

Memorandum

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01-AFC-24C	
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Date: November 30, 2007

File: 01-AFC-24C

To: Interested Parties

Subject:

**STAFF RESPONSE TO COMMENTS BY BIMBO BAKERIES USA (BBU)
REGARDING THE PETITION TO ADD A TURBINE AIR INLET CHILLER FILED BY
THE PALOMAR ENERGY CENTER (01-AFC-24C)**

From: Paula David, Compliance Project Manager

On July 25, 2007, Sempra Energy, on behalf of San Diego Gas and Electric (SDG&E) filed a petition to modify the Palomar Energy Center (PEC) by adding turbine air inlet chillers. The modification is expected to provide up to approximately 40 MW of additional capacity to serve summer peak load and will not significantly change air emissions. No increase in concentration, hourly or annual air emission limits is requested.

On November 16, 2007, BBU filed comments regarding the proposed amendment, asserting that the current operation of the PEC is causing adverse conditions at their facility, and that the operation of the chillers will cause "significant additional adverse impacts". Based on staff's analysis, it believes that the operation of the chillers will not change current compliance of PEC with its conditions of certification, nor will the incorporation of the chillers cause significant impacts.

SDG&E filed comments on November 20, 2007, and November 26, 2007, in response to BBU's November 16, 2007 comment letter. The three above mentioned comment letters have been incorporated into this staff response document for reference, and are attached.

After considering the comments submitted by BBU and SDG&E, it is staff's opinion that, with the implementation of staff's proposed conditions, the project will remain in compliance with applicable laws, ordinances, regulations, and standards and that the proposed modifications will not result in a significant adverse direct or cumulative impact to the environment (Title 20, California Code of Regulations, Section 1769). If BBU believes the PEC is causing an adverse impact on the bakery, they may file a complaint with the California Energy Commission or request an investigation. Should they choose to do so, staff will request that BBU provide operations data and other pertinent information to demonstrate that a causal relationship between the cooling tower emissions and the alleged adverse impacts to BBU's facility and products exists.

Staff's recommendation that the petition be approved remains unchanged.

Attachments

Energy Commission Staff Response to Bimbo Bakery USA Comments on the Palomar Energy Center Chiller Amendment

Prepared by Matthew Layton
November 30, 2007

Staff performed an independent assessment of the Application for Certification (AFC) of the Palomar Energy Project in 2002 and 2003 and concluded that the project impacts could be mitigated to a level of insignificance. Staff monitored project compliance with the conditions of certification during construction and commissioning activities.

Staff continues to monitor project operations and is expected to review amendment requests to the license to identify impacts and mitigation measures. The most recent amendment request proposed the replacement of the existing combustion turbine inlet evaporative cooler with refrigeration inlet chillers. Staff has reviewed the request and provided an analysis. Staff found that the existing project was in compliance with its conditions of certification, and that the project's operations and impacts would not change with incorporation of the chillers, such that no changes were necessary to the Air Quality conditions of certification beyond the inclusion of a Greenhouse gas reporting condition.

One business adjacent to the Palomar Energy Center (PEC), the Bimbo Bakery operated by Bimbo Bakery USA (BBU), filed a comment letter on the staff analysis and the amendment request. In brief, BBU believes that the current operation of the PEC is causing adverse conditions at their facility, which are degrading the quality of bakery goods. BBU suggests that the incorporation of the chillers "will only make a bad situation worse." In their comment letter, BBU makes a series of allegations that suggest a link has been "found" or "observed" between the existing cooling tower, staining on the bakery roof top and mold in their bakery and bakery goods.

Staff has had discussions with the bakery and power plants operators, visited both sites, reviewed power plant operations data and reports, and coordinated with a local air district investigation of a complaint about the PEC cooling tower. Staff did not find or observe a link between the cooling tower, the bakery roof staining and the alleged mold problem in the bakery and bakery goods. Staff does not believe the incorporation of the chillers into PEC will change current compliance of PEC with its conditions of certification, or cause significant impacts.

Chillers

The proposed PEC chillers can increase the efficiency of the combined cycle power plant operation, compared to no chilling or evaporative inlet cooling, during periods of elevated ambient temperatures. However, the chillers may decrease the efficiency of the combined cycle during periods of low ambient temperature. The use of "chillers" to heat inlet air during low ambient temperatures is not intended to improve performance but prevents ice formation in the combustion turbine compressor inlet after the inlet filters. Ice (as well as other solid particles) can damage compressor blades.

Staff does not agree that a potential 10% increase in instantaneous evaporation described by BBU from the cooling tower is significant, especially with respect to allegations of any moisture and humidity impact on the bakery roof top, staining of the roof top, and mold issue in the bakery and on the product. BBU did not (and cannot) show that additional moisture on the roof, if any, will cause an immediate 10% surge in roof staining and mold colonies in the bakery and on bakery products as alleged by BBU.

The proposed chiller will not significantly change current conditions, as the conditions of certification currently limit annual water use and cooling tower PM10 emissions thereby limiting total cooling tower evaporation and heat rejection. The plant already can and does operate at different levels depending on the time of day, week or year, resulting in variable stack emission rates and cooling tower heat rejection rates. Additionally, staff has looked at the design and compliance of existing facility with the conditions of certification, and provides the following comments on the BBU comment letter.

Drift Eliminators

The drift eliminator efficiency of 0.0005% was specified for particulate control from the cooling tower and not due to the use of recycled water for make up water as suggested by BBU. The combination of drift eliminators, limits on total dissolved solids (TDS) and circulating water flow place an upper limit on particulate matter less than 10 microns (PM10) emissions and the emission rate from the cooling tower. The PM10 emissions can be modeled and conditioned in an operating permit. Drift eliminators at 0.0005% efficiency are considered Best Available Control Technology for PM10 for cooling towers in California. A recent report¹ by the cooling tower manufacturer SPX Cooling Technologies, Inc², found that the cooling tower and internal components were in very good condition. Flow measurements and inspections indicated that the drift eliminators were installed and operating correctly, which indicates their operation within design specification (i.e., 0.0005% drift).

¹ Inspection Report 2007-05-25, SPX Cooling Technologies, Inc.

² Marley was the manufacturer of the Palomar Energy Center cooling towers and plume abatement system. Marley is now part of SPX Cooling Technologies, which includes the cooling tower manufacturers of Balcke, Hamon Dry Cooling, and Marley.

Staff also reviewed the water chemistry records and tests for the PEC cooling tower. Water chemistry and microbiology activity was within specifications and no Legionella activity was detected. Staff believes that PEC cooling tower drift is at or below 0.0005% and does not contain significant levels of mold or biological material. Concerns about the use of recycled or reclaimed water and potential biological constituents were raised and analyzed in great detail in the staff assessment of the AFC. The Energy Commission encourages the use of reclaimed water for power plant cooling as a state policy. However staff always analyzes the potential constituents and public health implications, and conditions and monitors its use via a cooling tower water chemistry program. BBU incorrectly commented that staff had not considered the effects of recycled water.

Plume Abatement System

The plume abatement system and controls are a predictive control system that is fully automated regardless of the time of year or day. If the controller predicts ambient conditions that might result in a visible plume, the louvers in the abatement system are adjusted to minimize the formation of a visible plume. Time of day or year is not a factor in the operation of the automated system.

BBU suggests that observation and information obtained proves or suggest that the plume abatement system and controls are not adequate, or that the design point may be incorrect. Additionally BBU states that the existing plume abatement system may not be able to mitigate visible plume formation from the increased heat rejection with the addition of the chillers.

A recent report³ by the cooling tower manufacturer, SPX Cooling Technologies, Inc, found that the plume abatement portion of the cooling tower was in good condition, and flow velocity measurements were within design specifications. Note that the project and cooling tower and plume abatement system was designed to handle both base operations and duct burning operations, which can cause a 20% increase in cooling tower heat rejection and circulating water evaporation.

Wind Effects

Wind roses in the AFC for 1998, 1999 and 2000 indicate the prevailing winds are from the west, about 15 degrees off the longitudinal axis of the PEC cooling tower, at about 20 percent of the year. The second highest wind direction is from the WSW about 12 to 17 percent of the year, parallel to the longitudinal axis of the cooling tower. When combined with the winds from the east, the PEC cooling tower, as built, sees winds within 15 degrees of the longitudinal axis of the cooling tower about 60 to 70 percent of the year, depending on the year. If the cooling tower had been oriented east-west, as suggested by BBU to ensure that the inlets were parallel to the prevailing westerly winds, the cooling tower

³ Inspection Report 2007-05-25, SPX Cooling Technologies, Inc.

would have still seen winds within 15 degrees of the longitudinal axis of the cooling tower about 60 to 70 percent of the year, depending on the year.

This suggests that the PEC cooling tower is well oriented for wind conditions likely at PEC over the course of a year, given that most winds are within 15 degrees of the longitudinal axis on the tower on an annual basis. The cooling tower could have been oriented to optimize for the worst case (for heat rejection) conditions – hot Santa Ana winds generally from the ENE that often occur at the same time that regional electricity demand can peak. However, staff does not disagree with the speculation of BBU that noise may have also been one of the design considerations in the orientation of the tower. Note that the PEC cooling tower met its performance guarantees at commissioning, and the project owner has not reported any curtailment of power plant operations due to limits on heat rejection in the cooling tower (i.e., re-entrainment of the heated plume due to wind, which might degrade cooling tower performance) over a year and half of operation.

BBU raises the issue of tower orientation to prevailing winds to suggest cooling tower plume downwash or “lee side draw” may be occurring that results in the cooling tower plume concentrating its effect on the adjacent roof top of the Bimbo Bakery. The photograph supplied by BBU (II.H.) to illustrate the lee side draw does not contain a time and date stamp, so it is not useful in quantifying the potential for the PEC cooling tower to affect the adjacent buildings.

According to good cooling tower design practices, the PEC tower is correctly oriented with the prevailing winds and also to achieve maximum plume rise. Wind moving parallel to the line of fans (i.e., the eight cells in the PEC cooling tower) causes the separate effluents for each fan cylinder to ‘stack up’ one on another, forming a concentrated plume of greater buoyancy.⁴

BBU commented that the chiller building and chiller tank will change air flow around the cooling tower. Staff does not agree with this assertion, as the chiller building and tank are well below the height of the cooling tower and wall at the west end of the tower.

Modeling Moisture as an Air Pollutant

BBU asked whether staff considers moisture an air pollutant. Staff does not normally directly analyze cooling tower moisture and vapor as an air pollutant, but does so indirectly by analyzing cooling tower drift/particulate matter impacts, visible plumes and plant water use. In an effort to address concerns raised by BBU, staff compared the PEC cooling tower with other combined cycle cooling towers in the state. The cooling towers are similar with respect to size, heat rejection, air and water flow rates, and drift rate. Some differences include

⁴ Cooling Tower Fundamentals, Second Edition, SPX Cooling Technologies, Inc, Overland Park, Kansas.

source water quality, allowable TDS levels and the use, or type, of plume abatement systems.

Staff believes that particulate matter is a good proxy for gauging relative moisture and plume impacts. Modeled particulate impacts provide a measure of location, intensity and duration of the cooling tower plume impacts. Staff found that the modeled impacts for PEC particulate matter were similar to other power plants. Therefore, we would expect any moisture or humidity impacts like those alleged by BBU to be occurring near other cooling towers. However, the Energy Commission has not registered any moisture or humidity impacts or complaints at any other power plants, even those in urban settings or those exposed to similar ambient meteorological conditions. Therefore, staff still cannot see a cause and effect between the PEC cooling tower and the Bimbo Bakery roof top staining and bakery product molding.

Bimbo Bakery Roof Top Staining and Bakery Product Mold Issues

BBU states that it has been observed and photographed that plumes from the cooling tower depositing moisture on the bakery facilities, that mold growth at the bakery has increased since the cooling tower operation started, and that the mold is causing problems with the bakery product quality and shelf life. To date BBU has not provided the documentation and observations that they suggest support their conclusions. Staff has not seen information or data that suggests moisture is being deposited on the bakery, and that such moisture is causing mold on or in the bakery or bakery goods. To the contrary, all data and information possessed and relied upon by staff suggests that the cooling tower is correctly designed and in compliance with the conditions of certification.

BINGHAM



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November 16, 2007

Via Email

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**Re: Petition for Proposed Change to Certification of the Palomar
Energy Center, Docket No. 01-AFC-24C**

Dear Ms. David:

Enclosed please find the comments of Bimbo Bakeries USA that are being sent in response to your memorandum of October, 26, 2007, regarding the petition for a proposed change to the Certification of the Palomar Energy Center to add inlet chillers, Docket No. 01AFC-24C. These comments are being filed today pursuant to an agreement for an extension of time that was granted by the Commission staff.

Please contact me if you have any questions concerning these comments.

Sincerely yours,

A handwritten signature in cursive script that reads "Bill Kissinger" followed by a flourish.

William D. Kissinger

Encl.

cc: CEC Docket Office
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BEFORE THE CALIFORNIA ENERGY COMMISSION

Petition for Proposed Change to Certification of the Palomar Energy Center, Docket No. 01-AFC-24C

Comments of Bimbo Bakeries USA

Bimbo Bakeries USA ("BBU") operates a bakery immediately adjacent to the Palomar Energy Center. On July 24, 2007, San Diego Gas and Electric ("SDG&E") filed a "Petition for Change of the Project Description in the Final Decision to Install and Operate a Gas Combustion Turbine Inlet Air Chiller in Place of an Evaporative Chiller System" ("Petition") with respect to the Palomar Energy Center, Docket No. 01-AFC-24. The Commission filed a staff analysis of this Petition on Oct. 26, 2007 ("Staff Analysis").

The Staff Analysis indicates the California Energy Commission ("Commission") will consider the Petition on November 21, 2007, although it is our understanding that the Petition will now be considered on Dec. 5, 2007. BBU is filing these comments to urge the Commission to delay action on the Petition. But, if the Commission is inclined to act on the Petition now and decides to grant it, the Commission should do so conditionally. BBU believes this is necessary because the analyses presented in the Petition as well as the Staff Analysis are flawed and mitigation is required to address the significant additional adverse impacts that the proposed modifications will have on BBU.

BBU's views are supported by the accompanying expert report of Mr. Richard DesJardins, an expert on cooling towers such as those in use at the Palomar Energy Center. *See Ex. A.*

BBU does not make this request lightly. It is aware of SDG&E's desire for immediate action on the Petition to ensure that the additional 40 MW of capacity can come on line for the 2008 summer peak. As a large consumer of electricity, BBU supports efforts to ensure a reliable supply of electricity. In addition, BBU acknowledges that the impact of the modification being sought by SDG&E is only incremental to the impacts of the previously approved permit. Thus, BBU is not asking that the Commission deny the application. Instead, it suggests either a brief delay so Commission Staff can work with SDG&E and BBU to come up with additional conditions of certification that might mitigate as well as quantify the additional adverse impacts associated with granting the Petition. Alternatively, BBU requests the Commission to make any approval conditional on taking such actions within a specified time period.

I. Background

A. Initial Certification of the Palomar Energy Center

On August 3, 2003, the Commission granted a certificate to construct and operate the Palomar Energy Center on a site in an industrial park in Escondido, CA. The bakery is about 75 yards east of Palomar Energy Center, down a fifteen foot embankment from Palomar Energy Center's

The second Petition, which is the subject of these comments, was filed on July 24, 2007. This Petition requests a change to the Project Description that is similar to that initially proposed earlier in the year. A Staff Analysis of the Petition was filed on October 26, 2007, which recommends approval of the Petition.

Although the Staff Analysis does not refer to any effort on the part of the Commission to address the earlier objection raised by BBU, the Commission should be aware that compliance staff sent BBU a one-page letter dated September 21, 2007. *See* Exhibit C. The letter indicates that the Staff investigated the allegations raised but could find no "causal relationship between the operation of the Palomar Energy Center and the Bimbo Bakery" and invited BBU to file a compliance case. *Id.* The Commission staff did not provide any basis for its conclusion in the letter and has not provided any basis for the conclusion in subsequent conversations concerning this letter.

C. Impact of Palomar Energy Center on BBU

BBU's Escondido bakery has been in operation since 1991. The bakery produces bread and rolls for customers ranging from local schools to supermarket chains to the military. On average, the bakery produces 4.2 million units of product each month, distributed throughout California, Arizona, and Nevada.

As explained in more detail in BBU's Initial Objection Letter, after the Palomar Energy Center began operations in April of 2006, BBU began to have mold problems both in product and at the bakery facility itself. *See generally* Ex. B. These problems became especially severe with the arrival of hot weather in July and August. Customers began to call in large numbers complaining about product spoiling well before the expiration date. Product testing showed abnormally high mold levels in the product, far in excess of that observed prior to Palomar's startup. After Palomar began operating, employees also began to complain about elevated mold levels in the facility. Employees reported the presence of mold to the Center for Disease Control ("CDC"), which placed the bakery in contact with the National Institute of Occupational Safety and Health ("NIOSH"). Serious mold problems have persisted and have required significantly heightened levels of disinfection and power washing on the roof and throughout the facility.

As detailed in the Initial Objection Letter, it is clear to BBU the bakery's mold problems are directly related to Palomar's operation, and particularly to the operation of the cooling towers. *See generally* Ex. B. Palomar's cooling towers give off large moisture plumes, which are especially noticeable on hot days. These plumes have often been observed directly over the bakery. The plant manager has observed occasions when on otherwise clear evenings it appeared to be "raining on the roof."

Since filing its Initial Objection Letter, BBU has retained Mr. Richard DesJardins, an expert on cooling towers, who has confirmed that the Palomar Energy Center cooling towers are the likely source of the increased moisture on the bakery roof that has led to mold formation. *See* Ex. A. Moreover, Mr. DesJardins believes that approval of the Petition will exacerbate the problem that BBU is already facing. *Id.*

II. Standard of Review

The Commission has established regulations governing how it addresses petitions for modification of its decisions. Commission regulations provide that this Petition is to be processed in accordance with 20 Cal. Code Reg. §176 9(a)(3). This section provides that the Commission may approve the modification only if the Commission can make several findings, as set forth below.

- The Commission must be able to make the “findings specified in section 1755 (c) and (d), if applicable.” These findings are those required with respect to the final decisions:

(c) The commission shall not certify any site and related facilities for which one or more significant adverse environmental effects have been identified unless the commission makes both of the following findings:

(1) With respect to matters within the authority of the commission, that changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant environmental effects identified in the proceeding.

(2) With respect to matters not within the commission's authority but within the authority of another agency, that changes or alterations required to mitigate such effects have been adopted by such other agency, or can and should be adopted by such other agency.

(d) If the commission cannot make both the findings required under subsection (c), then it may not certify the project unless it specifically finds both of the following:

(1) That specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the application proceeding; and

(2) That the benefits of the project outweigh the unavoidable significant adverse environmental effects that may be caused by the construction and operation of the facility.

20 Cal. Code Reg. § 1755 (c) and (d).

- The Commission must also find that:
 - “[T]he project would remain in compliance with all applicable laws, ordinances, regulations, and standards, subject to the provisions of Public Resources Code section 25525.” 20 Cal. Code Regs. § 1769(a)(3)(B).

- “[T]he change will be beneficial to the public, applicant, or intervenors.” 20 Cal. Code Regs. § 1769(a)(3)(C).
- “[T]here has been a substantial change in circumstances since the Commission certification justifying the change or that the change is based on information which was not known and could not have been known with the exercise of reasonable diligence prior to Commission certification.” 20 Cal. Code Regs. § 1769(a)(3)(D).

III. Summary of BBU’s Expert Report

As explained in the attached expert report, Mr. DeJardins’ primary conclusions are: (1) the initial design of the power plant was flawed in that the cooling towers were not oriented properly in relation to prevailing winds at the site, which may be promoting “lee side draw” where air is sucked downward on the downwind side of the cooling tower; (2) the Commission’s final decision authorizing the construction and operation of the Palomar Energy Center did not adequately analyze the direction and spread of the plume or assess the impact of the plume on neighboring landowners; (3) the analysis of the Petition and the Staff analysis of the Petition are flawed in a way that understates the impact on BBU and approval of the Petition as proposed is likely to exacerbate the impacts by increasing disposition of water on BBU’s rooftop; and (4) the Commission could take steps to ensure that a proper analysis of the impact of the Petition is prepared and mitigation measures developed to address the impact of the additional capacity associated with the Petition.

A. The Initial Design of the Power Plant Was Flawed.

Mr. DesJardins concludes the initial design of the power plant was flawed. *See generally* Ex. A at II-H. As he explains, it is standard industry practice to orient cooling towers parallel to the prevailing winds to prevent recirculation of cooling tower plumes and to give plumes buoyancy. *Id.* But, in this case, that was not done. *Id.* Thus, what appears to be happening is that cooling tower plumes are being subject to “lee side draw,” *i.e.* they are being sucked downward on the down wind side of the corner of the tower. This corner of the cooling tower is located on the top of slope, with the BBU bakery rooftop approximately 75 yards away at the bottom of the slope. Ex. A at II-H and Ex. A, Attachment 1. The direction of the prevailing winds are from the cooling tower toward the BBU bakery rooftop. *Id.*

B. The Commission’s Decision on the Application for Certification Did Not Adequately Analyze the Impacts.

Mr. DesJardins has reviewed pertinent portions of the Commission’s Final Decision. In particular, he has reviewed the information regarding the plume analysis presented in the visual resources section. Ex. A at VI-A. Mr. DesJardins concludes consideration should have been given to impacts beyond the visual impacts of the cooling tower plumes. *Id.* Mr. DesJardins believes modeling of the effects of the cooling tower plume on adjacent properties should have been performed under various ambient and load conditions for all seasons of the year considering

the location of the plant, the surrounding hills and the proximity of other businesses. Ex. A at VII-A.

C. The Impact of Approving the Petition has not been Adequately Analyzed.

Mr. DesJardins has reviewed the Petition and Staff Analysis and has concluded that neither adequately addresses the potential impacts on BBU. A key finding of Mr. DesJardins is that adding the centralized chiller plant will increase the amount of heat that must be dissipated by the cooling towers at certain times of the year. Ex. A at III-A-1. He indicates that the heat load of the plant at design conditions would increase by 10.71% at maximum capacity. *Id.*

Mr. DesJardins believes there are several significant problems with the information that has been presented by SDG&E in its Petition, including:

- **The Petition provides only annualized evaporation calculations.** Thus, it does not address specific instantaneous evaporation rates that may vary significantly from the annualized data. Ex. A at III-A-2. For instance, when the plant is running at full capacity, the addition of the evaporation coils on the turbine inlets will add an additional 12,800 gallons per hour ("gph") of evaporation to the already existing evaporation rate of 108,000 gph. Consequently, with the modification, at full output the Palomar Energy Project will be emitting 120,800 gph. *Id.* To put this in perspective, a backyard swimming pool contains about 12,000 gallons. Thus, the additional heat load from the refrigeration system will result in adding an additional swimming pool to the nine pools worth of water already being put into the air *every hour*. *Id.* Mr. DesJardins also points out that SDG&E's use of annualized data masks the problem because of seasonal and day/night differences. Ex. A at III-D.
- **There is no analysis of where the plume will travel.** Ex. A at III-H. This is particularly significant since the addition of the chiller and tank may change the air flow and could even funnel the plume between the new tank and the southwest sound wall so that the plume is funneled to the bakery. Ex. A at III-I.
- **Overall, there is no analysis to define the resulting increase in moisture to the bakery.** Ex. A at III-A-2, Ex. A at III-H.

Mr. DesJardins also believes that there are problems with the Staff Analysis, some of which are summarized below: *See generally* Ex. A at IV.

- **Air:** The air emissions analysis does not take into consideration moisture emitted from the cooling tower and its affect on the surroundings. Ex. A at IV-A and IV-B.
- **Visual:** Mr. DesJardins believes the analysis in the visual section has flaws.
 - **Averaging:** The visual analysis appears to rely on averaging chiller caused cooling tower load increases with load reductions from reduced direct duct burner usage. Ex. A at IV-C. But, Mr. DesJardins points out, when the chiller is running the duct burners would not be used and the full load of the chillers

would likely be added to the cooling tower, causing increased evaporation. *Id.* Thus, it is not appropriate to rely on annual averages for this analysis. *Id.*

- **Size of the plume:** Mr. DesJardins also believes that a more than 10% increase in the heat load will cause a proportionate increase in moisture emitted from the cooling towers and that, since the amount of air passing through the tower will not be increased at that time, the plume will have to travel considerably more than 10% of the distance to dissipate. Ex. A at IV-D.
- **CEC staff criteria:** Mr. DesJardins asks whether CEC staff criteria for plume frequency thresholds for visual impact analysis should be reconsidered or replaced with criteria that covers total plume impact. Ex. A at V.

D. The Commission Can Take Steps Necessary to Ensure that a Proper Analysis of the Petition is Done and Mitigation is Imposed.

Mr. DesJardins concludes his report with overall observations and recommendations. *See generally* Ex. A at VII and VIII. Mr. DesJardins' recommendations include: (1) modeling the plant and surrounding terrain to determine if the additional discharge added will increase the moisture ending up on the BBU rooftop under a variety of different operating and ambient conditions; (2) installing monitoring equipment; (3) preparing a more critical analysis of the Petition; and (4) preparing a study of whether changes in the plant operations with regard to plume abatement can be made to reduce the frequency and quantity of moisture reaching the bakery. *See* Ex. A at VIII.

IV. Discussion

The Petition presents a vexing issue for the Commission because it seeks a modification that will not create a *new* problem but rather will incrementally aggravate an existing one. At the time the Palomar Energy Center was first permitted, it appears no one appreciated the possible impacts the cooling tower might have on BBU's operations. The steel is now in the ground and it is difficult to imagine ways in which those impacts can be fully mitigated. As a result, BBU anticipates the need to address the issue with SDG&E outside the context of the Commission's proceedings. At the same time, the Petition provides the Commission with an opportunity to put in place measures to limit any additional impacts associated with the proposed modifications. Accordingly, BBU urges the Commission to either delay deciding the Petition so Commission Staff can work with SDG&E and BBU to come up with additional conditions of certification that might mitigate as well as quantify the additional adverse impacts of granting the Petition or otherwise make such approval conditional on taking such actions.

A. Absent Mitigation, the Commission Will Not Be Able to Make the Required Findings at this Time.

As detailed below, there are several reasons the Commission cannot make the findings required of it at this time. First, the Commission will not be able to find that "the project would remain in compliance with all applicable laws, ordinances, regulations, and standards, subject to the provisions of Public Resources Code section 25525." 20 Cal. Code Regs. § 1769(a)(3)(B) (so-

called "LORS" finding). As the Commission Staff has correctly noted in its Staff Analysis, among the LORS conditions is the requirement that:

[N]o person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

Cal. Health & Safety Code § 41700. *See* Staff Analysis at 8. The same legal requirement has been incorporated into San Diego Air Pollution Control District Rule 51. This requirement cannot be met with respect to Palomar given the manner in which granting the Petition would exacerbate the current problem. Ex. A at IV-A.

The Commission also has responsibilities under the California Environmental Quality Act ("CEQA"). As an agency that has a certified regulatory program that meets the requirements of CEQA, the Commission has an obligation to conform with the requirements of CEQA. Under CEQA and the CEQA Guidelines, there are circumstances under which granting a new discretionary approval for a project, such as approval of the Petition, after an EIR has been certified requires an agency to prepare a supplement or addendum to the EIR. *See generally* Cal. Pub. Res. Code § 21166; 14 Cal. Code Regs. §§ 15163 - 15164.

One of the circumstances under which a supplement or addendum is to be prepared is if "New information, which was not known and could not have been known at the time the environmental impact report was certified as complete, becomes available." Cal. Pub. Res. Code § 21166(c). The CEQA guidelines further specify the types of new information which can trigger the need for further environmental review. 14 Cal. Code Regs. § 15162 (a)(3) (referred to in 14 Cal. Code Regs. §§ 15163 - 15164).² Clearly this is a circumstance in which there is new information of significant effects that has not been analyzed in the Petition or by the Commission as part of its Staff Analysis and where there is at least the possibility that imposing mitigation measures that were not previously considered may reduce those significant effects.²

B. The Commission Also Has Authority to Establish a Monitoring System.

The Commission has authority to impose conditions on the granting of a Petition that include additional monitoring. The Public Resources Code provides that the Commission "shall

² These circumstances include situations in which "The project will have one or more significant effects not discussed in the previous EIR." 14 Cal. Code Regs. § 15162 (a)(3)(A). These circumstances also include circumstances under which "Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment." 14 Cal. Code Regs. § 15162 (a)(3)(D).

² BBU notes the Commission has previously had to reexamine the impact of a plume in the context of considering a proposed modification to a power plant certification. In the Commission's recent decision with respect to the proposed Russell City Energy Center Amendment No. 1, the Commission considered the possible impact of the thermal plume from the power plant on planes landing at a nearby airport, an issue that was not addressed during the initial certification proceeding. *See* Final Decision on Russell City Energy Center Amendment No. 1. Docket No. 01-AFC-7C, dated September 26, 2007, and filed October 2, 2007.

establish a monitoring system to assure that any facility certified under this division is constructed and is operating in compliance with air and water quality, public health and safety, and other applicable regulations, guidelines, and conditions adopted or established by the commission." Cal. Pub. Res. Code § 25532. At present, the Conditions of Certification do not require the type of monitoring needed to fully assess the impacts of the moisture from the cooling towers, although such monitoring could be required. See Ex. A at VII-B. The Commission has, in at least one other decision, imposed monitoring requirements intended to ensure that ground-hugging cooling tower plumes do not cause adverse impacts, in that case for the safety of vehicles on nearby roads. See Final Decision on Application for Certification of the Roseville Energy Park, Docket No. 03-AFC-1, dated April 13, 2005, at 294-96.

C. The Commission Could Grant Limited Conditional Approval for the Project.

BBU anticipates that the Commission will view the opportunity to add an additional 40MW in the San Diego region before the coming summer as a highly desirable outcome. As a customer of SDG&E that would be adversely affected by power outages, BBU itself is concerned about maintaining a reliable supply of electricity. Consequently, BBU is not specifically seeking denial of the Petition. Instead, BBU suggests a delay to allow Commission Staff, SDG&E and BBU to agree on measures that will mitigate the incremental impact of the cooling tower as well as put in place appropriate monitoring measures.⁴

BBU anticipates SDG&E will argue the Petition must be granted immediately if the plant modifications are to be completed by this summer. If the Commission is persuaded by this argument, it could grant the Petition conditionally, something it has done in other instances in order to enhance the reliability of the electric supply. See, e.g., Final Decision in Huntington Beach Generating Station Retool Project, 00-AFC-13, dated May 10, 2001, and Order on Reconsideration dated May 11, 2001 (in order to permit new capacity to be added quickly, license was conditioned on monitoring marine impacts and returning to the Commission to determine appropriate mitigation, and license was granted only for limited time period). Such a conditional approval could require SDG&E to take appropriate steps to mitigate the impacts to the extent possible and to put in place additional monitoring.

V. Requested Relief

1. The Commission should delay acting on the Petition and, should instead order Staff to promptly convene a meeting of the representatives of SDG&E and BBU to come up with a new condition of certification for the Palomar Energy Center. The new condition will require SDG&E to work with Commission Staff and BBU to take appropriate steps to mitigate the impacts of the Petition and to put in place additional monitoring.

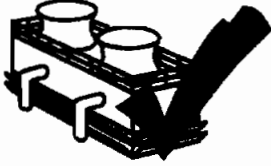
⁴ BBU notes that the first petition for authorization to do this work was filed on January 19, 2007, for work to be done for the summer of 2007. This suggests that Commission action could occur in a few months without jeopardizing project completion in advance of this coming summer.

2. **Alternatively, the Commission should grant the Petition conditionally subject to a review within four months that such conditions of certification have been developed.**

Respectfully submitted,

/s/

**William D. Kissinger
Bingham McCutchen, LLP**



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Cooling Tower and Evaporative Cooling Consulting, Tower Check and
Psychrometric Computer Programs, Evaporative Air Pre-Coolers
Cooling Tower and Air Flow Testing

November 16, 2007

Ref: Bimbo Bakery, Escondido, CA
SDG&E Palomar Project, Escondido, CA
Petition for Changes to Project Description

REPORT ON ANALYSIS OF COOLING TOWER DESIGN AND OPERATION

I. Background

- A. Richard J. DesJardins is an independent cooling tower and evaporative cooling consultant with over 48 years of experience in the industry. Please review the attached resume.
- B. Earlier this year Richard DesJardins was approached by Bingham McCutchen for assistance in reviewing an application by PEP to add air inlet chilling to the gas turbines at the PEP plant in Escondido, CA. and the effect the modification may have on the adjacent Bimbo Bakery. Subsequently a series of the applicable documents have been reviewed and the power plant site was visited along with the Bimbo Bakery plant manager. Richard DesJardins has been asked to provide expert comments regarding cooling tower design specifically as it applies to the problems Bimbo Bakery Co. is having with mold growth at their bakery and the effect the addition of more equipment at the power plant may cause.

II. Overview of the situation:

- A. The cooling tower at PEP was specified cool 125,000 gpm of cooling water used to cool the steam turbine's condenser and other plant equipment. Additionally the tower is equipped with plume abatement coils with a design point of 51.5° F and 90.5% relative humidity. The initial plant total heat load was 1,250,000,000 btu/hr.
- B. The Palomar power plant was designed to use recycled water as make-up for the cooling tower. For this reason a drift eliminator design requirement of a maximum drift rate of 0.0005% of the circulating water flow rate was made a part of the CEC license.

- C. A cooling tower evaporates approximately one pound of water for every 1,000 BTUs of heat dissipated. This is equivalent to approximately 1,800 gallons per minute evaporation introduced into the atmosphere at the original design heat load.
- D. Giving consideration to the WSW prevailing winds from the ocean it is noted the cooling tower is oriented almost in line with the prevailing winds and directly upwind and in close proximity to the bakery.
- E. It has been observed (and information obtained suggests) that plume abatement system and controls being utilized are not adequate to mitigate the plume at all times that power plant is running - including night time and winter conditions.
- F. It has been observed and photographed that plume from the cooling tower is depositing moisture on the bakery facilities. It has been observed that mold growth at the bakery has increased since the cooling tower operation started, and it is reported that the mold is causing problems with the bakery products.
- G. It is understood that the addition of air inlet chillers for the gas turbines at the power plant will increase the turbine efficiency and net plant output. This will occur both when using the refrigeration chillers in the summer to cool the inlet turbine air, and also in the winter when the inlet air coils can be used to heat the inlet turbine air. However, using the chillers will also increase the amount of moisture evaporated from the cooling tower, even if the plume is not visible, and the effect on the bakery mold growth may or may not be significant.
- H. The drawings of the power plant jobsite provided with the original petition show the orientation of the prevailing wind. This drawing has been modified to show the relative location and size of the bakery and the grade elevations at the bakery, the base of the cooling tower and the top of the hill to the west of the plant, and the modified drawing is attached.

It is observed from this drawing that, for some unknown reason, the longitudinal access of the tower is not orientated parallel with the prevailing wind, which would normally be recommended to prevent recirculation and allow combination of the discharge of all the fans to provide a more buoyant effect to the plume. Standard practice in the industry would call for orientation parallel with the prevailing wind. (Recirculation is defined as discharge air which is sucked into the lee side of the tower -- it causes the inlet wet bulb temperature to rise and reduces the thermal performance capability of the tower with resulting increase in the tower cold water temperature). It is speculated that the tower orientation was changed for noise emitting considerations. However, this orientation may be promoting "lee side draw" where the air is sucked downward on the down wind corner of the tower.

The photo below is an example of the plume from the tower extending in the direction of the prevailing wind (directly over bakery) and being drawn down with "lee side draw" from the tower configuration, and the slope of the hills upwind and down wind of the tower. Note the density of the discharge air as compared to the density of the ambient air is obviously not great enough to cause a vertically rising plume. The photo is taken looking east from the top of the hill above the plant. The roof of the bakery is located below the base of the tower further down the hill to the west. The portion of the tower shown is approximately the top 30 feet of a total 66 feet above grade.



III. The following are specific comments and questions on statements made in the SDG&E petition

A. The air inlet chiller would include "*A centralized chiller plant of 9,000 tons of refrigeration capacity ...*"

1. This size of plant, if running at full capacity, would add 135,000,000 btu/hr of waste heat that must be dissipated by the cooling tower. The heat load for the entire plant is 1,125,000,000. Therefore, the heat load of the plant at design conditions would increase 10.71%.

2. Table 2 of the petition (Summary of Projected Chiller Effects on Cooling Tower Evaporation) provides *annualized* evaporation calculations, but it does not address specific instantaneous evaporation rates that may vary significantly from the annualized data. For example, if the plant is attempting to run at full capacity during times of hot weather, with the chillers running at full capacity, and based on the original design, the evaporation from the tower would be 108,000 gallons per hour.

Addition of refrigeration coils on the turbine inlets will add about 12,800 gallons per hour of evaporation for a total of 120,800 gallons per hour. To put this into perspective, a typical backyard swimming pool contains about 12,000 gallons, and the tower with the new heat load from the refrigeration system will be evaporating the equivalent of 10 backyard swimming pools *every hour*. That is a lot of moisture to add to the ambient air passing the plant. There is no data presented to define the resulting increase in moisture at the bakery.

3. Also, there is a chance that addition of this chiller heat to the cooling tower will increase the cold water temperature going to the condenser of the steam turbine with a resulting decrease in efficiency that may drive the water returning to the tower up even more than just the chiller load, with a resulting increase in the actual evaporation rate

4. Appendix 3. Paragraph 3 of the petition indicates the AVERAGE heat load rejected is 40,000,000 Btu/hr. This is much less than the possible maximum of approximately 135,000,000 Btu/hr + for a 9,000 ton chiller. Use of AVERAGE hours may not be appropriate.

- B. The SDG&E application does not adequately address the potential impacts of the addition of the refrigeration system on the bakery. They have only looked at emissions of pollutants with specific emission limitations. They state: "*The change will not significantly change project air emission and no increase in concentration, hourly or annual emission limits is requested.*" Is there a chance the emission limits do not include water or water vapor emissions from the cooling tower, since a cooling tower is generally considered only as an air washer? The concern is the additional moisture evaporated from the tower will only make a bad situation at the Bimbo Bakery worse. Moisture is not considered a part of the PM-10 constituents.
- C. Table 1 (*Review of Effects of Substituting Air Chiller for Evaporative cooling of Turbine Inlet Air*) indicates the project emissions will remain within existing air quality emission limits. Do these in requirements include the cooling tower emissions and moisture content?
- D. The petition states: "... *chiller will not significantly affect cooling tower emissions...*": Is a 10% increase in moisture emissions from the cooling tower significant? Use of annual data will mask the type of problem the bakery is experiencing - it masks seasonal differences and day/night differences.
- E. The petition states: "... *since there is no possibility of a significant environmental impact...*". This may not be true at all times.
- F. The petition states: "*No additional water will be used; The chiller will result in a small reduction in water consumption*". This may be true on a

year around basis, but it will not be true if the maximum chiller capacity is used on any given day or series of days.

- G. Under "*Water Resources*" it is indicated that there may be an annual reduction in water usage. Annual usage may not be a proper method of analysis.
- H. It appears the "*Net Overall*" evaporation effect is distorted by the use of annual averages. There may be many times when the emissions from the tower are increased, and there is no sure way to determine the total additional detrimental affect on the bakery. There is no analysis of where the plume will travel.
- I. With respect to the structures to be added to the site to accommodate the chiller and tank additions the petition states: "*The structure is not expected to adversely affect the offsite visual impact of the plant.*" This may be true of the compressor housing, however, when the 128 ft diameter 50 ft high tank is added to the south there is no assurance the wind patterns around the tower will not be affected in such a manner as to change the air flow that is making its way to the bakery. Has this been studied? Will it channel air between the new tank and the southwest sound wall so that the plume is funneled to the bakery?
- J. There is no consideration of the effect that the use of recycled water may have -- especially that it may increase exposure to unmonitored constituents of the recycled water, such as mold spores.

IV. The following are comments on the CEC Staff reports

- A. Air quality analysis Table I lists Health and Safety Code #7401 states that: "*... no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.*" Unfortunately it is necessary to conclude the moisture from the cooling tower is affecting the bakery operations.
- B. Under "Cooling Tower Emissions" the Staff report concludes "*...staff does not expect an increase in pollutant emission from the facility cooling tower beyond the maximums, or worst-case, already analyzed, mitigated, and permitted. Therefore, no significant impacts to the ambient air quality are expected from cooling tower emissions after the chiller amendment.*" This apparently does not take into consideration moisture emitted from the cooling tower and its affect on the surroundings.
- C. In the Staff report under "Visual Resources Analysis" it was concluded, based on a report by W. Walters, that: "*Although there would be an*

increase in cooling load due to the use of the chiller, generally this increase would occur during warm ambient conditions when plumes would not be expected to occur, and the chiller caused cooling increase may be more than offset by cooling load reductions from reduced duct burner use." This conclusion may be flawed. It is believed that when the chiller is running the duct burners would not be used, and the full load of the chillers would likely be added to the cooling tower causing increased evaporation. The only way there can be an offset is by using annual analysis which should not apply to this conclusion.

- D. The conclusion in the "Visual Resources Analysis" that: "The installation of the inlet air chiller system is predicted to result in a less than significant change to the PEC cooling tower's water vapor plume frequency and size." may not be correct. A more than 10% increase in heat load will cause a proportionate increase in moisture emitted from the cooling tower. The amount of air passing the tower will not be increased at that time, so the plume will have to travel further to fully dissipate. Since the air into which it must dissipate will already be saturated, it may have to travel considerably more than 10% of the distance to eliminate the visual plume.

V. Will Walters' report: 10/18/2007 on Visual Plume

- A. Visual plume impact should not be the only consideration. A study of the plume dispersal under varying ambient and operating conditions is suggested. The report says the increase in load is only 5% or less. This may not be the case. The full heat load of the chillers at maximum capacity would cause approximately 10.7% in the total cooling tower heat load. It is believed the operation of the duct burners does not occur at the same time as the chillers. Should the CEC staff criteria for plume frequency thresholds for visual impact analysis be reconsidered or replaced with a criteria that covers total plume impact?

VI. The following excerpt from the CEC decision at pages 307-308 was provided:

- A. *Staff conducted an independent modeling analysis to predict the frequency of project vapor plumes associated with the non-abated HRSGs and the plume abated cooling tower. (Ex. 50, p. 4.12-21.) Staff employs a significance frequency threshold of ten percent or greater for plume occurrence during seasonal (72) daylight no rain/no fog (SDNRNF) hours to determine whether a more detailed analysis is required. Staff disregards plumes that may occur at night or during rain or fog conditions because plume visibility is typically low during those conditions. (4/29/03 RT, p. 111 et seq.)*

Staff's analysis determined that visible plume formation would occur mainly during the cold weather months, with the majority of plume formation occurring at night or early morning. Consequently, the predicted HRSG and cooling tower plumes for the project are likely to occur less than ten percent of SDNRNF hours. Staff therefore concluded

that project plumes would not result in significant visual impacts and no further visual analysis of visible plumes was conducted. (Ex. 50, p. 4.12-21.) Condition of Certification VIS-8 ensures that the project owner will implement plume abatement measures to reduce visible plumes to insignificant levels.

72 "Seasonal" is defined as the six consecutive months per year when the potential for plume formation is greatest. The months considered for a particular project are determined by the meteorological data used for that project. Usually the months are November through April, as is the case for this project. (Ex. 50, p. 4.12-20, fn. 2.)

There is no indication of what type of "independent modeling analysis" was conducted. In hind sight, it seems obvious that there should have been other considerations regarding the cooling tower plume.

- VII. It has been assumed that the cooling tower is operating as specified: (1) the thermal performance is assumed to be satisfactory to meet the original design conditions, (2) the drift loss from the cooling tower is no greater than the specified amount, and (3) the plume abatement system is operating as predicted.
- A. The problem is that the original design did not appear to include analysis of the total moisture content in the air and the possibility of the plume, visible or not, getting to the roof of the bakery and causing mold to grow to the extent that it affects the bakery's business. Review of the documents indicates only daylight visual affects were considered when choosing the plume abatement design conditions. This appears to be a case where the power plant should have been modeled using programs available from companies like Fluent, Inc. to determine the effect of the cooling tower plume on adjacent properties under various ambient and plant load conditions for all seasons of the year considering the location of the plant, the surrounding hills and the proximity of other businesses.
 - B. Calculations submitted to the CEC generally demonstrate what can be called "smoothed" data by using "yearly averages". They do not address the instantaneous conditions which may vary from season to season and day to night. They do not address considerations of what will happen to the plume when the plume abatement system is not in operation, what will happen when the fans are on half speed or some fans are turned off, or what happens during times of moderate or high winds under each of these conditions and at differing plant heat loads. The effect of the plume may be different under all of these variations.
 - C. Even if the tower had been designed for total visual plume abatement, it may not have prevented increasing the moisture around the bakery due to economical plant operating conditions and ambient wind and temperature conditions.
 - D. The preliminary findings that the addition of the refrigeration system will "not significantly" change the plant discharge may or may not be true.

The fact that the plume has been found to increase the moisture around the bakery, as observed by photos and individuals working at the bakery, demonstrates the strong possibility the mold growth found at the bakery is being promoted by the extra moisture. Adding another 10% to the amount of water evaporated by the cooling tower is not going to help the situation.

- E. It is admitted that most power plants do not have to consider the effect of cooling tower moisture on the surrounding areas. The general concern is for fallout of drift from the tower. Drift can contain all kinds of different chemical and organic matter. Evaporated water is just moisture. Usually the effect has been problems with fog or condensation on roads or bridges during freezing weather. This is not the case for the subject jobsite, so overlooking the possible problems might be brushed aside. However it should not have been. There was considerable consideration for the visible plume during daylight hours. It would have been reasonable to consider the effect at night or under different ambient conditions.
- F. If the cooling tower has adequate thermal capacity the plant could operate with the plume abatement system in operation all the time. In any case it seems it would be desirable to run the system whenever the plume is not "rising" to the point that it does not affect the operations at the bakery. There is a probability the plume abatement system design is not adequate to solve the problem of excessive moisture reaching the bakery roof.
- G. I have been asked if the tower can be modified to eliminate the plume problem. I do not believe it can. The physical size of the tower (the size of the box) has no extra room. It is expected that the fans are now designed to run at maximum capacity. The structure probably could not support larger plume abatement coils. Other significant changes to the plant would be required.
- H. The bakery is concerned with increased mold around its facility. It is well known that mold is always present in the air around all of us. It is minimized in dry conditions and it grows in moist conditions. It could come from the ambient air, the bakery or the sewage water make up to the tower. The source of the mold is not of concern. The moisture added around the bakery by the cooling tower is of concern as it can promote mold growth.

VIII. Suggestions to determine the impact of the addition of the air inlet chiller system:

- A. One suggestion would be to hire a suitable company to model the plant and surrounding terrain to determine if the additional discharge added by the refrigeration equipment will increase the moisture ending up at the bakery for different operating and ambient conditions.
- B. Another suggestion would be to install monitoring equipment to continually measure the moisture and mold content of the air upwind of the plant and on the bakery roof and to monitor and report for mold,

fungus and other biological matter in the cooling tower make-up water and the circulating water.

- C. Not all monitoring equipment is equal. If either of these suggestions is taken, it is cautioned that the quality of the program and equipment should be reviewed and agreed to by all parties before purchase to assure accurate results. Location of the monitoring equipment should be considered carefully.
- D. It appears that a more critical analysis of what SDG&E has submitted is required. Condition amendments on making changes to the CEC license to address adverse impacts in the event that the new monitoring data show that the change to inlet chillers has an adverse impact on the bakery.
- E. Consideration should be given to any other options to mitigate the problem of mold growth at the bakery.
- F. A study should be made to determine if changes in the plant operations with regard to plume abatement can be made to reduce the frequency and quantity of moisture reaching the bakery. This study should consider if use of the plume abatement system actually helps when considering that under some ambient temperature conditions and plant operating modes the density of the discharge air as compared to the ambient air density may actually promote deposition of more moisture around the bakery. Visual plume may not be the most important consideration.

Respectfully submitted,

Richard J. DesJardins

Richard J. DesJardins

Cooling Tower Consultant

**EXHIBIT A
ATTACHMENT 1**

BAKERY
380' X 220'

ELEV. = 725'

720' (APPROX.)

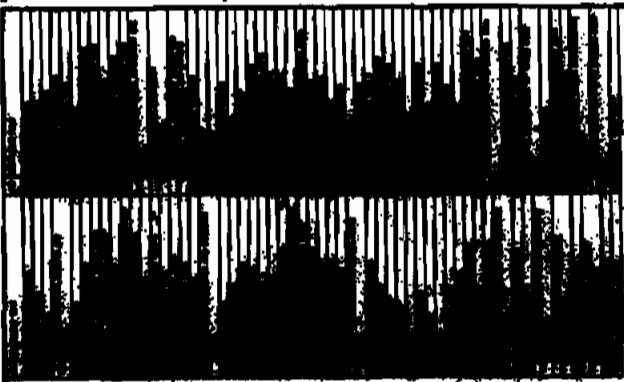
ELEV. = 730'

0000'

MAX. ELEV. = 800'

- 100' - 150'
- 150' - 200'
- 200' - 250'
- 250' - 300'
- 300' - 350'
- 350' - 400'
- 400' - 450'
- 450' - 500'
- 500' - 550'
- 550' - 600'
- 600' - 650'
- 650' - 700'
- 700' - 750'
- 750' - 800'

NOTE PREVAILING WIND DIRECTION



APR 1950	1:10,000
U.S. GEOLOGICAL SURVEY	WATER RESOURCES DIVISION
WATER RESOURCES DIVISION WASHINGTON, D. C. 20540	

CONSULTING SERVICES:

Cooling tower bid analysis and thermal performance evaluation; Structural Inspections; Specification preparation; Thermal performance testing; Review for thermal up-grades; Economic comparisons and evaluations; Confidential preliminary tower sizing and budget pricing; Review of alternatives to standard towers or materials; Psychrometric, plume abatement and water conservation problem analysis; Evaporative cooling equipment design for air cooled heat exchangers, gas turbines, and industrial buildings; Refrigeration of gas turbine inlet air.

Sophisticated cooling tower thermal rating programs and psychrometric problem solving programs are used to minimize costs. Cooling tower thermal performance analysis can be made using either standard CTI methods or more accurate alternative theories for either cross flow or counter flow towers.

EDUCATION:

BS Mechanical Engineering, University of Colorado
Master, Business Administration, University of Missouri at Kansas City

CONSULTING SERVICES HAVE BEEN PROVIDED FOR THE FOLLOWING COMPANIES:

Sempra Energy/CentralPlants, The Ben Holt Co., Bibb Associates, Unocal, City of Pasadena Power Department, U. S. Agri, C. A. Lampman & Associates, Airco Industrial Gases, Tri-Thermal, Inc., Psychrometric Systems, E & L Engineering, R. M. Parsons Co., Fluor Daniel, Ultramar Refining, Thermal Equipment Co., Tower Performance of Texas, American Cooling Products and Constructors, D. C. Industrial, Inc., Compliance Systems International, Bionomic Industries, GRT & Associates, Exxon, Mobil Oil, Ogden Geothermal, Pacific Gas and Electric, C. F. Braun, North Shore Greenhouses, Lantec Products, Calenergy, TIC., Beaudin Consulting, American Cooling Tower Co., Carrier Corp., Tower Tech Inc., Scott Co., SDG&E, American Cooling Tower, Mighty River Power, Parsons Brinkerhoff, Kinder Morgan, MicroCool, Popco, Transwestern Property, Arco Plaza, TRC Easy, Carlyle Group, Lunday Thargard, and more.

BUSINESS MEMBERSHIPS AND ACTIVITIES

Cooling Technology Institute - Member Performance and Technology Committee - Chairman Bid & Inquiry Committee - Member Plume Abatement Committee - Author, CTI Paper #TP-92-01 (regarding a more accurate theory of cooling tower performance prediction) and #TP-06-1 (regarding how cooling towers and their components work as a system and published in the CTI Journal, spring 2007 issue).

American Society of Mechanical Engineers - Past Member Board of Directors and Past Chairman Los Angeles Power Division, Lifetime Member

Los Angeles Power Producers Association - Past Member Board of Directors

Please review my web site: www.rjdesjardins.com

EXHIBIT B



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Phone 760.737.7780
Fax 760.737.0052

8 February 2007

Via Email cbruins@energy.state.ca.us
Via Facsimile (916) 654-3882

Connie Bruins
Compliance Project Manager
California Energy Commission
1516 9th Street, MS 2000
Sacramento, CA 95814

**Re: Notice of Insignificant Project Change to Add Inlet Chillers for the
Palomar Energy Center Project (01-AFC-24C)**

Dear Ms. Bruins:

This letter is in response to a document entitled "Notice of Insignificant Project Change to add Inlet chillers for the Palomar Energy Center Project (01-AFC-24C)," mailed January 26, 2007. I write to object to the California Energy Commission ("CEC") staff's determination that the proposed plant modifications and associated increase in output of 40 megawatts at the Palomar Energy Center ("Palomar") are an "insignificant project change." I am the Plant Manager of Bimbo Bakeries USA's Escondido facility (the "bakery") and write this letter on behalf of Bimbo Bakeries USA.

The bakery is about 75 yards East of Palomar, down a fifteen foot embankment from Palomar's cooling towers. Based on my experience with Palomar's operations to date, I expect that the forecasted increase in Palomar's output will result in significant effects on the environment, and may cause Palomar to be out of compliance with applicable laws, regulations, and ordinances. The bakery did not participate in the CEC's licensing process for Palomar, since we did not anticipate that Palomar would cause any problems for us. Some background regarding the bakery may be helpful for the CEC to understand our concerns with Palomar's proposed change. Since 1991, the bakery has been producing bread and rolls for customers ranging from local schools to supermarket chains to the military. On average, the bakery produces 4.2 million units of product each month, distributed throughout California, Arizona, and Nevada. For the last decade, the bakery has been one of Bimbo Bakeries USA's top-performing facilities. Of the twelve Bimbo's Bakeries USA facilities in the United States, the Escondido bakery has consistently rated number 1 or number 2 in customer satisfaction, as measured by our customer response system. For the four years before Palomar started operating, the bakery averaged only .4 or .5 customer complaints per million units produced. All this changed with Palomar's arrival. After Palomar began operations in April of 2006 we began to have mold problems both in product and at the bakery facility itself. These problems became especially severe with the arrival of hot



weather in July and August. Customers began to call in large numbers complaining about product spoiling well before the expiration date. Product testing showed abnormally high mold levels in the product, far in excess of that observed prior to Palomar's startup. This forced us to change product formulations and increase roughly four-fold the amount of mold inhibitor in the products so that product did not spoil before its expiration date. Since the mold inhibitor also consumes yeast, we have had to increase the amount of yeast in the product. While the reformulation extended the shelf-life of the product, it also resulted in customer complaints about a chemical taste. After Palomar began operating, employees also began to complain about elevated mold levels in the facility. Employees reported the presence of mold to the Center for Disease Control ("CDC"), which placed the bakery in contact with the National Institute of Occupational Safety and Health ("NIOSH").

We conducted various tests for mold within the facility, such as swab tests of equipment and also air tests. The plant draws in outside air through a series of evaporative coolers. Testing of the evaporative coolers showed, once again, abnormally high mold counts. Examination of the bakery's roof revealed a large patch of mold growth on the Northwest corner of the roof -- the corner of the roof closest to the Palomar cooling towers. We tried to address these elevated mold levels by cleaning and sanitizing the evaporative coolers, and also by cleaning and sanitizing the roof. We also increased the frequency with which we perform both of these tasks. Before Palomar began operations we cleaned the evaporative coolers and the roof once a year, and never saw a mold problem. Currently, we are cleaning them every two months, at significant expense. After discussions with NIOSH, we also added additional filters to the evaporative cooling system. Mold growth on both the roof and the evaporative cooling system is far beyond anything the bakery experienced in the nine years that I was there before Palomar started operations.

It seems clear to me that the bakery's mold problems are directly related to Palomar's operation, and particularly to the operation of the cooling towers. Last summer, I went on the roof at 9 PM. The outside temperature was 90 degrees and it was a clear night. The wind was mild but blowing exhaust from the Palomar facility towards the bakery. It was literally raining on the side of the bakery roof nearest Palomar, and I could see steam rising from the cooling towers just across the property line before it condensed and landed on our roof.

Palomar itself seems to have problems with mold around the cooling towers. The day after the rain-on-the-roof incident I just described, I grabbed my digital camera, walked up the embankment leading to the property line with Palomar, and took photographs of the cooling towers, which themselves were covered with mold. I have included those photographs with this letter. Palomar pressure-washed the mold from the cooling towers the day after I took the photographs.

The mold problems are not the only problems that the bakery has experienced as a result of Palomar's operation. Palomar's cooling towers give off large plumes of steam, which are especially noticeable on hot days. At night, the cooling towers are lit by lamps that emit a yellow-red light. These lights reflect off Palomar's steam plumes to create the illusion that the bakery is on fire, as explained to me by the firefighters from the City of Escondido Fire Department who have responded some six times in the last year to calls from neighbours reporting non-existent fires at the bakery.

The bakery's mitigation efforts responding to Palomar's operation are expensive, and, ultimately, reflect an unacceptable imposition on the bakery, its workers, and the thousands of people who eat the food that we bake. We are gravely concerned about the impacts on our workers and our customers of the mold problem that has resulted from Palomar's operations, and about the disruption to our business that results from Palomar's steam plumes triggering residents to call



the fire department to the bakery. The prospect of even greater output, and more water vapour coming from Palomar, is deeply disturbing.

The increase in Palomar's output that will result from the proposed design change will almost certainly worsen the problems that I have just described. More output from the plant will probably increase the ambient humidity and cause more mold problems on and in the bakery, and possibly in the product as well. I would expect it to result in additional visual impacts, and possibly more visits to the bakery from the Fire Department. Obviously we are continuing to work with NIOSH and others to mitigate the problems described above. We also intend to raise this issue with Palomar's owner San Diego Gas & Electric Co. directly as well. The proposed modification and associated deadline for any objections, however, has obliged Bimbo Bakeries USA to raise the issue in this fashion.

In sum, from where we are sitting, the changes to Palomar will have a significant adverse impact on the environment, and should not be summarily authorized by the CEC as "insignificant." Accordingly, we object to the staff's determination that the proposed change is insignificant. We request that the CEC investigate further the impacts that will result from the change. If the CEC finds that the change will cause any further problems such as those described above, the CEC should require Palomar to either mitigate the problems or to withdraw the proposed change. Thank you for your attention. Should you have any questions regarding this matter, please feel free to contact our legal counsel Todd Edmlister of Bingham McCutchen. He may be reached at (415) 393-2000.

Sincerely yours



Greg Clark

cc: Taylor Miller, SDG&E



EXHIBIT C

STATE OF CALIFORNIA – THE RESOURCES AGENCY**ARNOLD SCHWARZENEGGER, Governor****CALIFORNIA ENERGY COMMISSION**1308 NINTH STREET
SACRAMENTO, CA 95814-8812

September 21, 2007

Mr. Greg Clark
Manager
Bimbo Bakeries USA
2089 Alder Grove Avenue
Escondido, CA 92029

SUBJECT: Palomar Energy Center (01-AFC-24C)

Dear Mr. Clark:

As you may be aware, Energy Commission staff has been gathering information regarding the issues you raised in your February 8, 2007 letter objecting to the Palomar Energy Center's January 2007 amendment petition. On March 13, 2007, Palomar withdrew their petition. Based on the issues raised in your February 8 letter, our staff has been looking into whether the operation of the Palomar Energy Center is adversely impacting the bakery. Our May 30, 2007 tour of the Bimbo Bakery and Palomar Energy Center in Escondido was part of that effort. We have completed a compliance verification review of the Palomar Energy Center and have determined that the facility, including the cooling tower, is operating in compliance with all relevant conditions of certification adopted in the Energy Commission's certification on August 6, 2003.

At this time, based upon the information in our possession and the result of our investigation, we have not found a causal relationship between the operation of the Palomar Energy Center and the Bimbo bakery. At this time, we would not expect to continue our investigation into this issue unless Bimbo Bakery files a formal complaint. Should you wish to submit a formal complaint with the Energy Commission, the procedures are described in Title 20, Article 4, Section 1237 of the California Code of Regulations. The regulations can be accessed at: http://www.energy.ca.gov/public_advise/post-certification_fac.html. Such a complaint would require staff to perform an investigation and gather additional information from both the Palomar Energy Center and Bimbo Bakery.

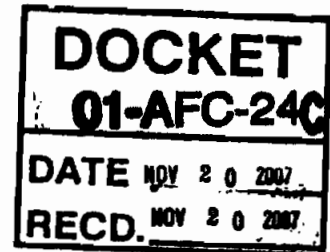
If you have any questions, please call me at (916) 654-5139 or e-mail me at dedwards@energy.state.ca.us.

Sincerely,

Dale Edwards
Compliance Program Manager
Energy Facilities Siting Division

cc: Taylor O. Miller, Semptra Energy
Dan Baerman, Palomar Energy Center

From: "Miller, Taylor" <TMiller@Sempra.com>
To: <PDavid@energy.state.ca.us>
CC: <Dedwards@energy.state.ca.us>, <jgeesman@energy.state.ca.us>, <Tobrien@e...>
Date: 11/20/2007 2:19 PM
Subject: Response to Bimbo Bakery comments dated Nov. 16, 2007



Paula - SDG&E will file a more formal letter as soon as possible concerning the Bimbo comments file by their attorney, Bill Kissinger. To quickly summarize our initial review:

1. Bimbo has once again waited until the 11th hour to comment (actually a week past that time) concerning the Inlet air chiller application and should not be allowed to delay the process without good cause.
2. Delaying the approval of the petition beyond December 5th will eliminate the possibility of putting the air chiller on line by summer of 2008.
3. Commission staff stated in their letter to Bimbo on September 21, 2007 that "we have not found a causal relationship between the operation of the Palomar Energy Center and the Bimbo bakery." Bimbo has not submitted any new information to support such a relationship beyond what it submitted in its letter of February 8, 2007. Bimbo was given an opportunity to file a formal complaint if it wanted the Commission to continue its investigation. Bimbo failed to do so and instead filed its late comments opposing the chiller application.
4. Bimbo has not provided evidence that the chiller itself will have any significant effect on its operations. The comment letter merely assumes that because the bakery purported to experience mold problems in its products after the power plant started operations, that the power plant must somehow have caused the problem. This is not evidence, it is merely speculation turned into assumption turned into "truth". Given the myriad other potential explanations for claimed mold problems being experienced at a bakery with huge amounts of flour being handled and potentially discharged into the internal and external portions of the building, there is simply no basis for this convenient assumption. The expert relied upon by Bimbo has no claimed expertise regarding the potential relationship between assumed increases in moisture and mold growth in a bakery. He is not a biologist or toxicologist. He is an engineer. And even he waffles and speculates on the potential linkage.
5. SDG&E has attempted to obtain any evidence from Bimbo supporting their allegation of a linkage between power plant operation and the bakery's alleged mold issues since February, 2007. We met with Bimbo management in March, 2007 and endeavored to establish a framework for evaluation of any such evidence, if any. SDG&E has requests outstanding going back to early summer. Bimbo did not contact SDG&E from mid-summer until about ten days ago.
6. Bimbo has not provided evidence that addition of the chiller will itself cause significant additional moisture at the bakery roof. Without this, the mold issue has no place in the petition to amend proceeding. The best the Bimbo cooling tower engineer can do is say

"adding another 10% to the amount of water evaporated by the cooling tower is not going to help the situation". Of course, the "situation" has not been described with evidence, merely a repeated assumption.

7. The asserted 10% added by the chiller assumes a very high temperature case that will occur only infrequently during summer conditions when moisture evaporation potentials are quite high anyway. The analysis presented in the petition to amend clearly shows no significant difference in the baseline moisture emissions resulting from operation of the chiller. Moreover, episodic increases in moisture from chiller operation for a few hours, even if relevant, cannot instantly create mold that could enter the bakery.

8. The photo included with the comment letter is one we believe was sent to the Commission some time ago by Mr. Mark Rodriguez during construction of the plant. It appears to show steam blows, not current cooling tower operations.

9. Bimbo is attempting in effect a post hoc intervention into the power plant siting case that concluded four years ago. It had notice of all the workshops and hearings held for that proceeding and failed to comment or intervene.

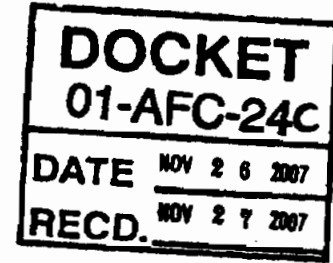
10. Because the inlet air chiller has no significant effect on the baseline operation of the power plant, any issues relating to that baseline should be addressed by Bimbo outside the petition to amend proceeding. For this reason, SDG&E is opposed to adding any conditions of approval of the chiller application relating to studying effects of the current baseline condition. They are not justified by evidence presented to the Commission and in any event are irrelevant to the chiller application.

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Miller, Taylor

From: Miller, Taylor
Sent: Monday, November 26, 2007 3:58 PM
To: PDavid@energy.state.ca.us
Cc: Docket@energy.state.ca.us
Subject: Air Chiller Project; Palomar 01-AFC-24C



Paula -

Here is some additional information concerning the inlet air chiller project:

Schedule

If we expect to get the chillers in service before the summer peak (June - July) then we need to begin construction near the first of the year. About a month is necessary to mobilize contractors, particularly during the holiday season. Another major driver is the need to take the plant out of service for 3 weeks to install the chiller coils in the air inlet filter houses. This must be done before the peak season since SDG&E will not take the plant down to perform this work during the summer. Pushing the approval out to January or February will delay this project for another year.

A further break down is as follows:

December 2007 - Complete detailed engineering of the project, while simultaneously submit drawings to the CBO. Order major equipment.

January 2008 Mobilize construction at the site, complete the CBO design review process, and order minor equipment.

February and March 2008. Construction of chiller building, cooling tower pump bay and chiller piping systems. Prepare for April inlet filter house construction and cooling tower bay tie-in.

April 2008 Three week full plant outage for filter house construction, electrical power tie-in and pump bay tie-in to the cooling tower.

May 2008 Complete all construction activities. Install equipment that arrives late due to long lead times. Start preliminary commissioning activities.

June 2008 Commissioning activities to achieve initial chiller operation.

July 2008 Complete commissioning activities, test system, and start commercial operation.

August 2008 through May 2009 Construct and commission chiller tank.

Claimed increase in moisture emissions related to the chiller. The Bimbo comment letter attachment posits a case where the chiller would add 10% additional moisture to cooling tower emissions for a short period. Bimbo hasn't established why a small 10% change would cause a significant environmental effect but has just speculated that this could be important. Without investing this claim with more relevance than it deserves, we can in any case comment that such a change would likely occur less than 3 percent of the time and only for a few hours when it does occur.

A 10% increase in the moisture from the chiller will only occur when the chiller is at full capacity at the same time that the duct burners are also at full capacity. The chiller will only be at full capacity on the very hottest, most humid days of the

year. For most hours of the year the combustion turbines will be able to provide full output while the chiller is at a very reduced load because it doesn't require full capacity to reduce the temperature of relatively cool dry air to 50 F. The duct burners will not be operated unless the combustion turbines are at full load with the chillers operating a maximum capacity, because the chiller is a much more efficient method of achieving the increased power.

The simultaneous operation of the chiller system at full load and the duct burners at full load will be a very rare occurrence primarily because the weather conditions rarely are hot enough and humid enough to necessitate full load operation. This simultaneous operation is further reduced because the duct burners are often not required to achieve the requested plant load. For example, since April 1, 2006 there were 339 hours (2.4%) of duct burner operations greater than 75% while ambient temperatures were greater than 80 degrees F. There were 36 (0.25%) hours of duct burner operation greater than 75% and ambient temperatures greater than 90 degrees F. Note that high temperatures in the Escondido are typically (a) during the summer when evaporative capacity of the atmosphere is high, and (b) when east to west Santa Ana wind conditions prevail, away from the bakery.

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