not supply power at night or on cloudy days. The Avenal Project parcel is not sufficiently large to be feasible for a commercial solar power plant. Furthermore, a solar power plant would not meet the project's objective of providing firming capability for intermittent renewable resources such as solar and wind energy projects. For these reasons, a solar power plant is rejected as BACT for this application.

Wind

Wind power facilities use a wind-driven rotor to turn a generator to generate electricity. Only limited sites in California have an adequate wind resource to allow for the economic construction and operation of large-scale wind generators. Most of these sites have already been developed or are remote from electric load centers and have little or no transmission access. Even in prime locations the wind does not blow continuously, so power is not always available. Due to the lack of availability of good sites, limited dependability, and relatively high cost, this technology is not feasible for this project. Furthermore, a wind power plant would not meet the project's objective of providing firming capability for intermittent renewable resources such as solar and wind energy projects. For these reasons, a wind power plant is rejected as BACT for this application.

Other alternatives

A number of other alternative generating systems were described in the Alternatives Analysis Section (Section 5.0) of the Application for Certification. That discussion is included as Attachment 1. These additional analyses failed to identify an alternative generating technology that was technically feasible for this site and that would meet the project's objectives.

2.1.3 Step 3 – Rank Remaining Control Technologies by Control Effectiveness

Both SCR and SCONO_x technologies, each in combination with dry low-NO_x (DLN) combustion, are capable of achieving a NO_x emission level of 2.0 ppmvd @ 15% O₂. They are therefore ranked together.

2.1.4 Step 4 – Evaluate the Most Effective Control Technology Considering Environmental, Energy, and Cost Impacts

The use of SCR will result in ammonia emissions due to an allowable ammonia slip limit of 10 ppmvd @ 15% O₂. A health risk screening analysis of the proposed project using air dispersion modeling showed the acute health hazard index and a chronic health hazard index each to be much less than 1, based on an ammonia slip limit of 10 ppmv @ 15% O₂. In accordance with the District's Integrated Air Toxics program and currently accepted practice, a hazard index below 1.0 is not considered significant. Therefore, the toxic impact of the ammonia slip resulting from the use of SCR is deemed to be not significant, and is not a sufficient reason to eliminate SCR as a control alternative.

The ammonia emissions resulting from the use of SCR may have another environmental impact through the potential to form secondary particulate matter such as ammonium nitrate. Because of the complex nature of the chemical reactions and dynamics involved in the formation of secondary particulates, it is difficult to estimate the amount of secondary particulate matter that would be formed from the emission of a given amount of ammonia. However, the SJVAPCD has stated that because of high background levels of ammonia, the formation of ammonium nitrate and ammonium sulfate in the San Joaquin Valley air basin is limited by the amount of nitrogen and sulfur oxides available for the formation of nitrates and sulfates, and not driven by the amount of ammonia in the atmosphere. Therefore, ammonia emissions from the proposed SCR system are not expected to contribute significantly to the formation of secondary particulate matter within the San Joaquin Valley air basin.

A second potential environmental impact that may result from the use of SCR involves the storage and transport of aqueous or anhydrous ammonia.³ Although ammonia is toxic if swallowed or inhaled and can irritate or burn the skin, eyes, nose, or throat, it is a commonly used material that is typically handled safely and without incident, especially in an agricultural region like the San Joaquin Valley. The project operator will be required to develop and maintain a Risk Management Plan (RMP) and to implement a Risk Management Program to prevent accidental releases of ammonia. The RMP provides information on the hazards of the substance handled at the facility and the programs in place to prevent and respond to accidental releases. The accident prevention and emergency response requirements reflect existing safety regulations and proven industry safety codes and standards. Thus, the potential environmental impact due to aqueous ammonia use at the Project is minimal and does not justify the elimination of SCR as a control alternative.

Regeneration of the EM_x catalyst (SCONO_x) is accomplished by passing hydrogen gas over an isolated catalyst module. The hydrogen gas is generated by reforming steam, so additional steam would be required beyond that for which the project is designed. This

³ The Project proposes to use the less concentrated, safer aqueous form of ammonia.

may require an increase in the size of the auxiliary boiler, and would result in an increase in expected boiler operation and emissions.

2.1.4.1 "Achieved in Practice" Criterion

While there are no formal "achieved in practice" criteria in the SJVAPCD, the SCAQMD has established formal criteria for determining when emission control technologies should be considered achieved in practice (AIP) for the purposes of BACT determinations. The criteria include the elements outlined below.

- **Commercial Availability:** At least one vendor must offer this equipment for regular or full-scale operation in the United States. A performance warranty or guarantee must be available with the purchase of the control technology, as well as parts and service.
- **Reliability:** All control technologies must have been installed and operated reliably for at least six months. If the operator did not require the basic equipment to operate daily, then the equipment must have at least 183 cumulative days of operation. During this period, the basic equipment must have operated (1) at a minimum of 50% design capacity; or (2) in a manner that is typical of the equipment in order to provide an expectation of continued reliability of the control technology.
- **Effectiveness:** The control technology must be verified to perform effectively over the range of operation expected for that type of equipment. If the control technology will be allowed to operate at lesser effectiveness during certain modes of operation, then those modes of operation must be identified. The verification shall be based on a performance test or tests, when possible, or other performance data.

Each of these criteria is discussed separately below for SCR and for EMx.

SCR Technology - SCR has been achieved in practice at numerous combustion turbine installations throughout the world. There are several utility-scale combined-cycle projects that limit NO_x emissions to 2.0 ppm, including the Mountainview Power Plant in San Bernardino County; the Inland Empire Energy Center in Riverside County; and the Cosumnes Power Plant in Sacramento County. An evaluation of the proposed AIP criteria as applied to the achievement of extremely low NO_x levels (2.0 ppm and lower) using SCR technology is summarized below.

- **Commercial Availability:** SCR technology is available with standard commercial guarantees for NO_x levels at least as low as 2 ppm. Consequently, this criterion is satisfied.
- **Reliability:** SCR technology has been shown to be capable of achieving NO_x levels consistent with a 2.0 ppm permit limit during extended, routine operations at several commercial power plants. There are no reported adverse effects of operation of the SCR system at these levels on overall plant operation or reliability.
- **Effectiveness:** SCR technology has been demonstrated to achieve NO_x levels of 2.0 ppm and less. Short-term excursions have resulted in NO_x concentrations above the permitted level of 2.0 ppm; however, these excursions have not been associated with diminished effectiveness of the SCR system. Rather, these excursions have

been associated with SCR inlet NO_x levels in excess of those for which the SCR system was designed.

- Conclusion: SCR technology capable of achieving NO_x levels of 2.0 ppm is considered to be achieved in practice. The permit limits for the proposed project CTG/HRSG include a NO_x limit of 2.0 ppm. This proposed limit is consistent with the available data.

EMx Technology – EMx has been demonstrated in service in five applications: the Sunlaw Federal cogeneration plant, the Wyeth BioPharma cogeneration facility, the Montefiore Medical Center cogeneration facility, the University of California San Diego facility, and the City of Redding Power Plant. The combustion turbines at these facilities are much smaller than for the proposed project turbine. The largest installation of the EMx system is at the Redding Power Plant. The Redding Power Plant currently consists of a single combined-cycle 43 MWe Alstom GTX100 combustion turbine with a permitted NO_x emission rate of 2.5 ppm. There is a second 43 MWe unit under construction at the Redding Power Plant, planned to be equipped with EMx, but that unit has not begun operation.

A review of NO_x continuous emissions monitoring (CEM) data obtained from the EPA's Acid Rain program website⁴ indicates a mean NO_x level for the Redding Unit 5 of less than 1.0 ppm during the period from 2002 to 2007. After the first year of operation, Unit 5 has experienced only a few hours of non-compliance per year (fewer than 0.1% of the annual operating hours exceed the NO_x permit limit of 2.5 ppm). At the lower NO_x limit of 2.0 ppm that will be required for the proposed project, the Redding CEM data show that the number of non-compliant hours increases to approximately 0.2% of the annual operating hours. The experience at the City of Redding Plant indicates the ability of the EMx system to control NO_x emissions to levels of 2.0 ppm and less. These data do not indicate the ability to consistently achieve NO_x levels below 2.0 ppm, notwithstanding the lower annual average emission rate. This is due to the cyclical nature of EMx NO_x levels in between plant shutdowns and schedule catalyst cleanings.

Based on this information, the following paragraphs evaluate the proposed AIP criteria as applied to the achievement of extremely low NO_x levels (2.0 ppm) using EMx technology.

- Commercial availability: While a proposal has not been sought, presumably EmeraChem Power would offer standard commercial guarantees for the proposed project. Consequently, this criterion is expected to be satisfied.
- Reliability: As discussed above, based on a review of the CEM data for Redding Unit 5 the EMx system complied with the 2.0 ppm NO_x permit limit but with a few hours each year of excess emissions (approximately 3% of annual operating hours following the first year, and approximately 2% following the second year, dropping to approximately 0.1% after 4 years). This level of performance was also associated with some significant operating and reliability issues. According to a June 23, 2005 letter from the Shasta County Air Quality Management District,⁵ repairs to the EMx

⁴ Available at <http://camddataandmaps.epa.gov/gdm/index.cfm?fuseaction=prepackaged.results>

⁵ Letter dated June 23, 2005, from Shasta County Air Quality Management District to the Redding Electric Utility regarding Unit 5 demonstration of compliance with its NO_x permit limit.

system began shortly after initial startup and have continued during several years of operation. Redesign of the EMx system was required due to a problem with the reformer reactor combustion production unit that led to sulfur poisoning of the catalyst, despite the sole use of low-sulfur, pipeline quality natural gas as the turbine fuel. In addition, the EMx system catalyst washings had to occur at a frequency several times higher than anticipated during the first three years of operation, which resulted in substantial downtime of the combustion turbine. Since the REU installation is the most representative of all of the EMx-equipped combustion turbine facilities for comparison to the proposed Project, the problems encountered at REU bring into question the reliability of the EMx system for the proposed project.

- **Effectiveness:** The EMx system at the REU power plant has recently been able to demonstrate compliance with a NOx level of 2.0 ppm. However, the permit limit for the REU unit remains at 2.5 ppm, and there are no EMx-equipped facilities of a size similar to that of the proposed project. Consequently, due to the lack of actual performance data, there is some question regarding the effectiveness of the EMx systems on large combustion turbine projects.
- **Conclusion:** EMx systems are capable of achieving NOx levels of 2.0 ppm and less. However, the operating history at the Redding Power Plant does not support a conclusion that this technology is achieved in practice based on SCAQMD guidelines, due mainly to reliability issues.

2.1.4.2 Summary of Achieved in Practice Evaluation

SCR's capability to consistently achieve 2.0 ppmvd NOx (1-hour average) in large turbines has been demonstrated by numerous installations. SCONOX's ability to consistently achieve 2.0 ppmvd in large turbines has not been demonstrated. An emission level of 2.0 ppm NOx has therefore been achieved in practice, and any BACT determination must be at least as stringent as that.

2.1.4.3 Technologically Feasible/Cost Effective Criterion

No candidate technology with lower emission levels than those achieved in practice has been identified.

2.1.5 Determine BACT/Present Conclusions

BACT must be at least as stringent as the most stringent level achieved in practice, federal NSPS, or district prohibitory rule. Based upon the results of this analysis, the NOx BACT determination of 2.0 ppmvd @ 15% O₂ on a 1-hour average basis made for recently permitted combined cycle turbine projects in SJVAPCD and elsewhere reflects the most stringent NOx emission limit that has been achieved in practice. No more stringent level has been suggested as being technologically feasible. Therefore, BACT for NOx for this application is any technology capable of achieving 2.0 ppmvd @ 15% O₂ on a 1-hour average basis.

Because both SCR and EMx are expected to achieve the proposed BACT NOx emission limit of 2.0 ppmvd @ 15% O₂ averaged over one hour, and neither will cause significant energy, economic, or environmental impacts, neither can be eliminated as viable control alternatives. The concern remains regarding the long-term effectiveness of EMx as a control technology because the technology has not been demonstrated on the turbine

used in this project. For this reason, SCR has been selected as the NO_x control technology to be used for the Project.

The Project facility will be designed to meet a NO_x level of 2.0 ppmvd @ 15% O₂ on a 1-hour average basis using SCR.

2.2 CO Emissions

2.2.1 Step 1 – Identify All Possible Control Technologies

Potential control technologies were identified by searching the following sources for determinations pertaining to combustion gas turbines:

- SCAQMD BACT Guidelines;
- SJVAPCD BACT Clearinghouse;
- BAAQMD BACT Guidelines;
- USEPA RACT/BACT/LAER Clearinghouse;
- Other districts' and states' BACT Guidelines; and
- BACT/LAER requirements in New Source Review permits issued by Districts or other air pollution control agencies.

Oxidation catalyst technology is commonly used to control CO emissions. Combustion controls alone have been determined to be BACT in some regions, but catalyst technology is necessary to achieve the emission levels commonly required in California. Because combustion controls alone will not achieve the stringent levels achievable by other candidate technologies, combustion controls alone will not be considered as a potential control technology in this analysis.

Alternative Basic Equipment, including renewable energy sources such as solar and wind, has also been identified as a technology for the control of CO emissions.

2.2.2 Step 2 – Eliminate Technologically Infeasible Options

The only technology under consideration is use of an oxidation catalyst in combination with combustion controls. This combination of technologies has been demonstrated to be feasible in many applications. No other technologies capable of comparable levels of control have been identified. As a result, the goal of the rest of this analysis is to determine the appropriate emission limit that constitutes BACT for this application.

The ARB's BACT guidance document for electric generating units rated at greater than 50 MW indicates that BACT for the control of CO emissions from stationary gas turbines used for combined-cycle and cogeneration power plants is 6 ppmvd @ 15% O₂.

The BAAQMD's BACT guidelines specify that, for natural gas-fired combined-cycle gas turbines larger than 40 MW, a CO limit of 4 ppmv @ 15% O₂ has been "achieved in practice."

The SJVAPCD's BACT guidelines contain determinations for gas turbines larger than 50 MW with uniform load and heat recovery. The District concluded that a CO exhaust concentration of 6 ppmv @ 15% O₂ constituted BACT that had been achieved in practice, while 4.0 ppmv @ 15% O₂ is considered technologically feasible.

A summary of recent CO BACT determinations for large, combined-cycle gas turbines is shown in Table 2. Similar facilities using oxidation catalysts have been permitted at between 2.0 and 4.0 ppm CO.

There is an important distinction between BACT and the emission limits contained in a permit. BACT is an existing demonstrably achievable emission limit. Achievability may be demonstrated in one of two ways: (1) an existing similar source has consistently and continuously demonstrated compliance with the proposed limit; or (2) the control technology is in use on another source that has enough similarity to make the technology transfer uncontroversial.

The CARB BACT Clearinghouse does not distinguish between these two types of BACT determinations. Muddying the waters still further, some agencies report emission limits that have been accepted by applicants as BACT determinations, when in fact these limits go beyond BACT (that is, they have not been demonstrated in practice, and, while they may be technologically feasible, they may not be cost effective). Once consistent and continuous compliance with the limit has been demonstrated, however, the limit becomes “achieved in practice.”

It is therefore important to bear in mind that just because a limit is included in a permit and listed in Table 2 does not mean that the limit is achieved in practice, or even that it is technologically feasible. More information is required to make either determination.

The SJVAPCD recently issued a Final Determination of Compliance for the Avenal Energy Project. At the applicant’s request, the FDOC included a 2 ppmc CO limit. Although the District’s FDOC and the CEC’s Final Staff Assessment both indicated that a CO limit of 2 ppmc went beyond BACT, the District staff have since asserted that the 2 ppmc CO limit should be considered “technologically feasible” for purposes of a BACT determination.

Published prohibitory rules from the BAAQMD, Sacramento Metropolitan AQMD (SMAQMD), San Diego APCD (SDAPCD), SJVAPCD, and SCAQMD were reviewed to identify the CO standards that govern existing natural gas-fired combined-cycle combustion gas turbines. Of the five prohibitory rules reviewed, the SJVAPCD prohibitory rule for combustion gas turbines is the only one that includes an emission limit for CO (200 ppmv @ 15% O₂). The applicable NSPS (40 CFR 60 Subpart KKKK) does not include a CO limit.

This “top-down” CO BACT analysis will consider the following CO emission limitations:

- 2 ppmvd @ 15% O₂
- 3 ppmvd @ 15% O₂
- 4 ppmvd @ 15% O₂

Alternative basic equipment, including renewable energy sources such as solar and wind, was already discussed in Section 2.1.2.2 (Step 2 for NO_x BACT on the CTGs/HRSGs). For the same reasons, solar, wind and other renewable energy sources are rejected as CO BACT for this application.

2.2.3 Step 3 – Rank Remaining Control Technologies by Control Effectiveness

The control technologies under consideration are ranked as follows:

- Oxidation catalyst unit capable of achieving 2 ppmvd @ 15% O₂
- Oxidation catalyst unit capable of achieving 3 ppmvd @ 15% O₂
- Oxidation catalyst unit capable of achieving 4 ppmvd @ 15% O₂

2.2.4 Step 4 – Evaluate the Most Effective Control Technology Considering Environmental, Energy, and Cost Impacts

This step evaluates any source-specific environmental, energy, or economic impacts which demonstrate that the top alternative listed in the previous step is inappropriate as BACT.

2.2.4.1 “Achieved in Practice” Criterion

As discussed above, BACT may not be less stringent than the most stringent emission limit that has been achieved in practice. The most stringent CO emission limit that has been achieved in practice for a source similar to the one proposed is 4 ppmc.

As shown in Table 2, a number of recent projects have received permits with CO emission limits below 4 ppmc. As discussed below, however, no documentation is available that demonstrates that any of these projects have achieved a more stringent level in practice.

The Magnolia Power Project was permitted with a CO limit of 2 ppm on a 1-hour average basis in 2004 and, according to the SCAQMD staff, has been in operation for several years. EPA staff report that District permit engineers have said that Magnolia completed its performance testing (including for CO) in December 2005. EPA reports that the District source testing staff reviewed the test, and determined the test to be acceptable with all permit conditions and limits being met. However, this indicates only that the Magnolia project met the 2 ppm CO limit during a single initial source test, and provides no information regarding continuous compliance over an extended period. No CEMS data have been provided, and without those data there is no means of determining whether the project has demonstrated continuous compliance with a 2 ppm CO limit during the nearly 4-year period during which the project has apparently been operating. In the absence of CEMS data demonstrating continuous compliance, this installation cannot be the basis for a determination that 2 ppm CO has been achieved in practice.

Even if CEMS data were available, however, the Magnolia permit could not form the basis for a determination that would apply to the proposed project. This is because the NO_x limit for the Magnolia permit is 2 ppm averaged over 3 hours. This limit is considered by most permitting agencies to be equivalent to a 2.5 ppm limit averaged over 1 hour.

NO_x and CO limits must be considered together, because the combustion conditions that reduce CO tend to increase NO_x, and vice versa. To establish a new lower BACT limit for CO, the NO_x limit must be taken into account, and must be comparable. Because the NO_x limit for the Magnolia project is less stringent than current BACT for NO_x, the Magnolia project cannot be used as a basis for demonstrating that 2 ppm CO is

achieved in practice for a turbine that must meet 2 ppmc NO_x (1 hour average). It can, however, be used to demonstrate the technological feasibility of CO control.

The Berrien Energy Center project was also permitted with a CO limit of 2 ppm. However, the NO_x limit for the project is 2.5 ppm on a 24-hour average basis. As in the case of Magnolia, because the NO_x limit for the Berrien project is less stringent than current BACT for NO_x, the Berrien project also cannot be used as a basis for demonstrating that 2 ppm CO is achieved in practice for a turbine that must meet 2 ppm NO_x on a 1-hour average basis.

The Vernon City Power & Light project was also permitted with a CO limit of 2 ppm. However, the Vernon CTG is based on an Alstom GTX100 gas turbine, which is rated at 43 MW. This is a much smaller gas turbine than the 180 MW F-class gas turbine that will be used at the proposed project, and is considered under a separate SJVAPCD BACT category because of its size. Again, this project cannot be used to demonstrate that the limit has been achieved in practice for this class and category of source.

The Colusa Generating Station (CGS) has been permitted with a 3 ppmc CO limit; however, that project is still under construction so that limit has not yet been achieved in practice at CGS.

Numerous projects have been permitted with and have demonstrated continuous compliance with a 4 ppmc CO limit, so 4 ppmc is considered achieved in practice.

TABLE 2 Recent CO BACT Determinations for Combustion Turbines/HRSGs						
Facility	District/State	NOx Limit (ppmc ^a)	Averaging Period (hours)	Control Method Used	Date Permit Issued	Source
Russell City Energy Center	BAAQMD	4.0	3	oxidation catalyst	December 2008	BAAQMD website
Colusa Generating Station	EPA Region 9	3.0	3	oxidation catalyst	May 2008	EPA AQIA
Blythe Energy LLC (Blythe II) ^b	MDAQMD	4.0	3	oxidation catalyst	April 2007	PSD permit
San Joaquin Valley Energy Center	EPA Region 9	4.0	1	oxidation catalyst	August 2006	PSD permit
Magnolia Power Project	SCAQMD	2.0	1	oxidation catalyst	February 2004	SCAQMD website
Vernon City Power & Light	SCAQMD	2.0	3	oxidation catalyst	February 2004	SCAQMD website
PSO Southwestern Power Plant	Oklahoma	25	--	oxidation catalyst	February 2007	EPA RBLC
Rocky Mountain Energy Center	Colorado	3.0	--	oxidation catalyst	May 2006	EPA RBLC
Sierra Pacific Power Company	Nevada	3.5	3	oxidation catalyst	August 2005	EPA RBLC
Wanapa Energy Center ^c	Oregon	2.0	3	oxidation catalyst	August 2005	EPA RBLC
Crescent City Power, LLC	Louisiana	4.0 ^c	annual	oxidation catalyst	June 2005	EPA RBLC
Berrien Energy, LLC	Michigan	2.0	3	oxidation catalyst	April 2005	EPA RBLC
Turner Energy Center ^d	Oregon	2.0/3.0	1	oxidation catalyst	January 2005	EPA RBLC
Notes:						
a. parts per million by volume, dry @ 15% O ₂						
b. Construction on hold.						
c. Separate CO limit set for duct burners; this limit is for turbines only.						
d. Not built.						

2.2.4.2 Technologically Feasible/Cost Effective Criterion

As discussed above, a CO limit of 4 ppmc has been achieved in practice for the CTGs being considered for the Project. Lower CO limits may be technologically feasible, but have not yet been achieved in practice. EPA's top-down BACT guidance allows the consideration of energy, environmental, economic, and other costs in determining whether an emission limitation considered technologically feasible should also be considered BACT.

Two cost-effectiveness analyses are presented, one based on total cost and one based on incremental cost. The calculations are attached. The calculations follow the procedure outlined in USEPA Office of Air Quality Planning and Standards (OAQPS) guidance. The SJVAPCD cost-effectiveness analysis uses uncontrolled emissions as a baseline and sets a recommended cost threshold for CO of \$300 per ton. The uncontrolled CO emissions from the proposed GE 7FA CTGs during normal operation are 9 ppmvd @ 15% O₂. Using the annual normal operation assumptions presented for the project in the AFC, annual CO emissions with 4 ppmc CO control would be 38.1 tpy per turbine, while annual CO emissions controlled to 2 ppmc during normal operation would be 19.0 tpy per turbine, for an annual reduction of 19.0 tpy per turbine. The annualized cost is \$63,412 per year per turbine, for a cost effectiveness of \$3,329 per ton. This cost exceeds the District's \$300 per ton recommended cost threshold, so under this calculation, the 2 ppmc CO limit would not be cost-effective.

The applicant has proposed to meet a 2 ppmc limit on a 3-hour average basis. This level is more stringent than the current BACT achieved in practice.

2.2.5 Determine BACT/Present Conclusions

BACT must be at least as stringent as the most stringent level achieved in practice, required in a federal NSPS or district prohibitory rule, or considered technologically feasible. More stringent levels (e.g., 2 or 3 ppmc) may be technologically feasible, but because the costs of achieving these levels exceed the District's cost threshold and because of other energy and environmental considerations, these lower levels are not considered to be BACT for the proposed project.

Because 4 ppmc has been achieved in practice, and because a more stringent limitation does not meet cost-effectiveness criteria, BACT for CO for the Project turbines is 4 ppmc.

The proposed CO emission limit of 2 ppmvd @ 15% O₂ on a 3-hour average basis is more stringent than the level currently considered BACT.

2.3 VOC Emissions

2.3.1 Step 1 – Identify All Possible Control Technologies

Most VOCs emitted from natural gas-fired turbines are the result of incomplete combustion of fuel. Therefore, most of the VOCs are methane and ethane, which are not effectively controlled by an oxidation catalyst. However, oxidation catalyst technology designed to control CO can also provide some degree of control of VOC emissions, especially the more complex and toxic compounds formed in the combustion process. Therefore, use of an oxidation catalyst is generally considered BACT for VOC.

Alternative Basic Equipment, including renewable energy sources such as solar and wind, has also been identified as a technology for the control of VOC emissions.

2.3.2 Step 2 – Eliminate Technologically Infeasible Options

The only technology under consideration is use of an oxidation catalyst in combination with combustion controls. This combination of technologies has been demonstrated to be feasible in many applications. No other technologies have been identified which are capable of achieving the same level of control. As a result, the goal of the rest of this analysis is to determine the appropriate emission limit that constitutes BACT for this application.

The CARB's BACT guidance document for electric generating units rated at greater than 50 MW⁶ indicates that BACT for the control of POC emissions for combined-cycle and cogeneration power plants is 2 ppmvd @ 15% O₂.

The BAAQMD's BACT guidelines specify that, for natural gas-fired combined-cycle combustion gas turbines larger than 40 MW, a VOC limit of 2 ppmvd @ 15% O₂ has been "achieved in practice."

The SJVAPCD's BACT guidelines contained a determination for gas turbines rated at larger than 50 MW with uniform load and with heat recovery. The SJVAPCD concluded that a VOC exhaust concentration of 2.0 ppmvd @ 15% O₂ constituted BACT that had been achieved in practice, while 1.5 ppmvd @ 15% O₂ is considered technologically feasible.

The SCAQMD database contains BACT determinations for VOC emissions from two natural gas-fired combined-cycle combustion gas turbines at 2.0 ppmvd @ 15% O₂.

Published prohibitory rules from the BAAQMD, SMAQMD, SDCAPCD, SJVAPCD, and SCAQMD were reviewed to identify the VOC standards that govern existing natural gas-fired simple cycle combustion gas turbines. None of the prohibitory rules for combustion gas turbines specify an emission limit for VOC. The applicable NSPS (40 CFR 60 Subpart KKKK) does not include a VOC limit.

This "top-down" VOC BACT analysis will consider the following CO emission limitations:

- 1 ppmvd @ 15% O₂
- 1.5 ppmvd @ 15% O₂
- 2 ppmvd @ 15% O₂

Alternative basic equipment, including renewable energy sources such as solar and wind, was already discussed in Section 2.1.2.2 (Step 2 for NO_x BACT on the CTGs/HRSGs). For the same reasons, solar, wind and other renewable energy sources are rejected as VOC BACT for this application.

2.3.3 Step 3 – Rank Remaining Control Technologies by Control Effectiveness

The control technologies under consideration are ranked as follows:

- Oxidation catalyst unit capable of achieving 1 ppmvd @ 15% O₂

⁶ Ibid, Table I-1.

- Oxidation catalyst unit capable of achieving 1.5 ppmvd @ 15% O₂
- Oxidation catalyst unit capable of achieving 2 ppmvd @ 15% O₂

2.3.4 Step 4 – Evaluate the Most Effective Control Technology Considering Environmental, Energy, and Cost Impacts

This step evaluates any source-specific environmental, energy, or economic impacts which demonstrate that the top alternative listed in the previous step is inappropriate as BACT.

2.3.4.1 “Achieved in Practice” Criterion

A summary of recent VOC BACT determinations for large, combined-cycle gas turbines is shown in Table 3. Similar facilities using oxidation catalysts have been permitted at between 1.0 and 2.0 ppmc VOC.

Compliance with limits below 2 ppmc has not been achieved in practice because neither the Blythe II nor the Turner plant has been constructed or operated. Further, the Crescent City limit of 1.1 ppmc is not comparable to the limits imposed for the other plants cited because it is an annual average limit and not a short-term limit.

Numerous projects have been permitted with and have demonstrated continuous compliance with a 2 ppmc VOC limit, so 2 ppmc is considered achieved in practice.

2.3.4.2 Technologically Feasible/Cost Effective Criterion

As discussed above, a VOC limit of 2 ppmc has been achieved in practice for the CTGs being considered for the Project. Lower VOC limits may be technologically feasible, but have not yet been achieved in practice. EPA’s top-down BACT guidance allows the consideration of energy, environmental, economic and other costs in determining whether an emission limitation considered technologically feasible should also be considered BACT.

Two cost-effectiveness analyses are presented, one based on total cost and one based on incremental cost. The calculations are attached. The calculations follow the procedure outlined in OAQPS guidance. The SJVAPCD cost-effectiveness analysis uses uncontrolled emissions as a baseline and sets a recommended cost threshold for VOC of \$17,500 per ton. Using the annual normal operation assumptions presented for the project in the AFC, annual VOC emissions with 2 ppmc VOC control would be 8.4 tpy per turbine, while annual VOC emissions controlled to 1 ppmc during normal operation would be 5.8 tpy per turbine, for an annual reduction of 2.6 tpy per turbine. The annualized cost is \$63,412 per year per turbine, for a cost effectiveness of \$24,627 per ton. This cost exceeds the District’s \$17,500 per ton recommended cost threshold, so under this calculation, the 1 ppmc VOC limit would not be cost-effective.

The applicant has proposed to meet a 2 ppmc limit on a 1-hour average basis when duct firing is in use, and 1.4 ppm without duct firing. This level meets BACT.

2.3.4.3 Determine BACT/Present Conclusions

BACT must be at least as stringent as the most stringent achieved in practice, required in a federal NSPS or district prohibitory rule, or considered technologically feasible. Based upon the results of this analysis, the VOC emission limits of 2.0 ppmvd @ 15% O₂ are considered to be BACT for the proposed project.

TABLE 3 Recent VOC BACT Determinations for Combustion Turbines/HRSGs						
Facility	District/State	NOx Limit (ppmc ^a)	Averaging Period (hours)	Duct Fired?	Date Permit Issued	Source
Gateway Generating Station	BAAQMD	2.0	3	yes	July 2008 (proposed permit)	BAAQMD
Colusa Generating Station	EPA Region 9	2.0	1	yes	May 2008	EPA AQIA
Russell City Energy Center	BAAQMD	2.0	3	yes	June 2007	BAAQMD website
Blythe Energy LLC (Blythe II) ^a	MDAQMD	1.0	3	yes	December 2005	CEC website
Magnolia Power Project	SCAQMD	2.0	1	yes	February 2004	SCAQMD website
Vernon City Power & Light	SCAQMD	2.0	1	yes	February 2004	SCAQMD website
Rocky Mountain Energy Center	Colorado	0.0029 lb/MMBtu	--	unknown	May 2006	EPA RBLC
Sierra Pacific Power Company	Nevada	4.0	3	yes	August 2005	EPA RBLC
Crescent City Power, LLC	Louisiana	1.1	annual	no ^b	June 2005	EPA RBLC
Turner Energy Center ^c	Oregon	1.0	3	yes	January 2005	EPA RBLC
Notes:						
a. Construction on hold.						
b. Separate VOC limit set for duct burners; this limit is for turbines only.						
c. RBLC record indicates that project will not be built.						

2.4 PM/PM₁₀/PM_{2.5} Emissions

Alternative Basic Equipment, including renewable energy sources such as solar and wind, has also been identified as a technology for the control of PM/PM₁₀/PM_{2.5} emissions. Such alternative basic equipment was already discussed in Section 2.1.2.2 (Step 2 for NO_x BACT on the CTGs/HRSGs). For the same reasons, solar, wind and other renewable energy sources are rejected as PM/PM₁₀/PM_{2.5} BACT for this application.

2.4.1 Achievable Controlled Levels and Available Control Options

PM emissions from natural gas-fired turbines and HRSGs primarily result from carryover of noncombustible trace constituents in the fuel. PM emissions are minimized by using clean burning pipeline quality natural gas with low sulfur content.

The CARB BACT Clearinghouse, as well as the BAAQMD and SJVAPCD BACT guidelines, identify the use of natural gas as the primary fuel as “achieved in practice” for the control of PM₁₀ for combustion gas turbines. The SJVAPCD also requires the use of an air inlet filter cooler and a lube oil vent coalescer to remove ambient particulate matter from the inlet air.

The CARB’s BACT guidance document for stationary gas turbines used for combined-cycle and cogeneration power plant configurations⁷ indicates that BACT for the control of PM emissions is an emission limit corresponding to natural gas with fuel sulfur content of no more than 1 grain/100 standard cubic foot.

Title 40 CFR Part 60 Subpart KKKK contains the applicable NSPS for combustion gas turbines. Subpart KKKK does not regulate PM₁₀ emissions.

Published prohibitory rules from the SCAQMD, SJVAPCD, SMAQMD, and SDCAPCD were reviewed to identify the PM₁₀ standards that govern natural gas-fired combustion gas turbines. These prohibitory rules do not regulate PM₁₀ emissions. The applicable NSPS (40 CFR 60 Subpart KKKK) limits SO_x emissions to 0.56 lb/MWh, well above permitted limits for natural gas-fired turbines.

Recent PM₁₀ BACT determinations for similarly-sized gas turbines/HRSGs are summarized in Table 4.

2.4.1.1 Determine BACT/Present Conclusions

Based upon the results of this analysis, the SJVAPCD BACT guideline reflects the most stringent PM₁₀ emission limit. The District established a requirement for the use of natural gas as the primary fuel to control PM₁₀ emissions from combustion gas turbines. Therefore, the use of natural gas as the primary fuel source constitutes BACT for PM₁₀ emissions from combustion gas turbines. Through the use of natural gas, the turbine is expected to be able to meet the proposed emission limit of 9.0 lb/hr without duct firing and 11.0 lb/hr with duct firing. These limits are consistent with or lower than the limits shown in the summary table, with the exception of the Blythe II project. Since the Blythe II project has not yet been constructed or operated and no performance data are available, this permit limit is not considered achieved in practice.

⁷ Ibid, Table I-2.

TABLE 4 Recent PM ₁₀ BACT Determinations for Combustion Turbines/HRSGs					
Facility	District/State	PM ₁₀ Limit, no duct firing (lb/hr)	PM ₁₀ Limit, with duct firing (lb/hr)	Date Permit Issued	Source
Colusa Generating Station	EPA Region 9	12.9	20.0	May 2008	CEC final decision
Russell City Energy Center	BAAQMD	8.6	11.6	June 2007	BAAQMD website
Blythe Energy LLC (Blythe II)	MDAQMD		6.0 ^a	December 2005	CEC website
Magnolia Power Project	SCAQMD	--	11.0	February 2004	SCAQMD website
Vernon City Power & Light	SCAQMD	--	11.0	February 2004	SCAQMD website
Rocky Mountain Energy Center	Colorado	--	0.0074 lb/MMBtu	May 2006	EPA RBLC
Sierra Pacific Power Company	Nevada	--	0.011 lb/MMBtu	August 2005	EPA RBLC
Crescent City Power, LLC	Louisiana	29.6	0.01 lb/MMBtu ^b	June 2005	EPA RBLC
Turner Energy Center ^c	Oregon	--	18	January 2005	EPA RBLC
Notes: a. Construction on hold. b. Annual limit. c. RBLC record indicates that project will not be built.					

2.5 SOx Emissions

Alternative Basic Equipment, including renewable energy sources such as solar and wind, has also been identified as a technology for the control of SOx emissions. Such alternative basic equipment was already discussed in Section 2.1.2.2 (Step 2 for NOx BACT on the CTGs/HRSGs). For the same reasons, solar, wind and other renewable energy sources are rejected as SOx BACT for this application.

2.5.1 Achievable Controlled Levels and Available Control Options

The CARB BACT Clearinghouse, as well as the BAAQMD and SJVAPCD BACT guidelines, identifies the use of PUC-quality natural gas or natural gas with a limit on the sulfur content (i.e., 1 grain/100 scf) as the primary fuel as “achieved in practice” for the control of SOx for combustion gas turbines. The two most recent BACT determinations in the SCAQMD did not determine BACT for SOx.

2.5.1.1 Federal NSPS

Title 40 CFR Part 60 Subpart KKKK contains the applicable NSPS for combustion gas turbines. A combustion gas turbine is subject to a SO₂ emission limit of 0.56 lb/MWh.

2.5.1.2 District Prohibitory Rules

Published prohibitory rules from the BAAQMD, SJVAPCD, and SCAQMD were reviewed to identify the SO₂ standards that govern existing gas turbines.

- BAAQMD Rule 9-9 (Nitrogen Oxides from Stationary Gas Turbines) is the BAAQMD’s only prohibitory rule that specifically addresses gas turbines; it does not limit SO₂ emissions. The BAAQMD adopted Rule 9-1 (Sulfur Dioxide) to limit SO₂ emissions from all sources. Rule 9-1 prohibits SO₂ emissions in excess of 300 ppm. No other BAAQMD Rule or Regulation contains a relevant prohibitory rule regulating either the sulfur content in the fuel or the emission of SO₂ from gas turbines.
- SJVAPCD Rule 4703 (Stationary Gas Turbines) is the SJVAPCD’s only prohibitory rule that specifically addresses gas turbines; it does not limit SO₂ emissions. The SJVAPCD adopted Rule 4301 (Fuel Burning Equipment) to limit SO₂ emissions from these devices. Rule 4301 specifies a SO₂ emission limit of 200 pounds per hour. The SJVAPCD also adopted Rule 4801 (Sulfur Compounds) to limit emissions of sulfur compounds. Rule 4801 specifies a SO₂ emission limit of 0.2%, or 2,000 ppm.
- SCAQMD Rule 1134 (Emissions of Oxides of Nitrogen from Stationary Gas Turbines) is the SCAQMD’s only prohibitory rule that specifically addresses gas turbines; however, it does not limit SO₂ emissions. The SCAQMD adopted Rule 431.1 (Sulfur Content of Gaseous Fuels) to reduce SOx emissions from the burning of gaseous fuels in stationary equipment. Rule 431.1 specifies a sulfur limit of 16 grains/100 scf (as H₂S) in natural gas sold within the SCAQMD. The SCAQMD also adopted Rule 407 (Liquid and Gaseous Air Contaminants) to limit SO₂ emissions from all sources. Rule 407 specifies an emission limit of 2,000 ppm for sulfur compounds (calculated as SO₂).

2.5.1.3 Determine BACT/Present Conclusions

BACT must be at least as stringent as the most stringent limit achieved in practice, federal NSPS, or district prohibitory rule. Based upon the results of this analysis, the CARB database and BAAQMD and SJVAPCD BACT guidelines reflect the most stringent SOx

emission limit. These sources established a requirement for the use of natural gas as the primary fuel to control SOx emissions from combustion gas turbines. Therefore, the use of natural gas as the primary fuel source constitutes BACT for SOx emissions from the gas turbine/HRSG.

3 BACT for the CTG/HRSG: Startup/Shutdown

Startup and shutdown periods are a normal part of the operation of combined-cycle power plants such as the Project. BACT must also be applied during the startup and shutdown periods of gas turbine/HRSG operation. The BACT limits discussed in the previous section apply to steady-state operation, when the turbine, HRSG, and steam turbine have reached stable operations and the emission control systems are fully operational.

3.1 NOx Emissions

3.1.1 Step 1 – Identify All Possible Control Technologies

The following technologies for control of NOx have been identified:

- A Selective Catalytic Reduction (SCR) system capable of continuously complying with a limit of 2.0 ppmvd @15% O₂ (1-hour average)
- A SCONOx system capable of continuously complying with a limit of 2.0 ppmvd @15% O₂ (1-hour average)
- Fast-start technologies (i.e., Rapid Response)
- General Electric OpFlex Startup NOx
- Operating practices to minimize the duration of startup and shutdown

3.1.2 Step 2 – Eliminate Technologically Infeasible Options

During gas turbine startup, there are equipment and process requirements that must be met in sequential order to protect the equipment. Many of these require holding the gas turbine at low loads, where operation is inefficient and emissions are relatively high, to allow the HRSG and steam turbine to warm up, and establish steam turbine seals and condenser vacuum. At low turbine loads, the combustors are not yet operating in lean pre-mix mode so turbine NOx emission rates are also high during startup. In addition, incomplete combustion at low loads results in higher CO and VOC emission rates. Further, the post-combustion controls that are used to achieve additional emissions reductions (SCR and oxidation catalyst) require that specific exhaust temperature ranges be reached to be fully effective. The use of SCR to control NOx is not technically feasible when the surface of the SCR catalyst is below the manufacturer's recommended operating range. When surface temperatures are low, ammonia will not react completely with the NOx, resulting in excess NOx emissions or excess ammonia slip. The oxidation catalyst is not effective at controlling CO emissions when exhaust temperature is below the optimal temperature range. Therefore, exhaust gas controls used to achieve BACT for normal operations are not feasible control techniques during startups and shutdowns.

This "top-down" BACT analysis will consider the following NOx emission limitations:

- General Electric OpFlex Startup NOx
- Operating practices to minimize emissions during startup and shutdown

- Design features to minimize the duration of startup and shutdown

3.1.3 Step 3 – Rank Remaining Control Technologies by Control Effectiveness

General Electric OpFlex Startup NOx -- GE has a commercially available turn-down technology which it calls “OpFlex™ Start-up NOx Start-up Fuel Heating” package. GE claims that emissions of NOx may be lowered to less than 25 ppm NOx at low-load operation (20% to 50% load), 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.” However, GE is not prepared to guarantee these numbers, or any specific level of emissions reductions, for the system at this time.⁸

Operating Practices to Minimize Emissions During Startup and Shutdown -- There are basic principles of operation, or Best Management Practices, that minimize emissions during startups and shutdowns. These Best Management Practices are as follows:

- During a startup, bring the gas turbine to the minimum load necessary to achieve compliance with the applicable NOx and CO emission limits as quickly as possible, consistent with the equipment manufacturers’ recommendations and safe operating practices;
- During a startup, initiate ammonia injection to the SCR system as soon as the SCR catalyst temperature and ammonia vaporization system have reached their minimum operating temperatures;
- During a shutdown, once the turbine reaches a load that is below the minimum load necessary to maintain compliance with the applicable NOx and CO emission limits, reduce the gas turbine load to zero as quickly as possible, consistent with the equipment manufacturers’ recommendations and safe operating practices; and
- During a shutdown, maintain ammonia injection to the SCR system as long as the SCR catalyst temperature and ammonia vaporization system remain above their minimum operating temperatures.

A key underlying consideration of these Best Management Practices is the overall safety of the plant staff by promoting operation within the limitations of the equipment and systems, and allowing for operator judgment and response times to respond to alarms and trips during the startup sequence.

Design Features to Minimize the Duration of Startup and Shutdown – An additional technique to reduce startup emissions is to minimize the amount of time the gas turbine and HRSG spend in startup. Efforts have been made by turbine and HRSG manufacturers to develop ways of reducing the time required to ramp up the CTG load to where the DLN combustors will be effective and exhaust temperatures will allow the control devices to be effective. For example, Siemens’ “Rapid Response” includes the following project features:

⁸ General Electric guarantees that “base load” emission rates can be achieved at lower loads with some of their OpFlex options, but does not guarantee lower startup emission rates associated with this technology.

- HRSG design: The HRSG is designed to optimize heat transfer to the tubes, which allows the HRSG to heat up more quickly. This reduces gas turbine hold time at low load, especially during cold startups.
- Auxiliary boiler: An auxiliary steam boiler that provides steam during startup. The auxiliary boiler steam preheats the CTG fuel and provides steam turbine sealing steam prior to CTG startup, thereby allowing the condenser vacuum to be established and the condenser to be in a condition ready to accept steam earlier in the startup cycle.

However, Rapid Response has not yet been demonstrated on an operating gas turbine plant. Although these design features are expected to reduce the duration of startups (and therefore reduce the quantity of startup emissions), the emission reductions cannot be quantified, and these reductions are not guaranteed.

Because emission reductions cannot be quantified, the remaining control technologies cannot be ranked.

3.1.4 Step 4 – Evaluate the Most Effective Control Technology Considering Environmental, Energy, and Cost Impacts

The General Electric OpFlex has no adverse environmental impacts. Rapid Response technologies may have adverse energy impacts – there is some indication of a small but important energy penalty during routine operations. The software (for GE OpFlex) and hardware (for Rapid Response) differences require additional initial capital cost. Because the potential emission reductions cannot be quantified, cost effectiveness cannot be calculated.

Utilizing best operating practices to minimize emissions during startups and shutdowns has no adverse environmental or energy impacts, nor does it require additional capital expenditure.

The approach of reducing startup/shutdown duration has no adverse environmental or energy impacts, but the equipment differences require additional initial capital cost. Because the potential emission reductions cannot be quantified, cost effectiveness cannot be calculated.

3.1.5 Step 5 - Determine BACT/Present Conclusions

BACT for NO_x during startups/shutdowns is the use of operating systems/practices that reduce the duration of startups and shutdowns to the greatest extent feasible, and the use of operational techniques to initiate ammonia injection as soon as possible during a startup. Because the duration of each startup event is strongly determined by a number of environmental factors (e.g., ambient temperature and the length of time the unit has been shut down prior to the restart), and because of the lack of operating experience with systems like Rapid Response, and the lack of guaranteed emission reductions during startups associated with OpFlex, the emission reductions associated with these technologies during startups are impossible to quantify; and an individual startup may take as long as a traditional startup. Therefore, BACT is determined to be the application of operating systems/practices that minimize startup and shutdown durations, in combination with the use of operational techniques to initiate ammonia injection as soon as possible during a startup.

3.2 CO Emissions

3.2.1 Step 1 – Identify All Possible Control Technologies

The control technologies under consideration are ranked as follows:

- Oxidation catalyst unit capable of achieving 2 ppmvd @ 15% O₂;
- Fast-start technologies (i.e., Rapid Response); and
- Operating practices to minimize the duration of startup and shutdown.

3.2.2 Step 2 – Eliminate Technologically Infeasible Options

The analysis for CO is identical to the analysis for NO_x.

3.2.3 Step 3 – Rank Remaining Control Technologies by Control Effectiveness

The analysis for CO is identical to the analysis for NO_x.

3.2.4 Step 4 – Evaluate the Most Effective Control Technology Considering Environmental, Energy, and Cost Impacts

The analysis for CO is identical to the analysis for NO_x.

3.2.5 Step 5 - Determine BACT/Present Conclusions

BACT for CO during startups/shutdowns is the use of operating systems/practices that reduce the duration of startups and shutdowns to the greatest extent feasible. Because the duration of each startup event is strongly determined by a number of environmental factors (e.g., ambient temperature), and because of the lack of operating experience with systems like Rapid Response, the emission reductions are impossible to quantify; and an individual startup may take as long as a traditional startup. Therefore, BACT is determined to be the application of operating systems/practices that minimize startup and shutdown durations.

3.3 VOC Emissions

The control technologies under consideration are ranked as follows:

- Oxidation catalyst unit capable of achieving 2 ppmvd @ 15% O₂
- Fast-start technologies (i.e., Rapid Response)
- Operating practices to minimize the duration of startup and shutdown

3.3.1 Step 1 – Identify All Possible Control Technologies

The analysis for VOC is identical to the analysis for NO_x.

3.3.2 Step 2 – Eliminate Technologically Infeasible Options

The analysis for VOC is identical to the analysis for NO_x.

3.3.3 Step 3 – Rank Remaining Control Technologies by Control Effectiveness

The analysis for VOC is identical to the analysis for NO_x.

3.3.4 Step 4 – Evaluate the Most Effective Control Technology Considering Environmental, Energy, and Cost Impacts

The analysis for VOC is identical to the analysis for NO_x.

3.3.5 Step 5 – Determine BACT/Present Conclusions

BACT for VOC during startups/shutdowns is the use of operating systems (i.e., Rapid Response) and operating practices that reduce the duration of startups and shutdowns to the greatest extent feasible. Because the duration of each startup event is strongly determined by a number of environmental factors, and because of the lack of operating experience with systems like Rapid Response, the emission reductions are impossible to quantify; and an individual startup may take as long as a traditional startup. . Therefore, BACT is determined to be the application of operating systems/practices that minimize startup and shutdown durations.

3.4 PM/PM₁₀/PM_{2.5} Emissions

Because PM and PM₁₀ emissions result from the characteristics of the fuel burned and do not rely on any emissions control system, the BACT determinations for SO₂ and PM₁₀ emissions during normal operations are applicable during startup and shutdown as well.

3.5 SO_x Emissions

Because SO₂ emissions result from the characteristics of the fuel burned and do not rely on any emissions control system, the BACT determinations for SO₂ (and PM₁₀) emissions during normal operations are applicable during startup and shutdown as well.

4 BACT for the Auxiliary Boiler

4.1 NO_x Emissions

4.1.1 Achievable Controlled Levels and Available Control Options

NO_x is formed during combustion through two mechanisms: (1) thermal NO_x, which is the oxidation of elemental nitrogen in combustion air; and (2) fuel NO_x, which is the oxidation of fuel-bound nitrogen. Since natural gas is relatively free of fuel-bound nitrogen, the contribution of this second mechanism to the formation of NO_x emissions in natural gas-fired equipment is minimal, and therefore, thermal NO_x is the chief source of NO_x emissions. Thermal NO_x formation is a function of residence time, oxygen level, and flame temperature, and can be minimized by controlling these elements in the design of the combustion equipment.

There are two basic means of controlling NO_x emissions from boilers: combustion controls and post-combustion controls. Combustion controls act to reduce the formation of NO_x during the combustion process, while post-combustion controls remove NO_x from the exhaust stream. Combustion control technologies for this type of boiler application include low-NO_x burners, flue gas recirculation, and staged combustion. Post-combustion controls include SCR and selective non-catalytic reduction (SNCR). These are discussed below in order of most effective to least effective.

Selective Catalytic Reduction. The effectiveness of an SCR system requires the catalyst, and thus the treated exhaust stream, to be within a certain temperature range for the NO_x reduction reaction to take place. The auxiliary boiler will be operated to support the turbine startup process and will be operated only up to 624 hours per year. The boiler is designed to provide 25,000 lb/hr of steam for steam turbine seals and sparging, and fuel gas heating. The majority of boiler operations are expected to be at low load, where the exhaust gas temperature is expected to be below the minimum needed for effective SCR control. While the boiler will operate at full load periodically, the length of time at which it will operate is expected to be so short that the SCR system could rarely, if ever, be used effectively. Therefore, this technology is not considered technically feasible for the auxiliary boiler in this application.

Selective Noncatalytic Reduction (SNCR). SNCR involves injection of ammonia or urea into the combustion gas stream without a catalyst. SNCR technology requires gas temperatures in the range of 1600 to 2000 °F. SNCR is less effective at low levels of inlet NO_x. Typical uncontrolled levels of NO_x where SNCR may be used are 200-400 ppm.⁹ NO_x reductions using SNCR are from 30% to 50%. Controlled NO_x levels using this technology may therefore be as low as 100 ppm. Lower NO_x levels may be achieved if SNCR is used in conjunction with low-NO_x burners. SNCR is difficult to apply to small boilers such as the proposed auxiliary boiler because of inadequate wall space for the installation of the ammonia injectors.¹⁰

Ultra-Low NO_x Burners with Flue Gas Recirculation (FGR). Low-NO_x burners with FGR are commonly used on industrial-sized package boilers such as the Project's auxiliary boiler. These burners minimize the formation of thermal NO_x, while FGR reduces the oxygen in the combustion zone to further reduce NO_x formation. Ultra-low NO_x burners with FGR can achieve NO_x emission rates of 7 to 9 ppmvd @ 3% O₂ without post-combustion controls. A 9 ppmc emission rate was recently accepted as BACT for the Colusa Generating Station auxiliary boiler, and was considered the lowest technologically feasible emission rate for that particular application. A summary of the permitted emissions limits for other, similar boilers is provided in Table 5 below.

⁹ EPA Air Technology Fact Sheet (<http://epa.gov/ttn/catc/dir1/fsnrcr.pdf>, accessed 10/10/09)

¹⁰ Ibid.

TABLE 5
Recent NOx and CO BACT Determinations for Medium-Sized Auxiliary Boilers

Facility	District/State	Heat Input Rating (MMBtu/hr HHV)	NOx Limit (ppmc) ^a	CO Limit (ppmc)	Date Permit Issued	Source
Colusa Generating Station	EPA Region 9	44	9	50	May 2008	CEC final decision
Genentech	BAAQMD	97	9	50	September 2005	CARB BACT Clearinghouse
Medimmune, Inc	Maryland	29.4	9	n/a	January 2008	RBLC # MD-0037
CPV Warren	Virginia	97	0.011 lb/MMBtu ^b	0.036 lb/MMBtu ^d	January 2008	RBLC # VA-0308
Minnesota Steel Industries	Minnesota	99	0.035 lb/MMBtu ^c	0.08 lb/MMBtu ^e	September 2007	RBLC # MN-0070
Thyssenkrupp Steel and Stainless USA, LLC	Alabama	64.9	0.035 lb/MMBtu ^c	0.040 lb/MMBtu ^d	August 2007	RBLC # AL-0230
Daimler Chrysler Corporation	Ohio	20.4	0.0350 lb/MMBtu ^c	0.0830 lb/MMBtu ^e	May 2007	RBLC # OH-0309

Notes:

- a. ppmc for a boiler = ppmvd @ 3% O₂
- b. Equivalent to approximately 9 ppmc NOx.
- c. RBLC record shows 0.0035 lb/MMBtu, but based on rated heat input and hourly limit, this is believed to be a typographical error. This is equivalent to approximately 27 ppmc NOx.
- d. Equivalent to approximately 50 ppmc CO.
- e. Equivalent to approximately 100 ppmc CO.

4.1.1.1 District BACT Determinations

The SJVAPCD's BACT determination for boilers in this size range with variable loads shows that less than 15 ppmc is considered achieved in practice and 9 ppmc is considered technically feasible.

The BAAQMD has determined that 9 ppmc is achieved in practice and 7 ppmc is considered technologically feasible. However, the BAAQMD BACT guideline indicates that SCR is needed to achieve 7 ppmc, and, as discussed above, SCR is not feasible for this application.

4.1.1.2 District Prohibitory Rules

SJVAPCD Rule 4306 requires natural gas-fired boilers of this size range and limited annual fuel use to achieve a NO_x limit of 30 ppmvd @ 3% O₂. Rule 4320 would be applicable to the proposed auxiliary boiler (i.e., the Authority to Construct Permit will be issued after July 1, 2009), and requires compliance with a NO_x limit of 7 ppmvd @ 3% O₂.

4.1.1.3 Determine BACT/Present Conclusions

BACT must be at least as stringent as the most stringent limit achieved in practice, federal NSPS, or district prohibitory rule. Based upon the results of this analysis, the proposed 7 ppmc NO_x limit represents BACT for this application.

4.2 CO Emissions

4.2.1 Achievable Controlled Levels and Available Control Options

CO emissions during natural gas combustion result from incomplete combustion of the fuel gas. CO emissions are minimized by combustion practices that promote high combustion temperatures, long residence times at those temperatures, and turbulent mixing of fuel and combustion air. Since those practices tend to increase NO_x emissions, the effectiveness of the NO_x control system may affect the ability of the boiler to achieve low CO emission rates.

4.2.1.1 District BACT Determinations

The SJVAPCD has determined that BACT for boilers in this size range is 50 ppmvd @ 3 % O₂.¹¹

The BAAQMD has determined that BACT for boilers in this size range is 100 ppmvd @ 3 % O₂.¹²

4.2.1.2 District Prohibitory Rules

SJVAPCD Rule 4320 limits CO emissions from boilers to 400 ppmc.

4.2.1.3 Determine BACT/Present Conclusions

BACT must be at least as stringent as the most stringent limit achieved in practice, federal NSPS, or district prohibitory rule. Based upon the results of this analysis, the proposed 50 ppmc CO limit represents BACT for this application. The proposed limit is expected to be achievable through the use of good combustion practices.

¹¹ SJVAPCD BACT Guideline 1.2.1

¹² BAAQMD BACT Guideline 17.2.1

4.3 VOC Emissions

4.3.1 Achievable Controlled Levels and Available Control Options

VOC emissions during natural gas combustion result from incomplete combustion of the fuel gas. VOC emissions are minimized by combustion practices that promote high combustion temperatures, long residence times at those temperatures, and turbulent mixing of fuel and combustion air. Since those practices tend to increase NO_x emissions, the effectiveness of the NO_x control system may affect the ability of the boiler to achieve low VOC emission rates.

4.3.1.1 District BACT Determinations

The SJVAPCD's BACT determination for boilers in this size range with variable loads shows that the use of natural gas fuel is considered to be BACT for VOCs.

The BAAQMD has determined that BACT for boilers in this size range is the use of good combustion practices for VOC control.

4.3.1.2 District Prohibitory Rules

SJVAPCD Rule 4320 does not contain a VOC limit.

4.3.1.3 Determine BACT/Present Conclusions

BACT must be at least as stringent as the most stringent limit achieved in practice, federal NSPS, or district prohibitory rule. Based upon the results of this analysis, the proposed 10 ppm VOC limit represents BACT for this application. The proposed limit is expected to be achievable through the use of good combustion practices.

4.4 SO₂ and PM₁₀ Emissions

4.4.1 Achievable Controlled Levels and Available Control Options

SO₂ and PM₁₀ emissions from natural gas combustion result from sulfur and other impurities in the fuel. Emissions of these pollutants will be minimized through the use of low-sulfur pipeline-quality natural gas. There are no add-on control technologies that are effective in reducing SO₂ and PM₁₀ emissions from naturally low-emitting natural gas-fired boilers.

4.4.1.1 District BACT Determinations

The SJVAPCD and BAAQMD BACT guidelines both indicate that the use of natural gas fuel is considered BACT for boilers.

4.4.1.2 Determine BACT/Present Conclusions

Use of pipeline quality natural gas is considered BACT for this boiler application. The proposed project emissions limitations are expected to be achievable with natural gas firing.

5 BACT for Cooling System

5.1 Step 1 – Identify All Possible Control Technologies

Potential control technologies were identified by searching the following sources for determinations pertaining to cooling systems:

- SCAQMD BACT Guidelines;
- SJVAPCD BACT Clearinghouse;
- BAAQMD BACT Guidelines;
- USEPA RACT/BACT/LAER Clearinghouse;
- Other districts' and states' BACT Guidelines; and
- BACT/LAER requirements in New Source Review permits issued by the District or other agencies.

BACT determinations from the SCAQMD, SJVAPCD, BAAQMD, and USEPA are summarized in Table 6.

TABLE 6 Summary of PM ₁₀ BACT Clearinghouse Guidelines			
Permitting Agency	Guideline	Operation	PM ₁₀ BACT for Cooling Towers
SCAQMD	None	N/A	N/A
SJVAPCD	8.3.10	Induced Draft Evaporative Cooling Tower	Cellular Type Drift Eliminator
BAAQMD	None	N/A	N/A
USEPA	Numerous	Cooling Towers for Combined-Cycle and Cogeneration Power Plants	Drift Eliminators 0.0005% Drift Rate

Recent BACT determinations approved by the California Energy Commission (CEC) through the Application for Certification (AFC) process are summarized in Table 6. These determinations were made by the indicated permitting authority.

TABLE 7 PM ₁₀ BACT Determinations for Cooling Towers in CEC Proceedings (CEC Approval Dates in 2008 and 2009)		
Permitting Agency	Project	PM ₁₀ BACT for Cooling Towers
BAAQMD	Russell City	Drift rate of 0.0005% (FDOC amended 12/12/08)
MDAQMD	Victorville 2	Drift rate of 0.0005% (FDOC 1/10/08)
Colusa County AQMD	Colusa	No BACT determination (FDOC 6/12/07)
SJVAPCD	Starwood	No BACT determination (FDOC 7/19/07)

Three possible alternate basic technologies were identified from background technical materials prepared during the rulemaking of USEPA's National Pollutant Discharge Elimination System (NPDES): Regulations Addressing Cooling Water Intake Structures for New Facilities (Federal Register 66:24, December 18, 2001). The NPDES regulation establishes national technology-based performance requirements applicable to the location, design, construction, and capacity of cooling water intake structures at new facilities using once-through cooling. During the rulemaking process, USEPA also evaluated alternatives to once-through cooling, including recirculating wet cooling systems, dry or air cooling systems, and hybrid cooling systems.

Recirculating Wet Cooling Tower with High Efficiency Drift Eliminator

In conventional closed-cycle recirculating wet cooling towers, cooling water that has been used to cool the condensers is pumped to the top of a recirculating cooling tower; as the heated water falls, it cools through an evaporative process and warm, moist air rises out of the tower, often creating a vapor plume. Approximately 80% of the heat transfer (cooling) occurs due to evaporation, and 20% of the heat transfer occurs due to convection.¹³ Therefore, wet cooling towers are more effective in areas of low relative humidity.

Dry or Air Cooling Tower

Dry cooling systems (towers) use either a natural or a mechanical air draft to transfer heat from the condenser tubes to air. Their effectiveness is independent of relative humidity and purely a function of the ambient (dry-bulb) temperature. Therefore, dry cooling towers are more effective in areas of low ambient temperature.

Hybrid Cooling Tower (Plume-Abated Wet Cooling)

There are two types of hybrid wet-dry cooling towers. One type is essentially a wet cooling tower with an additional dry section installed on top which reduces visible plumes by heating the wet air from the wet section. This is done to reduce or eliminate the visible condensation plume.

Hybrid Cooling Tower (Spray-Enhanced Dry Cooling)

The second type of hybrid system is essentially a dry cooling tower that enhances heat transfer in the condenser tubes by spraying water on the outside of the tubes.

Once-through Cooling

Once-through cooling systems eliminate the cooling tower entirely by drawing cooling water from a water source (such as a river or the ocean), using the water to cool the condensers, and then discharging the heated water, usually back to the original water source.

5.2 Step 2 – Eliminate Technologically Infeasible Options

The next step in the top-down BACT procedure is to eliminate technologically infeasible options.

¹³ Hensley, John C., ed. 2006. *Cooling Tower Fundamentals*. SPX Cooling Technologies, Inc. 2006.

Recirculating Wet Cooling Tower

As shown in Table 7, recirculating wet cooling towers equipped with high-efficiency (0.0005%) drift eliminators have been achieved in practice.

Dry Cooling

USEPA has adopted standards for new facilities that draw cooling water from waters of the U.S.¹⁴ The regulation established the best technology available for minimizing adverse environmental impacts associated with the use of cooling water intake structures.

As part of the rulemaking process, USEPA considered the technical issues, cost, and environmental impacts associated with replacing once-through cooling with recirculating cooling towers and dry cooling. USEPA rejected dry cooling as the best replacement technology due to all three of these factors. For the purposes of this BACT analysis, the technical issues are evaluated in this step. The environmental impacts and cost considerations of dry cooling are evaluated in the following step.

The three main technical issues associated with dry cooling towers are increased steam turbine backpressure, increased space needs, and increased downwash effects. Dry cooling results in increased steam turbine backpressure because of its inability to condense steam at 100% capacity on very hot days. For safety reasons, steam turbines are designed so that a plant shutdown will be triggered if back pressure limits are exceeded. The thermal inefficiency of dry cooling has caused turbine back pressure limits to be exceeded at existing plants, which in turn has triggered plant shutdowns. Because the potential for increased steam turbine backpressure is most severe when the ambient temperature is highest, the resulting plant shutdowns occur when electricity demand is at its peak.

Another potential issue associated with dry cooling towers is space. Because dry cooling systems rely only on convective and radiant heat transfer, they require a significantly larger footprint compared to wet cooling towers. For existing facilities, this may constitute a practical obstacle to installation of dry cooling. For a new facility, however, the need for additional space is more a question of cost than feasibility.

A third potential issue associated with dry cooling towers is increased downwash effects. When the wind blows over large structures, a wake effect on the leeward side of the building can pull the air down toward the ground, a meteorological condition known as building wake downwash. Because structures for dry cooling are much larger than comparable wet cooling towers, the downwash effect is potentially greater. Increased downwash can result in higher ambient concentrations from nearby emissions sources.

Hybrid Cooling (Plume-Abated Wet Cooling Tower)

Hybrid wet-dry (plume abated) cooling towers employ both a wet section and dry section and reduce or eliminate the visible plumes associated with wet cooling towers. In general, a hybrid cooling tower is used only where a visible plume presents a threat to public safety by its interference with major infrastructure, such as airports or in some cases if the plume will block prominent landscape features or scenic coastal areas.

¹⁴ 66 Federal Register 65255, December 18, 2001.

Hybrid cooling towers offer only insignificant changes in PM, PM₁₀, PM_{2.5} emissions compared to wet cooling towers. After the warm, moist air passes through the drift eliminators of the wet section, it is mixed with warm dry air that passed through the dry section. This step speeds the evaporation that would normally occur after the plume was released. While most remaining liquid drift may be eliminated within the cooling tower via evaporation, the particulate nuclei are not reduced or eliminated by any physical process and are exhausted through the top of the cooling tower.

Even though this option does not decrease PM emissions from the cooling tower, it also has not been deemed technologically infeasible. Therefore, the environmental and economic impacts of this option are discussed in later top-down steps.

Hybrid Cooling Tower (Spray-Enhanced Dry Cooling)

A spray-enhanced hybrid cooling tower works essentially as a dry cooling tower that enhances heat transfer in the condenser tubes by spraying water on the outside of the tubes. The addition of the evaporating water spray can help alleviate both of the technical issues associated with dry cooling. Increased cooling decreases the likelihood of turbine backpressure events and may allow for fewer, more efficient dry cooling cells to be installed, thus shrinking the plant footprint required for the cooling tower. Therefore, this BACT option has not been deemed technologically infeasible.

Once-through Cooling

Once-through cooling involves the water withdrawn from rivers, streams, lakes, reservoirs, estuaries, oceans, or other waters. In general, once-through cooling is only technologically feasible when a large surface water body exists in immediate proximity to the power plant. Since this situation does not exist for the Project, once-through cooling has been deemed a technologically infeasible BACT option and will not be further evaluated.

5.3 Step 3 – Rank Remaining Control Technologies by Control Effectiveness

In terms of PM/PM₁₀ emissions, the candidate technologies are ranked as follows:

- Dry cooling (no direct PM/PM₁₀ emissions)
- Hybrid Cooling Tower (Spray-Enhanced Dry Cooling)
- Hybrid Cooling Tower (Plume-abated Wet Cooling Tower)
- Recirculating Wet Cooling Tower

5.4 Step 4 – Evaluate the Most Effective Control Technology Considering Environmental, Energy, and Cost Impacts

The applicant has proposed to use the highest ranked technically-feasible control alternative, which results in no direct PM/PM₁₀ emissions. Dry cooling was selected in order to minimize water usage for the project.

No further analysis is required under the top-down BACT analysis procedure. It should be acknowledged that dry cooling requires electric power to run the fans; hence, more fuel

needs to be combusted to generate the same net energy from the plant, leading to higher emissions from the electric grid.

5.5 Step 5 – Select BACT/Present Conclusions

In terms of PM/PM₁₀ emissions, dry cooling is selected as BACT because it has no direct PM/PM₁₀ emissions.

6 BACT for the Diesel-Fueled Emergency Standby Fire Water Pump Engine

As summarized in the following sections, the BACT analyses include the following for a Diesel fire water pump engine, with a maximum work output of 288 bhp:

- Compliance with Tier 3 Certification requirements (4.0 g/bhp) constitutes BACT for a Diesel fire water pump engine. At a combined NO_x + VOC emission factor of 2.75 g/bhp-hr, the proposed fire water pump engine will comply with the NO_x BACT guideline.

6.1 Published BACT Guidelines

Table 8 summarizes published BACT determinations from the SJVAPCD, BAAQMD, and the SCAQMD for Diesel fire water pump engines. The SJVAPCD’s BACT guidelines identify a NO_x limit of 6.9 g/bhp-hr as achieved in practice. The BAAQMD BACT Guidelines do not contain determinations for Diesel fire water pump engines. A BAAQMD guideline for compression ignition (i.e., Diesel) ICEs rated at more than 50 bhp defines BACT as currently applicable EPA Tier standards; however, direct-drive fire water pump engines are explicitly excluded. The SCAQMD BACT guidelines for fire water pump engines list four BACT determinations. The BACT determinations for these sources specify a BACT emission factor of 6.9 g/bhp, or use of cooling water and fuel injection timing retard as BACT technology.

TABLE 8 BACT Guidelines For Emergency Fire Water Pump Engine (288 Hp)		
Agency	Pollutant	BACT For Diesel Engines Driving Fire Pumps
SJVAPCD	NO _x	6.9 g/bhp-hr or less (SJVAPCD BACT Guideline 3.1.4)
BAAQMD	NO _x	No published guideline for fire pumps
SCAQMD	NO _x	6.9 g/bhp-hr or use of cooling water and timing retard

6.2 Federal NSPS

40 CFR 60, Subpart IIII specifies emission limits for stationary compression ignition ICEs. Table 4 of Subpart IIII specifies that the current NO_x emission standard is 4.0 g/bhp-hr for fire water pump engines between 300 and 600 HP. This emission level is equivalent to Tier 3 Certification levels contained in 40 CFR Part 89. This standard applies to manufacturers of

fire water pump engines; therefore any new fire water pump engine must meet this limit before it can be sold.

6.3 District Prohibitory Rules

Published prohibitory rules from the SJVAPCD, BAAQMD, SCAQMD, SMAQMD, and SDAPCD were reviewed to identify the NO_x standards that govern existing Diesel fire water pump engines. Each district has adopted a prohibitory rule for ICEs. SDAPCD Rule 69.4.1 (Stationary Reciprocating ICEs – Best Available Retrofit Control Technology) specifies CO and NO_x limits of 4,500 ppmvd @ 3% O₂ and 6.9 g/bhp-hr for emergency Diesel fire pumps. SCAQMD Rule 1470 requires use of a Tier 3 Certified engine for new direct drive fire pumps. Every other listed District exempts emergency fire pumps from the emission limits of its Internal Combustion Engine (ICE) prohibitory rules.

6.4 Determine BACT/Present Conclusions

BACT must be at least as stringent as the most stringent BACT determination, federal NSPS, or district prohibitory rule. The standard contained in SCAQMD Rule 1470 constitutes the most stringent emission limits for NO_x. Based upon the results of this analysis, the use of a fire water pump engine certified to Tier 3 emissions standards was determined to constitute BACT for Diesel fire pumps.

7 BACT for the Emergency Standby Natural Gas-Fired Generator Engine

7.1 Step 1 – Identify All Possible Control Technologies

The possible control technologies include two approaches to combustion air/fuel ratio and two main add-on control systems. The two combustion air/fuel ratio approaches are called lean burn and rich burn, as defined below.

- Lean burn: A quotient greater than 1.1, obtained by dividing the manufacturer's recommended operating air/fuel ratio by the stoichiometric air/fuel ratio, both at full load, or, lacking such information, exhaust oxygen content greater than 2 percent.
- Rich burn: A quotient less than or equal to 1.1, obtained by dividing the manufacturer's recommended operating air/fuel ratio by the stoichiometric air/fuel ratio, both at full load, or, lacking such information, an exhaust oxygen content less than or equal to 2 percent.

The two main add-on control systems are use of 1) an oxidation catalyst and SCR on a lean-burn engine, and 2) use of non-selective catalytic reduction (NSCR) on a rich-burn engine.

7.2 Step 2 – Eliminate Technologically Infeasible Options

Both approaches to the engine combustion air/fuel ratio are technologically feasible, as are also the use of an oxidation catalyst achieving 90% control of CO and VOC on a lean-burn

engine or NSCR achieving 90% control of NOx on a rich-burn (achieving 80% control of CO and 50% control of VOC) engine.¹⁵

7.3 Step 3 – Rank Remaining Control Technologies by Control Effectiveness

Based on SJVAPCD BACT Guideline 3.1.8, the use of an oxidation catalyst on a lean-burn engine and NSCR on a rich-burn engine are considered equivalent BACT emission levels, where a rich-burn engine would be “alternate basic equipment” to the lean-burn engine proposed by the Project.

7.4 Step 4 – Evaluate the Most Effective Control Technology Considering Environmental, Energy, and Cost Impacts

Table 9 summarizes published BACT determinations from the SJVAPCD, BAAQMD, and SCAQMD for emergency standby natural gas-fired generator engines.

TABLE 9 BACT Guidelines for Emergency Natural Gas-Fired Engine		
Agency	Pollutant	BACT for Natural Gas-Fired Engines
SJVAPCD	NOx	1.0 g/bhp-hr (lean-burn) (SJVAPCD BACT Guideline 3.1.8)
BAAQMD	NOx	1.0 g/bhp (lean-burn) (BAAQMD BACT Guideline 96.3.4)
SCAQMD	NOx	1.5 g/bhp-hr (BACT Determination 360419 for 1,334 bhp Cummins 800GTA500G3)
SJVAPCD	CO	2.75 g/bhp-hr (lean-burn) (SJVAPCD BACT Guideline 3.1.8)
BAAQMD	CO	2.75 g/bhp (lean-burn) (BAAQMD BACT Guideline 96.3.4)
SCAQMD	CO	2.0 g/bhp-hr (BACT Determination 360419 for 1,334 bhp Cummins 800GTA500G3)
SJVAPCD	VOC	1.0 g/bhp-hr (lean-burn) (SJVAPCD BACT Guideline 3.1.8)
BAAQMD	POC	1.0 g/bhp (lean-burn) (BAAQMD BACT Guideline 96.3.4)
SCAQMD	VOC	1.5 g/bhp-hr (BACT Determination 360419 for 1,334 bhp Cummins 800GTA500G3)

The appropriate Federal New Source Performance Standard is 40 CFR 60 Subpart JJJJ, which established emission limits for stationary spark-ignition ICEs, but does not list quantitative (e.g., g/bhp-hr) limits for emergency engines rated equal or larger than 130 bhp.

¹⁵ SJVAPCD. *Best Available Control Technology (BACT) Guideline 3.1.8*, April 4, 2002, <http://www.valleyair.org/busind/pto/bact/bactchidx.htm>.

7.5 Determine BACT/Present Conclusions

BACT must be at least as stringent as the most stringent BACT determination, federal NSPS, or district prohibitory rule. The SJVAPCD's BACT determinations constitute the most stringent emission limit for NO_x and VOC, while the SCAQMD BACT determination constitutes the most stringent emission limit for CO. Based upon the results of this analysis, the emission limits summarized in Table 2 were determined to constitute BACT for the emergency standby generator engine. The Caterpillar G3512LE lean-burn engine equipped with the Miratech oxidation catalyst/SCR process would exceed BACT.

Attachment 1

**Alternatives Analysis Section (Section 5.0) of the Application for
Certification**

capital as well as operation and maintenance (O&M) costs, which would translate into a bus bar cost represented in cents per kilowatt-hour.

This methodology was applied to a number of base load and load-following technologies as described in the following sections.

5.6.2 ALTERNATIVE NATURAL GAS-FIRED TECHNOLOGIES

Selection of the power generation technology focused on those technologies that can utilize natural gas. These technologies include conventional boiler-steam turbine units, combustion turbines in various configurations, and fuel cells.

5.6.2.1 Combined-Cycle (Selected) Generating Technology

This technology integrates combustion turbines and steam turbines in a combined cycle to achieve higher efficiencies compared to simple-cycle technologies. The combustion turbine drives a generator and the exhaust gases from the combustion turbine are used to produce steam that drives an additional generator, instead of being released to the atmosphere as they would under a single-cycle configuration. The resulting efficiency of the system is 50 to 54 percent, considerably above most other alternatives. This efficiency results in relatively low air emissions per kilowatt-hour generated. In addition, natural gas fuel emits little sulfur dioxide and little particulate matter. For these reasons, the system is considered the benchmark against which all other base load technologies are compared. Combined-cycle technology is commercially available and can be implemented. Because of its high efficiency and relatively low cost of generation, this technology is cost effective. This technology is the one selected for the Project, as well as most other new base load and load-following units being developed in the United States.

5.6.2.2 Conventional Boiler Steam Turbine

In conventional boiler steam turbine technology, fuel is burned in a furnace/boiler to create steam, which is passed through a steam turbine that drives a generator. The steam is condensed and returned to the boiler. This is an aging technology that is able to achieve a maximum thermal efficiency on the order of 35 to 40 percent. Applying the review methodology, the technology is commercially available and can be implemented. However, due to its relatively low efficiency, it tends to emit a greater quantity of emissions per kilowatt-hour generated

compared to more efficient technologies. Furthermore, its cost of generation is higher than the selected combined-cycle technology. This technology therefore does not satisfy Step 3 and was eliminated from further consideration.

5.6.2.3 Supercritical Boiler-Steam/Turbine

This technology is basically the same as the conventional boiler-steam/turbine except it utilizes considerably higher pressures. Plants using this type of technology are more expensive to construct per unit of power generated compared to conventional boiler-steam/turbine plants. Higher construction costs are generally offset by increased efficiency, so cost of power produced is about the same as a conventional boiler steam turbine plant. Applying the review methodology, the technology is definitely commercially available and could probably be implemented. However, because it is not as efficient as the combined-cycle technology, it would emit a greater quantity of emissions per kilowatt-hour compared to the Project. Based on the lower efficiency compared to the selected combined-cycle technology, this technology does not satisfy Step 3 and was eliminated from consideration.

5.6.2.4 Simple Cycle Combustion Turbine

This technology uses a combustion turbine to drive a generator. Air is compressed in the compressor section of the combustion turbine, and then passed into the combustion section where fuel is added and ignited. The resulting hot combustion gases pass through a turbine, which drives a generator. The combustion turbines have a relatively low capital cost and have efficiencies approaching 40 percent in the larger units. Because they are fast-starting and have a relatively low capital cost, they are used primarily for meeting high peak demand and have relatively low efficiency compared to combined-cycle technology. Applying the review methodology, this technology is commercially available and could be implemented. However, due to its lower efficiency compared to the selected combined-cycle technology, this technology would result in more air emissions per kilowatt-hour generated. Also, the incremental cost of generation, if it were base-loaded, would be relatively high. The technology, therefore, does not satisfy Step 3 and was eliminated from consideration.

5.6.2.5 Kalina Combined Cycle

This technology is similar to the conventional combined cycle except water in the heat recovery boiler is replaced with a mixture of water and ammonia. Overall efficiency is expected to be increased 10 to 15 percent. However, this technology is still in the testing phase. Applying the review methodology, the technology fails to pass Step 1, since it is not commercially available. It was therefore eliminated from consideration.

5.6.3 FUEL ALTERNATIVES

Technologies based on fuels other than natural gas, such as fuel cells, coal and oil, nuclear, solar and water, are described in the following sections.

5.6.3.1 Fuel Cells

This technology uses an electrochemical process to combine hydrogen and oxygen in order to liberate electrons, thereby providing a flow of current. Types of fuel cells include phosphoric acid, molten carbonate, solid oxide, alkaline and proton exchange membrane. With the exception of the phosphoric acid fuel cell and possibly the molten carbonate fuel cell, none of these technologies is commercially available on the scale of a commercial power plant. Therefore, they fail Step 1. The phosphoric acid fuel cell has operated in smaller size units, and the molten carbonate fuel cell has completed testing. At this time, however, neither of these technologies is cost competitive with conventional combined-cycle technology. Therefore, fuel cells fail Step 3 of the review methodology.

5.6.3.2 Coal

The technologies that use coal for fuel include: conventional furnace/boiler steam turbine generator; fluidized bed steam turbine generator; integrated gasification combined-cycle; direct-fired combustion turbine; indirect-fired combustion turbine; and magnetohydrodynamics.

Conventional Furnace/Boiler Steam Turbine Generator

Using this technology, coal is burned in the furnace/boiler, creating steam that is passed through a steam turbine connected to a generator. The steam is condensed in a condenser, passed through a cooling tower and returned to the boiler. Designs include stoker, pulverized coal and cyclone. The efficiency of this technology is equivalent to a conventional gas fired steam

turbine generator unit (35 to 40 percent) and, because of the usually lower price of coal compared to natural gas, the technology can be cost competitive under most conditions. However, the air emissions are greater per kilowatt-hour generated compared to conventional combined-cycle technology because of its lower efficiency, resulting in more fuel consumed per kilowatt-hour. Applying the review methodology, the technology is commercially available (Step 1). The technology should be implementable, except for a possible adverse public perception that large coal-fired units have unacceptably high levels of air emissions (untrue with modern units). In addition, coal would have to be imported from outside California (resulting in increased truck and/or train traffic), and the time to construct a facility would probably be about twice that for a conventional combined-cycle unit. The technology may therefore not pass Step 2. In addition, the generation cost of the technology could be greater than for a combined cycle (Step 3). Due to the potential problems under Step 2 and the potentially higher cost in Step 3, the technology was eliminated from consideration.

Atmospheric and Pressurized Fluidized Bed Combustion

Both of these technologies burn coal in a hot bed of inert material containing limestone that is kept suspended or fluidized by a stream of hot air from below. Water coils within the furnace create steam that drives a steam turbine generator. Efficiencies of atmospheric fluidized bed combustion (AFBC) units are on the order of 35 to 40 percent; pressurized (pressurized fluidized bed combustion [PFBC]) units are between 40 and 45 percent. The technology is commercially available for the AFBC technology, at least up to the 160-MW size. The PFBC technology is not commercially available. Applying the review methodology, the AFBC may pass Step 1, but the PFBC is eliminated from consideration. Implementation of the AFBC technology in California is possible, particularly for cogeneration applications (several units have been constructed in recent years). Coal would have to be imported from outside California, increasing train and/or truck traffic. The technology should pass Step 2, although possibly not for the 600-MW size that the applicant has planned. The generation cost of the technology, however, could be greater than for a combined cycle (Step 3). Due to the lack of a commercially proven unit in the 600-MW range, and the potentially higher cost, the AFBC technology was eliminated from consideration.

Integrated Gasification Combined-Cycle

Integrated gasification combined-cycle (IGCC) technology gasifies coal to produce a medium Btu gas that is used as fuel in a combustion turbine, which exhausts to an HRSG that supplies steam to a steam turbine/generator. The coal gasifier is located at the same site as the combustion turbine, HRSG and steam turbine generator. It is sized to supply the combustion

turbine and is integrated with it and the rest of the equipment to provide an integrated generating system. While a 100-MW unit has been fully tested in California, the technology is probably not fully commercially available. Applying the review methodology, the IGCC will not pass Step 1. Implementation of the IGCC technology in California is possible, except that coal would have to be imported from outside California (resulting in increased truck and/or train traffic). The generation cost of the technology could be competitive with a conventional gas-fired combined cycle (Step 3), but this is a relatively unknown factor. Due largely to the probable lack of full commercial availability, particularly in the 600-MW range, IGCC technology was eliminated from consideration.

Direct- and Indirect-Fired Combustion Turbines

Direct-fired units burn finely powdered coal directly in the combustion chamber of the combustion turbine. Indirect-fired units burn the coal in a fluidized bed or other combustor. Both use a heat exchanger to transfer the heat from the combustion gases to air, which is then expanded through the turbine. Neither of these units is commercially available. Therefore, they both fail to pass Step 1 of the selection methodology and were eliminated from consideration.

Magnetohydrodynamics

High temperature (3,000°F) combustion gas is ionized and passed through a magnetic field to directly produce electricity. This technology is not commercially available. Therefore, it fails to pass Step 1 of the review methodology and was eliminated from consideration.

5.6.3.3 Nuclear Reactions

Nuclear technology includes nuclear fission and nuclear fusion. Nuclear fission breaks atomic nuclei apart, giving off large quantities of energy. For nuclear fission, pressurized water reactors (PWRs) and boiling water reactors (BWRs) are commercially available. California law prohibits new nuclear plants until the scientific and engineering feasibility of disposal of high-level radioactive waste has been demonstrated. To date, the Nuclear Regulatory Commission has been unable to make the findings of disposal feasibility required by law for this alternative to be viable in California. Nuclear fission would also require very large quantities of fresh water for cooling, a resource that is not readily available. The technology therefore is not implementable and fails to pass Step 2 of the review methodology. It was therefore eliminated from consideration.

Nuclear fusion forces atomic nuclei together at extremely high temperatures and pressures, giving off large quantities of energy. Nuclear fusion is not available commercially, and it is not clear if or when it will become available. The technology, therefore, fails to pass Step 1 of the review methodology and was eliminated from consideration.

5.6.3.4 Water

These technologies use water as "fuel." They include hydroelectric, geothermal and ocean energy conversion.

Hydroelectric

This technology uses falling water to turn turbines that are connected to generators. A flowing river or, more likely, a dammed river, is required to obtain the falling water. This technology is commercially available. However, most of the sites for hydroelectric facilities have already been developed in California, and any remaining potential sites face formidable environmental licensing problems. There are no large bodies of water near the Avenal Energy Project Site that can be used for hydroelectric power. Therefore, it would fail to pass Step 2 of the review methodology. It was therefore eliminated from consideration.

Geothermal

These technologies use steam or high-temperature-water (HTW) obtained from naturally occurring geothermal reservoirs to drive steam turbine/generators. There are vapor dominated resources (dry, superheated steam) and liquid-dominated resources that use a number of techniques to extract energy from the HTW. Geothermal energy electric power generation utilizes commercially available technology. However, geothermal resources are limited, and most, if not all, current resources have been discovered and developed in California. Geothermal development is not viable at the Project location. It was, therefore, eliminated from consideration.

Ocean Energy Conversion

A number of technologies use ocean energy to generate electricity. These include: tidal energy conversion, which uses the changes in tide level to drive a water turbine/generator; wave energy conversion, which uses wave motion to drive a turbine/generator; and ocean thermal energy conversion, which employs the difference in water temperature at different depths to drive an ammonia cycle turbine/generator. While all of these technologies have been made to work at a

research scale, they are not commercially available. Even if they were commercially available, they are considerably more costly than conventional combined-cycle technology and so would fail Step 3 of the review methodology. They were therefore eliminated from consideration.

5.6.3.5 Biomass

Major biomass fuels include forestry and mill wastes, agricultural field crop and food processing wastes, and construction and urban wood wastes. Several techniques are used to convert these fuels to electricity, including direct combustion, gasification and anaerobic fermentation. While these technologies are available commercially on a limited basis, their cost tends to be high relative to a conventional combined-cycle unit burning natural gas. This technology, therefore, does not pass Step 3 of the review methodology and was eliminated from consideration.

5.6.3.6 Solar Radiation

Solar radiation (sunlight) can be collected directly to generate electricity with solar thermal and solar photovoltaic technologies, or indirectly through wind generation technology in which the solar energy causes thermal and pressure difference in the atmosphere, creating wind. Wind generation and two types of solar generation, thermal conversion and photovoltaics, were considered as alternative technologies to the combined cycle. These are described in the following subsections.

Solar Thermal

Most of these technologies collect solar radiation, then heat water to create steam to power a steam turbine generator. The primary systems that have been used in the United States capture and concentrate the solar radiation with a receiver. The three main receiver types are mirrors located around a central receiver (power tower), parabolic dishes and parabolic troughs. Another technology collects the solar radiation in a salt pond and then uses the heat collected to generate steam and drive a steam turbine generator. While one of these technologies might be considered to be marginally commercial (parabolic trough), the others are still in the experimental stage. All require considerable land for the collection receivers and are best located in areas of high solar incidence. In addition, power is only generated while the sun shines, so the units do not supply power when clouds obscure the sun or between early evening and late morning. Gas-fired backup generation for the evening hours is necessary to support continuous power output and to provide steam to support solar operations. The Avenal area does not have sufficient year

round sunshine to be favorable for commercial solar power generation. The land use impact of the large area required for collection receivers would also be significant. Considering these factors, this technology may not be implementable. Hence, solar thermal was eliminated from consideration.

Solar Photovoltaic

This technology uses photovoltaic "cells" to convert solar radiation directly to direct current electricity, which is then converted to alternating current. Panels of these cells can be located wherever sunlight is available. This technology is commercially available, since panels of cells can theoretically be connected to achieve any desired capacity. The cost is higher than the selected combined-cycle technology. This technology fails Step 3, cost-effectiveness, and was therefore eliminated from consideration.

Wind Generation

This technology uses a wind-driven rotor (propeller) to turn a generator and generate electricity. Only limited sites in California have an adequate wind resource to allow for the installation of wind generators, and most of these sites have already been developed or are remote from electric load centers and have limited or no transmission access. Even in prime locations the wind does not blow continuously, so capacity from this technology is not always available. In California, the average wind generation capacity factor has been 25 to 30 percent. In addition, depending on the site and/or season, the technology cannot be depended upon to be available at system peak load since the peak may occur when the wind is not blowing. The technology is commercially available. Land consumption and effects on visual resources and avian species are a concern that may inhibit implementability. The cost of generation is above the cost of the selected combined-cycle technology. Due to the lack of availability of good sites, limited dependability, and relatively high cost, this technology was eliminated from consideration.

5.6.3.7 Conclusion

Using the selection methodology identified in Section 5.6.1, alternative fuels were eliminated from consideration. The availability of natural gas, the environmental and operational advantages of natural gas fuel technology, and the proven performance and commercial benefits of natural gas make this the selected choice for the Project.