

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

In re:)	
)	
Russell City Energy Center)	PSD Appeal Nos. 10-01; 10-05
)	
PSD Permit No. 15487)	
)	

**RUSSELL CITY ENERGY COMPANY, LLC'S
CONSOLIDATED EXHIBITS TO ITS
RESPONSES TO PETITIONS FOR REVIEW
FILED BY:**

**THE CALIFORNIA PILOTS ASSOCIATION
(PSD APPEAL 10-01)**

**CALIFORNIANS FOR RENEWABLE ENERGY, INC.,
BOB SARVEY, AND ROB SIMPSON
(PSD APPEAL 10-05)**

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**RUSSELL CITY ENERGY COMPANY, LLC'S
CONSOLIDATED EXHIBITS TO ITS
RESPONSES TO PETITIONS FOR REVIEW
(PSD APPEAL NOS. 10-01 AND 10-05)**

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Exhibit 27

Electronic with Hard Copy by U.S. Mail

California Pilots Association
P.O.Box 6868
San Carlos, CA 94070-6868

February 6, 2009

Weymen P. Lee, P.E.
(415) 749-4797
weyman@baaqmd.gov
Senior Quality Engineer
Bay Area Air Quality Management District
939 Ellis St.
San Francisco, CA 94109

Dear Mr. Lee,

The Bay Area Air Quality Management District (BAAQMD) is issuing a proposed Statement of Basis and proposed permit conditions for the amended Prevention of Significant Deterioration ("PSD") Permit (application # 15487) for the Russell City Energy Center (December 8, 2008), a natural gas-fired, combined cycle power plant with a nominal output of 600 megawatts. It is proposed by Russell City Energy Company, LLC, an affiliate of Calpine Corporation, and is to be located in Hayward, CA.

California Pilots Association (CalPilots)

The California Pilots Association mission is to promote and preserve the state's airports. As a statewide volunteer organization, we work to maintain the State's airports in the best possible condition.

We understand that comments also are being or have been submitted by Golden Gate University's Environmental Law Clinic and Earthjustice on behalf of Citizens Against Pollution as well as the Sierra Club, Port of Oakland, AOPA, and Chabot Las Positas Community College District. CalPilots also refers to and incorporates those comments by those organizations in addition to identifying the following issues and problems with the present draft P__ S__ D__.

The California Pilots Association requests you do not approve the P_S_D Permit for Russell City Energy Center (RCEC) and not allow this Power Plant to be built in Hayward within 1 1/2 miles of Hayward Executive Airport. We support the California

Energy Commission (CEC) Staff Assessment recommendation not to approve the Russell City Energy Center as referenced in:

<http://www.energy.ca.gov/2007publications/CEC-800-2007-003/CEC-800-2007-003-CMF.PDF>

The Hayward Executive Airport with a Federal Aviation Administration (FAA) staffed control tower is a vital link in the National Transportation System. It is therefore eligible for Grants from the FAA. When the City of Hayward last accepted a FAA Grant for Construction in 2002, the City Manager signed Grant Assurances on behalf of the City.

The City thereby agreed to an obligation to keep Hayward Executive Airport free of hazards, and also to maintain compatible land use zoning. These are Grant Assurances numbers 20 and 21.
(Attachment)

http://www.faa.gov/airports_airtraffic/airports/aip/grant_assurances/media/airport_sponsor_assurances.pdf

20. Hazard Removal and Mitigation. It (*the City, acting as the sponsor*) will take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) will be adequately cleared and protected by removing, lowering, relocating, marking, or lighting or otherwise mitigating existing airport hazards **and by preventing the establishment or creation of future airport hazards.**

21. Compatible Land Use. It (*the City, acting as the sponsor*) will take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. In addition, if the project is for noise compatibility program implementation, it will not cause or permit any change in land use, within its jurisdiction, that will reduce its compatibility with respect to the airport, of the noise compatibility program measures upon which federal funds have been expended.

The airspace at Hayward Executive Airport is very complicated, perhaps the most complicated in the country. That is because Class B Airspace for San Francisco International Airport sits on top of the airspace over much of the Bay Area affecting the airspace at all other airports in the Bay Area. Class C Airspace for Oakland International Airport is another layer of airspace, which affects Hayward Executive Airport. Hayward Executive Airport (HWD) has its own Airspace, Class D, further complicating rules and regulations for flying at Hayward's Airport.

Each class of airspace has its own particular rules and regulations, which must be followed by a pilot at certain altitudes in certain areas in the Bay Area. One of the requirements for ALL aircraft flying in the Class D airspace is to have a radio for communication with the control tower at all times. During Hayward Airport Tower operating hours pilots are required to communicate with Hayward. When the Hayward Tower is not in operation, pilots are required to report to the Oakland Tower. This further complicates the Hayward Executive Airport Airspace, as do Hayward Airport's Noise Abatement Procedures.

The types of aircraft using a HWD vary greatly, from very light fabric airplanes, to blimps, light corporate-style jet aircraft, single-engine and twin-engine Cessna and Piper Aircraft and twin-engine King Airs. All of these aircraft would be affected by turbulence created by this power plant. The type of turbulence experienced would be more serious at the lower altitude of 650 feet or 600' Above Ground Level [AGL] (which is the traffic pattern altitude for Hayward Airport), because there is less altitude at which to recover when the pilot encounters buffeting or sudden change in altitude. Helicopters fly even lower and both types of aircraft can fly lower still based on special VFR (Visual Flight Rules) conditions. It should be noted that planes overfly the RCEC site for both VFR and IFR (Instrument Flight Rules) as per testimony of Group Petitioners and FAA Witnesses as per testimony:

http://www.energy.ca.gov/sitingcases/eastshore/documents/2007-12-18_TRANSCRIPT.PDF

Hayward Airport is classified as a Reliever Airport that relieves or saves Oakland Airport from having to accommodate the Air Traffic of smaller planes (commonly called General Aviation). This allows for a more efficient use of air space and air traffic control. By constructing a power plant within 1 1/2 miles of the airport, it will limit airspace use,

which would have a dramatic deterioration affect on the Bay Area's air traffic management.

1. Request Risk Analysis for Mobile Sensitive Receptors (Pilots and Passengers)

Pilots and their passengers are mobile sensitive receptors flying in and through the power plant plume will receive the greatest impact exposure to emissions and contaminants especially through unfiltered cabin air vents as well as open cockpit aircraft. Appendix A. They have been omitted in this process and we hereby request that a complete study be made for short term and long term impact health analysis. Air ambulances of various types are used to transport mobile sensitive receptors (passengers) with life threatening and respiratory ailments that will be transported in and through the plume. This should also include but not be limited to what affect each of the chemical compounds as well and the total composition makeup of the plume will have on each type of mobile sensitive receptor and those receptors that will affect to maintain safe control of the aircraft. This should include no less than four data points through the plume concentration of what is emitted and through the entire span of weather conditions as well with no fewer than four weather data points for each weather condition. Weather data should be used from the weather station at the Hayward Executive Airport in Hayward, California.

This study should also include all but not limited to all phases of construction, commissioning, startups and shutdowns for each individual generator as well as maximum generator load capacity while both generators are generating electricity at their combined load capacity. Startups and shutdowns should include but not limited to cold startups, hot startups and shutdowns through the calendar year.

Special attention should be give to the affect of the ammonia and or ammonia slip on all phases of commissioning and statups will have on mobile sensitive receptors in open cockpit and aircraft without air filtering cabin heating, ventilating and defrosting systems as shown in Appendix A.

1. What is the amount of time for the cabin to fill with plume emissions or Hazardous material Releases that would have an affect the pilots ability to control and fly the aircraft both in VFR and IFR conditions.

2. What method of data substitution was used and how many data points were substituted for actual measured data values for AERMOD model?

The Airframe and Engines

The study should include what affect each chemical compound will have on the physical aircraft to include but not limited to the outer skin, frame, controls, internal engine and the air filters for engines as well as air filters if installed for cabin air and heat. This includes fabric-covered aircraft and composites, aluminum and material for blimps and helicopters or rotorcraft.

The oxygen content of the plume would have a significant affect on aircraft engine performance when flying in and near the plume. This would include various types of aircraft power plants that depend on the oxygen content throughout the aircraft's transition to and from the Hayward Executive Airport. Rotorcraft is required by the tower to "hold in place" in order to maintain aircraft separation for both rotorcraft and fixed wing aircraft.

1. At what distance and altitude should aircraft remain from the plume in order to maintain engine performance based on manufacturer standards?

Hazardous Material Releases

Hazardous material releases have been omitted as part of the air analysis during this process and should be included for the above for Russell City Energy Center but also the Hayward Wastewater Treatment Plant which is Adjacent to the Russell City Energy Center. We would also make reference to the Blythe, CA Power Plant Hazardous Material release report, Appendix B and point out that the Highway was closed but again mobile sensitive receptors were omitted from the process. The Blythe Airport was not notified and pilots and their passengers were put at risk. Appendix B

Visual Plume

The visual plume will impeded and distorts the view of the airport by pilots and also obscures and interferes with the hand held visual light pilot commands from the control tower during an emergency if they are required?

1. At what point does the visual become opaque during day, evening and nighttime airport operations?
2. What method of data substitution was used and how many data points were substituted for actual measured data values for both the VSCREEN and Calpuff models?

Thermal Plume

Thermal plumes can have an affect on aircraft as both demonstrated from California Energy Commission and FAA reports as in Appendix C.

1. How far should aircraft remain form the thermal part of the thermal plume and what affect would this have on the overall operation of the Hayward Executive Airport?

Hayward Executive Airport Economic

CalPilots requests that the FAA make a complete economic impact study on the Hayward Executive Airport over the entire estimated 30-40 year life of RCEC. This should include but not limited to impacts on Oakland international Airport, San Francisco International Airport air space and flight procedures as well the financial and economic affects on the City of Hayward.

40CFR Part 52.21 (12)

Our comments are based on but not limited to 40CFR Part 52.21 (12)

<http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&rgn=div8&view=text&node=40:3.0.1.1.1.1.1.19&idno=40>

(12) *Best available control technology* means an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under 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.

Respectfully submitted,

Carol Ford

Vice-President - California Pilots Association
carol_ford@sbcglobal.net
650 591 8308

Jay White, General Council
California Pilots Association

Andy Wilson
31438 Greenbrier Lane
Hayward, CA 94544
andy_psi@sbcgloal.net

Appendix A

**SECTION 7
AIRPLANE & SYSTEMS DESCRIPTIONS**

**CESSNA
MODEL 172RG**

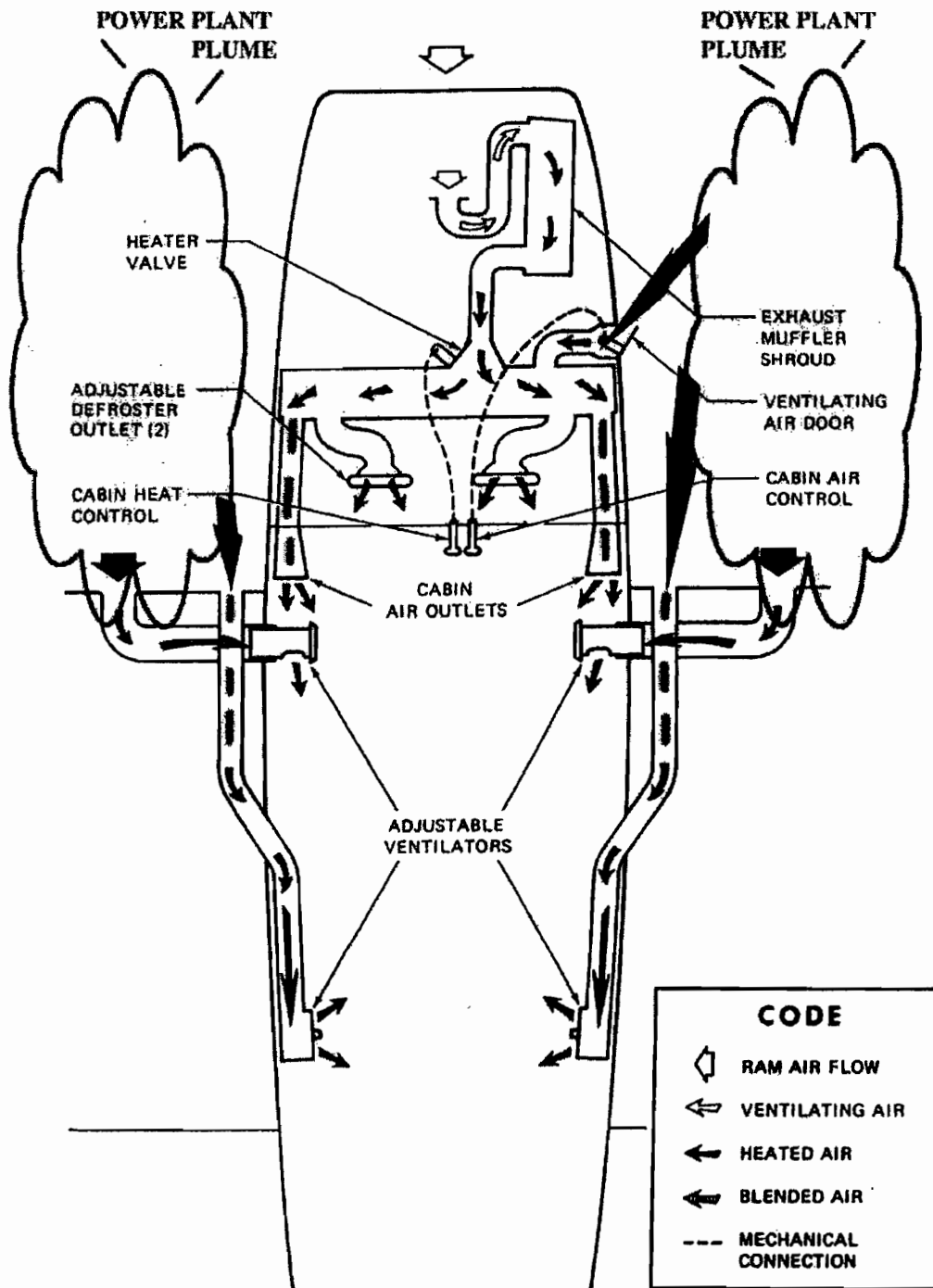


Figure 7-9. Cabin Heating, Ventilating, and Defrosting System

Appendix B

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ALTERNATIVE W/ VEH T-141-301-100-0011 JUL 10 2001 04:20PM P002/004
COUNTY OF RIVERSIDE HEALTH SERVICES AGENCY
DEPARTMENT OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS MANAGEMENT DIVISION
EMERGENCY RESPONSE, COMPLAINT, INVESTIGATION REPORT

OFFICE RECEIVING ERG:	INITIAL REPORT TAKEN BY:	DATE REPORTED:	TIME REPORTED (USE MILITARY TIME):	SPECIALIST ASSIGNED:	CODE NUMBER:	CONTROL NUMBER:
Indio	ECC	9-25-04	0400	Bobby Riggs	6520	20950
LOCATION OF INCIDENT:		HUMAN BRIS. WA:	TYPE OF PLACE:	DATE OCCURRED:	TIME OCCURRED (USE MILITARY TIME):	
15560 W. Hobsonway Blythe		392B-10	Power Plant	9-25-04	0400	
NATURE OF COMPLAINT OR INCIDENT: Anhydrous ammonia release.						
OFFICE USE ONLY						
HAZMAT FILE	HAZMAT INVOICE	COF INVOICE	SPRIS INVOICE	FORM 30 COMPLETED	INVESTIGATION SECTION	

CODES: RP-RESPONSIBLE PARTY G-COMPLAINANT V-VICTIM W-WITNESS O-OTHER

CODE:	NAME (FIRST, MIDDLE LAST):	DOB:	RACE:	SEX:
RP	Blythe Energy			
ADDRESS (HOME):	PHONE (H):	HT:	WT:	HAIR COLOR:
ADDRESS (WORK):	PHONE (W):	IDENTIFICATION NUMBER (COL):		
15560 W. Hobsonway Blythe	760-922-9950			

CODES: RP-RESPONSIBLE PARTY G-COMPLAINANT V-VICTIM W-WITNESS O-OTHER

CODE:	NAME (FIRST, MIDDLE LAST):	DOB:	RACE:	SEX:
ADDRESS (HOME):	PHONE (H):	HT:	WT:	HAIR COLOR:
ADDRESS (WORK):	PHONE (W):	IDENTIFICATION NUMBER (COL):		

FURTHER ACTION / FOLLOWUP REQUIRED:	IS IT POSSIBLE TO LOCATE OR IDENTIFY A RESPONSIBLE PARTY FOR THE INCIDENT?	IS A PROHIBITION REPORT TO BE COMPLETED?
YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>

DESCRIPTION OF ACTION:

0400 Hours 9-25-04 I received a tone from the ECC to respond to an anhydrous ammonia release at Blythe Energy, 15560 W. Hobsonway in Blythe.

0600 Hours I arrived on scene at the Quik Chek West gas station at 14021 W. Hobsonway, the command center. I met with the following: CDF Battalion Chief Bill Zimmerman, CHP Officer Michael King, CDF Hazmat Capt. Reeves and Operations Manager Gary McIntire. CHP Officer King and CDF Battalion Chief Zimmerman made the decision to close the freeway at Desert Center to Blythe. Capt. Reeves reported that there was a release of anhydrous ammonia in the chiller room while employees were changing a filter, the scrubber had come on when the ammonia alarm came on. Capt. Reeves stated we would need to make entry to see what would need to be done to shut off the release. I informed Capt. Reeves I was familiar with the facility because I had recently done an inspection of the facility.

I went to Gary McIntire and asked what had happened and what it would take to stop the release. Gary reported that two employees were changing a filter on one of the compressors, they had gone thru the safety procedures paper work and had performed the lock out procedure and had bled the filter of ammonia into a water can before starting the work. One of the employee's took five to six bolts off of the flange and caused the ammonia release. All three employees working in the compressor room evacuated the area. The ammonia alarm went off and the scrubber automatically came on. To stop the leak a valve would need to be closed and the flange bolts replaced. I asked if they had personnel trained to make an entry; Gary stated that they all had the training to make entry. Capt. Reeves and I made the decision to stage on the northwest side of the chiller room to don suits so we could have visual contact with the entry team. Hazmat personnel gave Rick Deabenderfer, plant employee, a lesson on the hazmat unit SCBA to make entry. At approximately 0700

W

Jan 041220

Hours the wind changed and we moved to the southwest corner of the chiller room and entry would be made from the south doors. Hazmat personnel and plant personnel suited out in modified level "B" with two hazmat personnel suited out in modified "B" as back up. The entry team entered the chiller room and closed the valve to the filter and put the bolts back in the flange. They opened all the doors to help vent the chiller room. When the entry team exited the building they reported that the wrong flange had been opened and the line was hot. We used an ammonia meter from the power plant and made another entry fifteen minutes later. The monitor read 90 PPM of ammonia. We waited another fifteen minutes and took another reading of 15 PPM of ammonia. At 0915 I called CHP Officer Michael King to reopen the freeway. Plant personnel will monitor the ammonia and wear proper equipment to pick up the oil on the floor for proper disposal. We rehydrated the hazmat team and packed up all the equipment, hazmat team off scene at 1115 hours. I gathered information for my report and made sure that plant employees were monitoring the area properly while absorbing the spilled oil. 1215 Hours I left the scene arriving home at 1430 Hours.

1330 Hours 9-27-04 I met with the City of Blythe and Blythe Energy to discuss the incident. Chris Allen, Blythe Energy Plant General Manager, informed the group that 405 pounds of ammonia was released from the system and that the scrubber had caught 400 pounds of ammonia back into the system, losing five pounds of ammonia into the air, they had also lost 70 to 100 gallons of oil onto the floor. The chiller system holds 55,000 pounds of anhydrous ammonia. The City of Blythe, Blythe Energy and Riverside County Hazmat will have meetings in the future to coordinate emergency plans.

DRUG LAB NOTIFICATION DATE:		ADVERSELY AFFECTED PARTS:	TOTAL ACCIDENT TIME: (VULN. DOWN)
OTHER AGENCIES NOTIFIED:	None	None	10.5 hours
SPECIMEN PREPARING REPORT:	DATE:	REVIEWED / APPROVED BY:	DATE:
Bobby Riggs	12-3-04	<i>[Signature]</i>	12/2/04
DC#-HEH-201 (REV 1/2000)			

Appendix C

**Energy Facilities Siting and
Environmental Protection
Division**

FILE:

PROJECT TITLE: Blythe Power Plant

<input checked="" type="checkbox"/> Telephone	316-946-2416	<input type="checkbox"/> Meeting Location:	
NAME: Eric Nordberg	DATE: 8/2/04	TIME: 9 AM	
WITH:			
SUBJECT: Blythe turbulence			

COMMENTS:

I talked to Mr. Nordberg about his experience with turbulence from the Blythe power plant cooling towers. He and a co-pilot were flying a Lear jet (1800 lb. airplane) on an Instrument Landing System approach to Blythe airport's Runway 26 early (6:30 - 7) morning on May 4, 2004. They did not see any plumes and were about 550 feet above ground level with an airspeed of 124 knots (142 mph) when they passed over the plant. The wind was calm with good visibility. They experienced moderate to severe turbulence which caused the plane to veer from side to side with considerable shaking. They were surprised but able to regain control of the plane. It was not an emergency situation but it was an uncomfortable experience.

I advised him that we had reports from several other pilots who have experienced the same thing and we were investigating the situation. I faxed him Terry O' Brien's letter of April 5, 2004 and asked him to review the mitigation discussed within. He said he would check his flight charts for that May 4th flight and send me an e-mail with any other pertinent information or suggestions.

cc:	Signed:
	Name: James S. Adams 8/3/04

**Energy Facilities Siting and
Environmental Protection
Division**

FILE:

PROJECT TITLE: Blythe Power Plant

<input checked="" type="checkbox"/> Telephone	928-681-8318	<input type="checkbox"/> Meeting Location:	
NAME:	Joe Sheble	DATE:	2/19/04
		TIME:	10:45 AM
WITH:	Sheble's Flight Service		
SUBJECT:	Blythe turbulence		

COMMENTS:

As a pilot who performs check rides for the FAA on student and commercial pilots on Instrument Landing System (ILS) approaches to various airports, he has experienced turbulence three times when flying over the Blythe plant while utilizing the ILS approach. He was flying either a Cessna 172 or a Beachcraft Traveler. He was about 300 feet above ground level (AGL) when flying over the plant. Some pilots fly 200 feet AGL over the plant, and Mr. Sheble believes the turbulence is enough to cause pilot trainees to do something "stupid". A couple of pilots have told him that they have experienced turbulence as well. He believes that two thirds of the flights to Blythe Airport are done using visual flight rules (VFR) and many pilots do not see the power plant. He has also experienced even greater turbulence when flying downwind over a coal-fired power plant located about one mile from the Loflin Bullhead Airport in Arizona. The plant has one stack which is over 200 feet tall. His elevation when passing over the facility was 800 to 1000 feet AGL. There is an airport advisory about this power plant

In response to a question about the visibility of the power plant and why pilots would fly over it, he said a lot of pilots flying VFR are from out of the area and aren't paying attention to what is on the ground (his remarks were considerably more derogatory and off-color). Instead, they are focused on the runway. The warning about the power plant in a Notice to Airmen is probably ignored by most pilots. He believes that once the plant is running at full capacity, there is a possibility that aircraft will be blown around or tipped over by heated plumes and somebody is going to get killed. I, James Adams, don't believe his characterizations about pilots are necessarily accurate but he does use the airport frequently.

Mr. Sheble told us that the ILS at Blythe Airport has been in operation for 30 years. The ILS was brought to Blythe by the former Pacific Southwest Airlines, who acquired it from Lindberg Airfield in San Diego. They used it train their pilots. Blythe Airport later acquired it and uses it for training purposes. The reason that the ILS has not been certified by the FAA relates to the absence of a technical service order, which is now required prior to certification. This order would cost millions of dollars and require a considerable amount of time and effort. He doesn't think it will ever happen.

cc:	Signed:
	Name: James S. Adams 2/20/04 Ken Peterson

**Energy Facilities Siting and
Environmental Protection
Division**

FILE:

PROJECT TITLE: Blythe Power Plant

<input checked="" type="checkbox"/> Telephone	702-263-4314	<input type="checkbox"/> Meeting Location: E-mail on June 21, 2004	
NAME:	Luis Magana	DATE: 6/9/04	TIME: 3:30PM
WITH:	Sheble Aviation		
SUBJECT:	Blythe turbulence		

COMMENTS:

Mr. Magana is a pilot and flying instructor who has been using Blythe Airport for several years. On the morning of May 4, 2004, he was aboard a two-engine Beechcraft airplane piloted by a student. They were on final approach to Runway 26 and saw the Blythe power plant in front of them. No plume was visible. Their elevation was approximately 550 feet above ground level and the airspeed was 110 miles per hour. As they flew over the cooling towers, they encountered significant turbulence which knocked the plane on its side or about 50 to 60 degrees off center. The student pilot was startled but was able to level the plane and proceed with the approach. After they landed, Luis discussed the incident with the student pilot and he considers it a good example of being prepared for the unexpected.

He is very worried about new and inexperienced pilots in smaller planes such as a single engine Cessna 150 or 172 encountering similar turbulence. The smaller plane could be inverted and sent into a downward spiral, possibly crashing into or near the power plant. He also told me that a high percentage of the pilots that use the Blythe Airport are student pilots. I asked his opinion about potential mitigation measures such as moving the ILS to Runway 17, and creating a new NOTAM that advises pilots to avoid flying over the power plant by turning base and final within one mile of the landing threshold of the Runway 26. He thought these measures would probably remove the existing hazard. He sent me an e-mail describing the turbulence encounter and his concern about aviation safety.

cc:	Signed:
	Name: James S. Adams 6/25/04

**Energy Facilities Siting and
Environmental Protection
Division**

FILE:

PROJECT TITLE: Blythe 1

<input checked="" type="checkbox"/> Telephone	760-921-2869	<input type="checkbox"/> Meeting Location:			
NAME:	Rory Watkins	DATE:	8/6/03	TIME:	9:45 AM
WITH:	Blythe resident and pilot				
SUBJECT:	Blythe HRSG plumes				

COMMENTS: I (James Adams) called Mr. Watkins in response to a suggestion by Butch Hull who is the Assistant City Manager for the City of Blythe, and is also the Blythe Airport Manager. Mr. Watkins told me that he is a relatively new pilot and he flew over the power plant while on final approach to Runway 26 sometime in December 2002, although he is probably mistaken about the date of the incident since the power plant did not start up for testing until early 2003. His elevation when passing over the plant's HRSGs was approximately 1000 feet, and his airspeed was about 75 knots. The invisible plume pushed his plane up between 300 to 500 feet and scared him to the point that he broke off his approach. He has not flown over the plant since and has advised other pilots to refrain as well. In his opinion, the power plant should not have been sited in its current location.

cc:	Signed:
	Name: James S. Adams 3/4/04

December 18, 2008

Attention: Ms. Johnson

Aviation Safety Hotline Program Office

Reference: MGW ILS Rwy 18/Severe Turbulence

Dear Ms. Johnson,

On 18 December 2008, United Express flight 6922 operated by Colgan Air from CKB-MGW-IAD experienced severe turbulence during approach into MGW. The flight was on the ILS approach to runway 18, inside the Final Approach Fix, when the flight entered severe turbulence.

The flight immediately executed a missed approach and diverted to the final destination, IAD, landing without any further incidence. The airplane was grounded for a severe turbulence inspection. During the approach the airplane was in IMC conditions winds calm 100' overcast temperature 1 Celsius and surface visibility 2 miles.

This was the second identical incident within the last two months.

After reviewing the ILS 18 Rwy MGW approach plate we focused on the obstacle between the FAF and the runway. The obstacle stands at 1577' MSL. We called the MGW control tower to investigate the obstacle and we were told it is the smokestack from a power plant. We were also told by the tower that when the temperature is just right and the surface winds are calm the smoke creates turbulence during the final approach in to MGW. The tower also told us that FAA check flight "was not happy" during the checking events for the approach.

According to my information this condition is not being reported to the flight crews. Our crews in this event reported uncontrolled flight, left engine ignition lights were activated, engine oil pressure lights illuminated, and all 3 axis trim circuit breakers tripped.

We would like to suggest that the FAA takes immediate action on the following:

1. A thorough investigation on the meteorological and atmospheric conditions that create turbulence over the smokestack.
2. A NOTAM should be issued to all flights operating over and in the MGW airport, about the possible severe turbulence during the ILS approach to Rwy 18.
3. Notes should be added in the airport diagram, about the possible conditions during the ILS approach to Rwy 18.

Please contact me if you have any questions or if you'd like to discuss our recommendations further.

Sincerely,

Dean Bandavanis

Director Operations

Exhibit 28

California Pilots Association
P.O.Box 6868
San Carlos, CA 94070-6868

September 16, 2009

By Email with Hard Copy by U.S. Mail
Waymen P. Lee, P.E.
(415) 749-4797
weyman@baaqmd.gov
Senior Quality Engineer
Bay Area Air Quality Management District
939 Ellis St.
San Francisco, CA 94109

Re: August 2009 Draft PSD Permit for Russell City Energy Center

Dear Mr. Lee,

Our comments for on the draft prevention of significant deterioration (PSD) permit for the proposed Russell City Energy Center (RCEC). California Pilots Association (CalPilots) appreciates that BAAQMD issued an additional Statement of Basis for the new draft permit conditions.

As before the draft permit once again fails to meet and address pilots as receptors for pilots and passengers and aircraft engine operation in our previous comments. This would also include but not limited to start-up and shutdown power plant conditions.

In addition to our previous comments we respectfully submit Ms. Carol Ford, Vice President, CalPilots comments read at the BAAQMD Hearing in Hayward, CA on Wednesday, September 2, 2009 in Attachment A, herein.

We also are submitting in Appendix B herein a National Transportation Safety Board (NTSB) Brief of accident report No. LAX89LA270 File No. 2339 as evidence that power plant plumes are safety hazards to pilots, passengers and aircraft. If you will note the causal affects were lack of Oxygen (starvation), high plume temperature and emission contaminants in the plume itself that resulted in aircraft engine caused failure.

Enclosed in Appendix C herein is ATSDR Ammonia (NH₃). Ammonia along with the other plume contaminants can and do have affects on

receptors that would adversely affect a pilot to safely maintain control of the aircraft.

There are many reasons as to why aircraft would remain in the RCEC plumes some of which would include but not limited to aircraft circling for spacing in the airport pattern under visual flight rules (VFR), engine break-in after maintenance. Holding in the area as instructed by the FAA traffic control personal for spacing as required by Instrument Flight Rules (IFR). Pilot training for slow flight, short field landings and takeoffs, engine out procedures, etc. Also included would be touch and goes for pilots to become current to carry passengers as well as instrument practice approaches to the Hayward Executive Airport which requires a left turn towards and over the plumes. Any of these prolonged practice and training procedures either individually or in combination could and would increase exposure to plume contaminants have an adverse safety affects on pilots, passengers and aircraft.

Health thresholds for pilots, passengers and thresholds for aircraft operation must be far below those that are used for receptors on the ground and engine operation specifications for even a temporary moment in and around RCEC power plant thermal plumes.

CalPilots hereby requests that the RCEC PSD permit be denied.

Respectfully submitted,

Jay White, General Council
California Pilots Association

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Attachment A



PO Box 6868, San Carlos, CA 94070-6868

Mr. Weyman Lee, P.E., Senior Air Quality Engineer
Bay Area Air Quality Management District
939 Ellis St.
San Francisco, CA 94109
(415) 749-4796

Mr. Bateman, Mr. Lee and Staff,

I am a Vice President of the California Pilots Association, a statewide group of volunteers whose mission is to promote, protect and preserve the state's airports.

We are asking you to deny the PSD the Permit of Significant Deterioration for the Russell City Energy Center for the harm it will do to the Hayward Airport.

This (RCEC) is not a geothermal or green plant. This is a dirty plant which shoots high velocity plumes more than 1200 feet into the air spewing pollution and creating a hazard endangering airplanes.

We have evidence of an aircraft accident caused by a Power Plant's plume. We disagree that your state environmental analysis is complete and request that BAAQMD refer the Determination of Compliance back to the California Energy Commission so that it may be updated and a complete review performed which has not, not been performed.

AB32 is not applied in the present state analysis.

We also disagree with Mr. Stewart that there was any "complete" review by the California Energy Commission as CalPilots was precluded from intervening and participating. Therefore there was NO "complete" review.

In yesterday's (Sept 1st) San Francisco Chronicle, an article named carbon dioxide and five other compounds as dangerous pollutants this plant will contribute two million additional parts of carbon dioxide every year. Or over the 30 year life of the plant, that is 60,000,000 tons. This is unacceptable.

The BAAQMD must weigh 635 *temporary* jobs against the detrimental impacts to Hayward Airport which contributes \$90,000,000 in revenue a year, every year, to the surrounding area.

Thank you.

Respectfully submitted,

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Attachment B

Brief of Accident

Adopted 09/09/1992

LAX80LA270 File No. 2338 08/09/1989 BAKERSFIELD, CA Aircraft Reg No. N80298 Time (Local): 11:15 PDT

Make/Model: Bell / 206B
 Engine Make/Model: Allison / 250-C20
 Aircraft Damage: Destroyed
 Number of Engines: 1
 Operating Certificate(s): On-demand Air Taxi; Aircraft External Load
 Type of Flight Operation:
 Reg. Flight Conducted Under: Part 91: General Aviation

Condition of Light: Day
 Weather Info Src: Witness
 Basic Weather: Visual Conditions
 Lowest Ceiling: None
 Visibility: 20.00 SM
 Wind Dir/Speed: Calm
 Temperature (°C): 28
 Precip/Obscuration:

Last Depart. Point: VAN NUYS, CA
 Destination: Local Flight
 Airport Proximity: Off Airport/Airstrip

Crew Pass	Fatal	Serious	Minor/None
0	0	1	0
0	0	1	1

Pilot-in-Command Age: 51
 Certificate(s)/Rating(s)
 Commercial; Multi-engine Land; Single-engine Land; Helicopter
 Airplane; Helicopter
 Flight Time (Hours)
 Total All Aircraft: 8000
 Last 90 Days: 55
 Total Make/Model: 5000
 Total Instrument Time: Unk/Nr

THE HELICOPTER CREW WAS FILMING A COGENERATION PLANT. THE HELICOPTER ORBITED THE PLANT THREE TIMES. DURING THE THIRD ORBIT, THE HELICOPTER PASSED OVER THE EXHAUST CHIMNEY OF THE PLANT WHICH WAS OPERATING AT THE TIME. THERE WAS NO VISIBLE INDICATION THAT EXHAUST GASES WERE EMANATING FROM THE CHIMNEY. THE GASES WERE REPORTED TO BE 350 DEGREES FAHRENHEIT WITH A 3.6 PERCENT OXYGEN CONTENT. THE HELICOPTER TURBOSHAFT ENGINE LOST POWER OVER THE CENTER OF THE CHIMNEY. THE PILOT ENTERED AUTOROTATION TOWARDS AN OPEN AREA OF A PARKING LOT. DURING THE FLARE, THE HELICOPTER STRUCK A VEHICLE, AND LANDED HARD, SEVERED THE TAILBOOM, AND ROLLED ON TO ITS SIDE. THE CERTIFICATION STANDARD FOR THE ENGINE WAS 120 DEGREES FAHRENHEIT.

Brief of

The National Transportation Safety Board determines the probable cause(s) of this accident as follows.
THE LOSS OF ENGINE POWER DUE TO THE HELICOPTER BEING FLOWN IN EXHAUST GASES EMANATING FROM A COGENERATION PLANT CHIMNEY STACK THAT EXCEEDED THE CERTIFICATION STANDARDS OF THE POWERPLANT. CONTRIBUTING TO THE ACCIDENT WAS INVISIBLE NATURE OF THE EXHAUST GASES WHICH MADE

THE DETECTION OF THEIR PRESENCE UNLIKELY.

Accident (Continued)

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL

Phase of Operation: MANEUVERING

Findings

1. (F) WEATHER CONDITION - TEMPERATURE EXTREMES
2. (C) MISCELLANEOUS - STARVATION
3. (F) VISUAL LOOKOUT - NOT POSSIBLE - PILOT IN COMMAND
4. (F) TURBOSHAFT ENGINE - FAILURE.TOTAL
5. (F) DESIGN STRESS LIMITS OF AIRCRAFT - EXCEEDED - PILOT IN COMMAND
6. (C) INFORMATION UNAVAILABLE - PILOT IN COMMAND

Occurrence #2: FORCED LANDING

Phase of Operation: DESCENT - EMERGENCY

Findings

7. (F) AUTOROTATION - PERFORMED - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

8. OBJECT - VEHICLE

Occurrence #4: HARD LANDING

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

9. (F) PROPER DESCENT RATE - NOT POSSIBLE - PILOT IN COMMAND

Findings Legend: (C) = Cause, (F) = Factor

File No. 2339 08/09/1989 BAKERSFIELD, CA Aircraft Reg No. N90296 Time (Local): 11:15 PDT

LAX89LA270

Attachment C

Ammonia (NH₃)
CAS 7664-41-7; UN 2672 (between 12% and 44% solution), UN 2073 (>44% solution), UN 1005 (anhydrous gas or >50% solution)

Synonyms include ammonia gas, anhydrous ammonia, and liquid ammonia. Aqueous solutions are referred to as aqueous ammonia, ammonia solution, and ammonium hydroxide.

Persons exposed only to ammonia gas do not pose significant risks of secondary contamination to personnel outside the Hot Zone. Persons whose clothing or skin is contaminated with liquid ammonium hydroxide can secondarily contaminate response personnel by direct contact or through off-gassing ammonia vapor.

Ammonia dissolves readily in water to form ammonium hydroxide a corrosive, alkaline solution at high concentrations.

Ammonia's pungent odor and irritating properties usually provide adequate warning of its presence; however, olfactory fatigue can occur. Inhalation can result in fatalities.

Description

At room temperature, anhydrous ammonia is a colorless, highly irritating gas with a pungent, suffocating odor. It is lighter than air and flammable, with difficulty, at high concentrations and temperatures. It is easily compressed and forms a clear, colorless liquid under pressure. Anhydrous ammonia is hygroscopic. Ammonia dissolves readily in water to form ammonium hydroxide—an alkaline solution. The concentration of aqueous ammonia solutions for household use is typically 5% to 10% (weight:volume), but solutions for commercial use may be 25% (weight:volume) or more and are corrosive. Aqueous ammonia is commonly stored in steel drums. Anhydrous ammonia is stored and shipped in pressurized containers, fitted with pressure-relief safety devices, and bears the label “Nonflammable Compressed Gas”. Despite not meeting the Department of Transport definition of flammable it should be treated as such.

Routes of Exposure

Inhalation

Inhalation of ammonia may cause nasopharyngeal and tracheal burns, bronchiolar and alveolar edema, and airway destruction resulting in respiratory distress or failure. Ammonia's odor threshold is sufficiently low to acutely provide adequate warning of its presence (odor threshold = 5 ppm; OSHA PEL = 50 ppm). However, ammonia causes olfactory fatigue or adaptation, making its presence difficult to detect when exposure is prolonged. Anhydrous ammonia is lighter than air and will

therefore rise (will not settle in low-lying areas); however, vapors from liquefied gas are initially heavier than air and may spread along the ground. Asphyxiation may occur in poorly ventilated or enclosed.

Children exposed to the same levels of ammonia vapor as adults may receive larger dose because they have greater lung surface area:body weight ratios and increased minute volumes:weight ratios. In addition, they may be exposed to higher levels than adults in the same location because of their short stature and the higher levels of ammonia vapor found nearer to the ground.

Skin/Eye Contact

The extent of injury produced by exposure to ammonia depends on the duration of the exposure and the concentration of the gas or liquid. Even low airborne concentrations (100 ppm) of ammonia may produce rapid eye and nose irritation. Higher concentrations may cause severe eye injury. Contact with concentrated ammonia solutions, such as some industrial cleaners (25%), may cause serious corrosive injury, including skin burns, permanent eye damage, or blindness. The full extent of damage to the eyes may not be clear until up to 1 week after the injury is sustained. Contact with liquefied ammonia can cause frostbite injury.

Children are more vulnerable to toxicants that affect the skin because of their relatively larger surface area:body weight ratio.

Ingestion

Ingestion of ammonium hydroxide, while uncommon, results in corrosive damage to the mouth, throat, and stomach. Ingestion of ammonia does not normally result in systemic poisoning.

Sources/Uses

Ammonia is manufactured by reacting hydrogen with nitrogen. About 80% of the ammonia produced is used in fertilizers. It is also used as a refrigerant gas, and in the manufacture of plastics, explosives, pesticides, and other chemicals, as a corrosion inhibitor, in the purification of water supplies, as a component of household cleaners, in the pulp and paper, metallurgy, rubber, food and beverage, textile and leather industries, and in the manufacture of pharmaceuticals. Ammonia is also produced naturally from decomposition of organic matter and under unusual conditions, can reach dangerous concentrations.

Standards and Guidelines

OSHA PEL (permissible exposure limit) = 50 ppm (8-hour TWA).

NIOSH IDLH (immediately dangerous to life or health) = 300 ppm.

AIHA ERPG-2 (the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action) = 200 ppm.

Physical Properties

Description: Clear, colorless gas at room temperature; easily liquefied; readily dissolves in water to form caustic solutions.

Warning properties: Pungent odor at ~5 ppm; eye irritation at 20 ppm

Molecular weight: 17.0 daltons

Boiling point (760 mm Hg): -28 F (-33.4 C)

Vapor pressure: >6,000 mm Hg at 68 F (20 C)

Gas density: 0.59 (air = 1)

Water solubility: 33.1% at 68 F (20 C)

Autoignition temperature: 1,204 F (650 C)

Flammable range: 16–25% (concentration in air) Combustible gas, but difficult to burn

Incompatibilities

Ammonia reacts with strong oxidizers, acids, halogens (including chlorine bleach), and salts of silver, zinc, copper, and other heavy metals. It is corrosive to copper and galvanized surfaces.

Health Effects

Ammonia is highly irritating to the eyes and respiratory tract. Swelling and narrowing of the throat and bronchi, coughing, and an accumulation of fluid in the lungs can occur.

Ammonia causes rapid onset of a burning sensation in the eyes, nose, and throat, accompanied by lacrimation, rhinorrhea, and coughing. Upper airway swelling and pulmonary edema may lead to airway obstruction.

Prolonged skin contact is prolonged (more than a few minutes) can cause pain and corrosive injury.

Acute Exposure

Anhydrous ammonia reacts with moisture in the mucous membranes to produce an alkaline solution (ammonium hydroxide). Exposure to ammonia gas or ammonium hydroxide can result in corrosive injury to the mucous membranes of the eyes, lungs, and gastrointestinal tract and to the skin due to the alkaline pH and the hygroscopic nature of ammonia.

Respiratory

The extent of injury produced by exposure to ammonia depends on the duration of the exposure, the concentration of the gas, and the depth of inhalation. Even fairly low airborne concentrations (50 ppm) of ammonia produce rapid onset of eye, nose, and throat irritation; coughing; and narrowing of the bronchi. More severe clinical signs include immediate narrowing of the throat and swelling, causing upper airway obstruction and accumulation of fluid in the lungs. This may result in low blood oxygen levels and an altered mental status. Mucosal burns to the tracheobronchial tree can also occur.

Children may be more vulnerable to corrosive agents than adults because of the smaller diameter of their airways. Children may also be more vulnerable because of failure to evacuate an area promptly when exposed.

Dermal

Dilute aqueous solutions (less than 5%) rarely cause serious burns but can be moderately irritating. Exposure to concentrated vapor or solution can cause pain, inflammation, blisters, necrosis and deep penetrating burns, especially on moist skin areas. Skin contact with compressed, liquid ammonia (which is stored at -28 °F) causes frostbite injury, and may also result in severe burns with deep ulcerations.

Ocular Ammonia has a greater tendency to penetrate and damage the eyes than does any other alkali. Even low concentrations of ammonia vapor (100 ppm) produce rapid onset of eye irritation. Contact with high concentrations of the gas or with concentrated ammonium hydroxide may cause swelling and sloughing of the surface cells of the eye, which may result in temporary or permanent blindness.

Gastrointestinal Nausea, vomiting, and abdominal pain are common symptoms following ingestion of ammonia. On rare occasions, deliberate ingestion of household ammonia (5–10%) has resulted in severe esophageal burns. Ingestion of more concentrated ammonia can cause severe corrosive injury to the mouth, throat, esophagus and stomach.

Potential Sequelae Survivors of severe inhalation injury may suffer residual chronic lung disease. In cases of eye contact, ulceration and perforation of the cornea can occur after weeks or months, and blindness may ensue. Cataracts and glaucoma have been reported in persons acutely exposed. Ingestion of ammonia may cause permanent damage to the mucous membranes of the alimentary canal, with bleeding, perforation, scarring, or stricture formation as potential sequelae.

Chronic Exposure

Repeated exposure to ammonia may cause chronic irritation of the respiratory tract. Chronic cough, asthma and lung fibrosis have been reported. Chronic irritation of the eye membranes and dermatitis have also been reported.

Carcinogenicity Ammonia has not been classified for carcinogenic effects.

Reproductive and Developmental Effects No data exist to evaluate the reproductive and developmental effects of ammonia in humans. Ammonia is not included in *Reproductive and Developmental Toxicants*, a 1991 report published by the U.S. General Accounting Office (GAO) that lists 30 chemicals of concern because of widely acknowledged reproductive and developmental consequences. Decreased egg production and conception rates have been observed in animals, and ammonia has been shown to cross the ovine placental barrier.

Prehospital Management

Victims exposed only to ammonia gas do not pose substantial risks of secondary contamination to personnel outside the Hot Zone. Victims whose clothing or skin is contaminated with liquid ammonium hydroxide can secondarily contaminate response personnel by direct contact or through off-gassing ammonia vapor.

Ammonia causes rapid onset of a burning sensation in the eyes, nose, and throat, accompanied by lacrimation, rhinorrhea, and coughing. Upper airway swelling and pulmonary edema may lead to airway obstruction.

Ammonia gas or solution can cause serious corrosive burns on contact.

There is no antidote for ammonia poisoning. Treatment consists of supportive measures. These include administration of humidified oxygen and bronchodilators and airway management; treatment of skin and eyes with copious irrigation; and dilution of ingested ammonia with milk or water.

Hot Zone

Rescuers should be trained and appropriately attired before entering the Hot Zone. If the proper equipment is not available, or if rescuers have not been trained in its use, assistance should be obtained from a local or regional HAZMAT team or other properly equipped response organization.

Rescuer Protection

Ammonia is a caustic and corrosive chemical that causes irritation and chemical burns upon contact of the gas or liquid with the eyes, skin, respiratory tract, or alimentary canal.

Respiratory Protection: Positive-pressure, self-contained breathing apparatus (SCBA) is recommended in response situations that involve exposure to potentially unsafe levels of ammonia.

Skin Protection: Chemical-protective clothing is recommended because ammonia can cause skin irritation and burns.

ABC Reminders

Quickly access for a patent airway, ensure adequate respiration and pulse. If trauma is suspected, maintain cervical immobilization manually and apply a cervical collar and a backboard when feasible.

Victim Removal

If victims can walk, lead them out of the Hot Zone to the Decontamination Zone. Victims who are unable to walk may be removed on backboards or gurneys; if these are not available, carefully carry or drag victims to safety.

Consider appropriate management of chemically contaminated children, such as measures to reduce separation anxiety if a child is separated from a parent or other adult.

Decontamination Zone

Victims exposed only to ammonia gas who have no skin or eye irritation do not need decontamination. They may be transferred immediately to the Support Zone. All others require decontamination as described below.

Rescuer Protection

If exposure levels are determined to be safe (<20 ppm), decontamination may be conducted by personnel wearing a lower level of protection than that worn in the Hot Zone (described above).

ABC Reminders

Quickly access for a patent airway, ensure adequate respiration and pulse. Stabilize the cervical spine with a collar and a backboard if trauma is suspected. Administer supplemental oxygen as required. Assist ventilation with a bag-valve-mask device if necessary.

Basic Decontamination

Rapid skin and eye decontamination is critical. Victims who are able, may assist with their own decontamination. Remove contaminated clothing while flushing exposed areas. Double-bag contaminated clothing and personal belongings.

Flush liquid-exposed skin and hair with water for at least 5 minutes. If feasible, wash exposed skin extremely thoroughly with soap and water. Use caution to avoid hypothermia when decontaminating of children or the elderly. Use blankets when appropriate.

Irrigate exposed or irritated eyes with plain water or saline for at least 15 minutes. Remove contact lenses, if easily removable without additional trauma to the eye. Continue irrigation while transferring the victim to the Support Zone.

In cases of ingestion **do not induce emesis**, perform gastric lavage, or attempt neutralization. **Do not administer activated charcoal.** Victims who are conscious and able to swallow should be given 4 to 8 ounces of water or milk.

Consider appropriate management of chemically contaminated children at the exposure site. Also, provide reassurance to the child during decontamination, especially if separation from a parent occurs. If possible, seek assistance from a child separation expert.

<i>Transport to Support Zone</i>	As soon as basic decontamination is complete, move the victim to the Support Zone.
Support Zone	Be certain that victims have been decontaminated properly (see <i>Decontamination Zone</i> above). Victims who have undergone decontamination or have been exposed only to vapor pose no serious risks of secondary contamination. Support Zone personnel require no specialized protective gear in such cases.
<i>ABC Reminders</i>	Quickly access a patent airway, ensure adequate respiration and pulse. If trauma is suspected, maintain cervical immobilization manually and apply a cervical collar and a backboard when feasible. Ensure adequate respiration and pulse; administer supplemental oxygen as required. Establish intravenous access if necessary. Place on a cardiac monitor.
<i>Additional Decontamination</i>	Continue irrigating exposed skin and eyes, as appropriate. In cases of ingestion, do not induce emesis, do not administer activated charcoal, and do not attempt to neutralize with weak acids. If the patient is conscious and able to swallow, administer 4 to 8 ounces of water or milk if it has not been given previously.
<i>Advanced Treatment</i>	<p>In cases of respiratory compromise secure airway and respiration via endotracheal intubation. If not possible, perform cricothyroidotomy if equipped and trained to do so. Patients who are hypotensive or have seizures should be treated according to advanced life support (ALS) protocols.</p> <p>Treat patients who have bronchospasm with aerosolized bronchodilators. The use of bronchial sensitizing agents in situations of multiple chemical exposures may pose additional risks. Also consider the health of the myocardium before choosing which type of bronchodilator should be administered. Cardiac sensitizing agents may be appropriate; however, the use of cardiac sensitizing agents after exposure to certain chemicals may pose enhanced risk of cardiac arrhythmias (especially in the elderly). Ammonia poisoning is not known to pose additional risk during the use of bronchial or cardiac sensitizing agents.</p> <p>Consider racemic epinephrine aerosol for children who develop stridor. Dose 0.25–0.75 mL of 2.25% racemic epinephrine solution in water, repeat every 20 minutes as needed cautioning for myocardial variability.</p>

Patients who are comatose, hypotensive, or are having seizures or have cardiac arrhythmias should be treated according to ALS protocols.

Monitor fluid and electrolyte balance and restore if abnormal. Fluids should be administered cautiously to patients with pulmonary edema.

Transport to Medical Facility

Only decontaminated patients or patients not requiring decontamination should be transported to a medical facility. “Body bags” are not recommended.

Report to the base station and the receiving medical facility the condition of the patient, treatment given, and estimated time of arrival at the medical facility.

If ammonia has been ingested, prepare the ambulance in case the victim vomits toxic material. Have ready several towels and open plastic bags to quickly clean up and isolate vomitus.

Multi-Casualty Triage

Consult with the base station physician or the regional poison control center for advice regarding triage of multiple victims.

The following exposed persons should be evaluated at a medical facility: those who have ingested ammonia, those who have persistent upper respiratory irritation or other acute symptoms of severe inhalation exposure, and those who have eye or skin burns that cover a large surface area.

Persons who have been exposed only to ammonia gas and are currently asymptomatic are not likely to develop complications. After their names, addresses, and telephone numbers are recorded, these patients may be released from the scene with follow-up instructions to seek medical care promptly if symptoms develop (see *Patient Information Sheet* below).

Emergency Department Management

Hospital personnel in an enclosed area can be secondarily contaminated by vapor off-gassing from heavily soaked clothing or from the vomitus of victims who have ingested ammonia. Patients do not pose a contamination risk after contaminated clothing is removed and the skin and hair are washed.

Inhaling ammonia causes rapid onset of a burning sensation in the eyes, nose, and throat, accompanied by lacrimation, rhinorrhea, and coughing. Upper airway swelling may lead to airway obstruction.

Ammonia gas or solution can cause serious corrosive burns on contact.

There is no antidote for ammonia poisoning. Treatment consists of support of respiratory and cardiovascular functions.

Decontamination Area

Previously decontaminated patients and patients exposed only to ammonia gas who have no skin or eye irritation may be transferred immediately to the Critical Care Area. Other patients will require rapid decontamination as described in Basic Decontamination below.

Be aware that use of protective equipment by the provider may cause fear in children, resulting in decreased compliance with further management efforts.

Because of their larger surface area:weight ratio, children are more vulnerable to toxicants absorbed through the skin. Also, emergency room personnel should examine children's mouths because of the frequency of hand-to-mouth activity among children.

ABC Reminders

Evaluate and support airway, breathing, and circulation. Watch for signs of laryngeal edema and airway compromise. Children may be more vulnerable to corrosive agents than adults because of the smaller diameter of their airways. In cases of respiratory compromise, secure airway and respiration via endotracheal intubation. If not possible, surgically secure an airway.

Treat patients who have bronchospasm with aerosolized bronchodilators. The use of bronchial sensitizing agents in situations of multiple chemical exposures may pose additional risks. Also consider the health of the myocardium before choosing which type of bronchodilator should be administered. Cardiac sensitizing agents may be appropriate; however, the use

of cardiac sensitizing agents after exposure to certain chemicals may pose enhanced risk of cardiac arrhythmias (especially in the elderly). Ammonia poisoning is not known to pose additional risk during the use of bronchial or cardiac sensitizing agents.

Consider racemic epinephrine aerosol for children who develop stridor. Dose 0.25–0.75 mL of 2.25% racemic epinephrine solution in water, repeat every 20 minutes as needed cautioning for myocardial variability.

Patients who are comatose, hypotensive or have seizures should be treated in the conventional manner. Manage hypotension and shock with intravenous fluids (use caution when pulmonary edema is present); pressor agents may be required.

Basic Decontamination

Patients who are able, may assist with their own decontamination. Remove and double bag contaminated clothing and personal belongings.

Because ammonia in solution can cause burns, ED staff should don chemical-resistant jumpsuits (e.g., of Tyvek or Saranex) or butyl rubber aprons, rubber gloves, and eye protection if the patient's clothing or skin is wet. After the patient has been decontaminated, no special protective clothing or equipment is required for ED personnel.

Flush liquid-exposed skin and hair with water for at least 5 minutes. If feasible, wash exposed skin extremely thoroughly with soap and water.

Use caution to avoid hypothermia when decontaminating children or the elderly. Use blankets or warmers when appropriate.

Irrigate exposed or irritated eyes with plain water or saline for at least 15 minutes. Remove contact lenses, if easily removable without additional trauma to the eye. Continue irrigation while transferring the victim to the Critical Care Area. An ophthalmic anesthetic, such as 0.5% tetracaine, may be necessary to alleviate blepharospasm, and lid retractors may be required to allow adequate irrigation under the eyelid.

In cases of ingestion, **do not induce emesis; do not administer activated charcoal**. If the patient is conscious and able to swallow, administer 4 to 8 ounces of water or milk if it has not been given previously (see *Critical Care Area* below for more information on ingestion exposure).

Critical Care Area

Be certain that appropriate decontamination has been carried out. (See *Decontamination Area* above.)

ABC Reminders

Evaluate and support airway, breathing, and circulation as in ABC Reminders above. Children may be more vulnerable to corrosive agents than adults because of the smaller diameter of their airways. Establish intravenous access in seriously ill patients if this has not been done previously. Continuously monitor cardiac rhythm.

Patients who are comatose, hypotensive, having seizures or have cardiac arrhythmias should be treated in the conventional manner.

Inhalation Exposure

Administer supplemental oxygen by mask to patients who have respiratory symptoms. Treat patients who have bronchospasm with aerosolized bronchodilators. The use of bronchial sensitizing agents in situations of multiple chemical exposures may pose additional risks. Also consider the health of the myocardium before choosing which type of bronchodilator should be administered. Cardiac sensitizing agents may be appropriate; however, the use of cardiac sensitizing agents after exposure to certain chemicals may pose enhanced risk of cardiac arrhythmias (especially in the elderly). Ammonia poisoning is not known to pose additional risk during the use of bronchial or cardiac sensitizing agents.

Consider racemic epinephrine aerosol for children who develop stridor. Dose 0.25–0.75 mL of 2.25% racemic epinephrine solution in water, repeat every 20 minutes as needed cautioning for myocardial variability.

Observe patients carefully for 6 to 12 hours for signs of upper-airway obstruction. Patients who have had a severe exposure may develop noncardiogenic pulmonary edema.

Skin Exposure

If ammonia gas or solution was in contact with the skin, chemical burns may result; treat as thermal burns.

Eye Exposure

Continue irrigation for at least 15 minutes or until the pH of the conjunctival fluid has returned to normal. Test visual acuity. Examine the eyes for corneal damage and treat appropriately. Immediately consult an ophthalmologist for patients who have severe corneal injuries.

Ingestion Exposure

Do not induce emesis because this may re-expose the esophagus and mouth to the caustic substance. Do not administer activated charcoal. Do not perform gastric lavage or attempt neutralization after ingestion. If not given during decontamination, give 4 to 8 ounces of water by mouth to dilute stomach contents.

Consider endoscopy to evaluate the extent of gastrointestinal-tract injury. Extreme throat swelling may require endotracheal intubation or cricothyroidotomy.

*Antidotes and
Other Treatments*

There is no specific antidote for ammonia poisoning. Although administration of corticosteroids to limit esophageal scarring is recommended by some toxicologists, this treatment is unproven and may be harmful in patients who have perforation or serious infection. Hemodialysis is not effective.

Laboratory Tests

Routine laboratory studies for all exposed patients include CBC, glucose, and electrolyte determinations. Chest radiography and pulse oximetry (or arterial blood gases measurements) are recommended for severe inhalation exposure or if pulmonary aspiration is suspected. No specific biologic test for ammonia exposure exists.

**Disposition and
Follow-up**

Consider hospitalizing patients who have evidence of respiratory distress or significant skin burns or who have ingested an ammonia solution.

Delayed Effects

Pulmonary injury may continue to evolve over 18 to 24 hours. Residual bronchoconstriction, bronchiectasis and small airway disease may occur, and chronic obstructive pulmonary disease can develop. Patients exposed by inhalation who are initially symptomatic should be observed carefully and reexamined periodically. Pulmonary function tests should be repeated on an annual basis. Patients who develop pulmonary edema should be admitted to an intensive care unit.

Acute ocular exposure to ammonia may result in persistent intraocular pressure, cataract formation, and glaucoma with significant reduction in visual acuity.

Patient Release

Patients who are asymptomatic following exposure or who experienced mild symptoms that have been treated may be released and advised to seek medical care promptly if symptoms recur or develop (see *Ammonia—Patient Information Sheet* below). Cigarette smoking may exacerbate pulmonary injury and should be discouraged for 72 hours after exposure.

Follow-up Obtain the name of the patient's primary care physician so that the hospital can send a copy of the ED visit to the patient's doctor.

Patients with mild to moderate skin burns should be reexamined within 24 hours.

Patients who have eye injuries should be reexamined by an ophthalmologist in 24 hours.

Reporting

If a work-related incident has occurred, you may be legally required to file a report; note incident details and contact your state or local health department.

Other persons may still be at risk in the setting where this incident occurred. If the incident occurred in the workplace, discussing it with company personnel may prevent future incidents. If a public health risk exists, notify your state or local health department or other responsible public agency. When appropriate, inform patients that they may request an evaluation of their workplace from OSHA or NIOSH. See Appendices III and IV for a list of agencies that may be of assistance.

Ammonia

Patient Information Sheet

This handout provides information and follow-up instructions for persons who have been exposed to ammonia gas or ammonium hydroxide solution.

What is ammonia?

Ammonia is a colorless, highly irritating gas with a sharp, suffocating odor. It easily dissolves in water to form a caustic solution called ammonium hydroxide. It is not highly flammable, but containers of ammonia may explode when exposed to high heat. About 80% of the ammonia produced is used in fertilizers. It is also used as a refrigerant and in the manufacture of plastics, explosives, pesticides, and other chemicals. It is found in many household and industrial-strength cleaning solutions.

What immediate health effects can result from ammonia exposure?

Most people are exposed to ammonia from breathing the gas. They will notice the pungent odor and experience burning of the eyes, nose, and throat after breathing even small amounts. With higher doses, coughing or choking may occur. Exposure to high levels of ammonia can cause death from a swollen throat or from chemical burns to the lungs. Skin contact with ammonia-containing liquids may cause burns. Eye exposure to concentrated gas or liquid can cause serious corneal burns or blindness. Drinking a concentrated ammonia solution can cause burns to the mouth, throat, and stomach. Generally, the severity of symptoms depends on the degree of exposure.

Can ammonia poisoning be treated?

There is no antidote for ammonia poisoning, but ammonia's effects can be treated, and most people recover. Persons who have experienced serious signs and symptoms (such as severe or persistent coughing or burns in the throat) may need to be hospitalized.

Are any future health effects likely to occur?

A single small exposure from which a person recovers quickly is not likely to cause delayed or long-term effects. After a severe exposure, injury to the eyes, lungs, skin, or digestive system may continue to develop for 18 to 24 hours, and serious delayed effects, such as gastric perforation, chronic pulmonary obstructive disease, or glaucoma, are possible.

What tests can be done if a person has been exposed to ammonia?

Specific tests for the presence of ammonia in blood or urine generally are not useful to the doctor. If a severe exposure has occurred, blood and urine analyses, chest x-rays, and other tests may show whether the lungs have been injured. Testing is not needed in every case. If ammonia contacts the eyes, the doctor may put a special dye in the eyes and examine them with a magnifying lamp.

Where can more information about ammonia be found?

More information about ammonia can be obtained from your regional poison control center; your state, county, or local health department; the Agency for Toxic Substances and Disease Registry (ATSDR); your doctor; or a clinic in your area that specializes in occupational or environmental health. If the exposure happened at work, you may wish to discuss it with your employer, the Occupational Safety and Health Administration (OSHA), or the National Institute for Occupational Safety and Health (NIOSH). Ask the person who gave you this form for help in locating these telephone numbers.

Follow-up Instructions

Keep this page and take it with you to your next appointment. Follow *only* the instructions checked below.

- Call your doctor or the Emergency Department if you develop any unusual signs or symptoms within the next 24 hours, especially:
 - coughing
 - difficulty breathing or shortness of breath
 - wheezing or high-pitched voice
 - chest pain or tightness
 - increased pain or a discharge from exposed eyes
 - increased redness or pain or a pus-like discharge in the area of a skin burn
 - stomach pain or vomiting

No follow-up appointment is necessary unless you develop any of the symptoms listed above.

Call for an appointment with Dr. _____ in the practice of _____.
When you call for your appointment, please say that you were treated in the Emergency Department at _____ Hospital by _____ and were advised to be seen again in _____ days.

Return to the Emergency Department/ _____ Clinic on (date) _____ at _____ AM/PM for a follow-up examination.

Do not perform vigorous physical activities for 1 to 2 days.

You may resume everyday activities including driving and operating machinery.

Do not return to work for _____ days.

You may return to work on a limited basis. See instructions below.

Avoid exposure to cigarette smoke for 72 hours; smoke may worsen the condition of your lungs.

Avoid drinking alcoholic beverages for at least 24 hours; alcohol may worsen injury to your stomach or have other effects.

Avoid taking the following medications: _____

You may continue taking the following medication(s) that your doctor(s) prescribed for you: _____

Other instructions: _____

- Provide the Emergency Department with the name and the number of your primary care physician so that the ED can send him or her a record of your emergency department visit.
- You or your physician can get more information on the chemical by contacting: _____ or _____, or by checking out the following Internet Web sites: _____;

Signature of patient _____ Date _____

Signature of physician _____ Date _____

Exhibit 29

PROJECT FACT SHEET
Russell City Energy Center (Hayward, CA)

The Bay Area Air Quality Management District (“Air District”) is proposing to issue an Amended Federal Prevention of Significant Deterioration (“PSD”) Permit for the Russell City Energy Center. This Fact Sheet provides a summary of some of the most important aspects of the project and of the proposed amended permit, as well as information on how the public can get involved and provide input on the project. The Air District’s full analysis of the project, its emissions and potential environmental impacts – and how it will comply with applicable Federal PSD Permit requirements – is set forth in the Statement of Basis for the proposed amended permit, which is available from the Air District upon request. (See instructions below for further information.)

The Russell City Energy Center Project

The Russell City Energy Center is a proposed 600 megawatt natural gas fired combined-cycle power plant proposed to be built by Russell City Energy Company, LLC, an affiliate of Calpine Corporation. The proposed facility would be located at 3862 Depot Road, near the corner of Depot Road and Cabot Boulevard, in Hayward, CA. The facility was originally permitted in 2002, but was subsequently relocated approximately 1,500 feet north of the original permitted site, which required the facility’s permits to be amended.

The Russell City Energy Center is proposed to include: two gas turbines, two heat recovery steam generators (also known as waste heat boilers), a single steam turbine, a cooling tower and a diesel fire pump engine. The facility would be a combined-cycle power plant in which the gas turbines generate electricity and the heat from the gas turbine exhaust is used to produce steam in the heat recovery steam generator to generate additional electricity via the steam turbine. The recovery of energy from the gas turbine exhaust, which otherwise would be wasted, increases the efficiency of electrical generation. The facility would have a cooling tower that acts as a heat exchanger by circulating water to cool assorted equipment at the site. The cooling tower also cools the steam turbine condenser that recycles water back to the heat recovery steam generator. The facility would also have a 300 hp diesel engine to power a fire pump onsite (to be used in case of emergency to provide water to fight fires).

The diagram on the next page presents a schematic overview of how such a combined-cycle facility operates. The gas turbine burns natural gas, along with combustion air, to turn an electrical generator (1). The hot exhaust from the turbine is then vented to a steam generator (2) to produce steam for further electrical generation. The steam is sent to the steam turbine (3), which turns a second electrical generator. The used steam then exits to a condenser (4) where it is recycled back to the steam generator, with residual heat exhausted through a cooling tower (5).

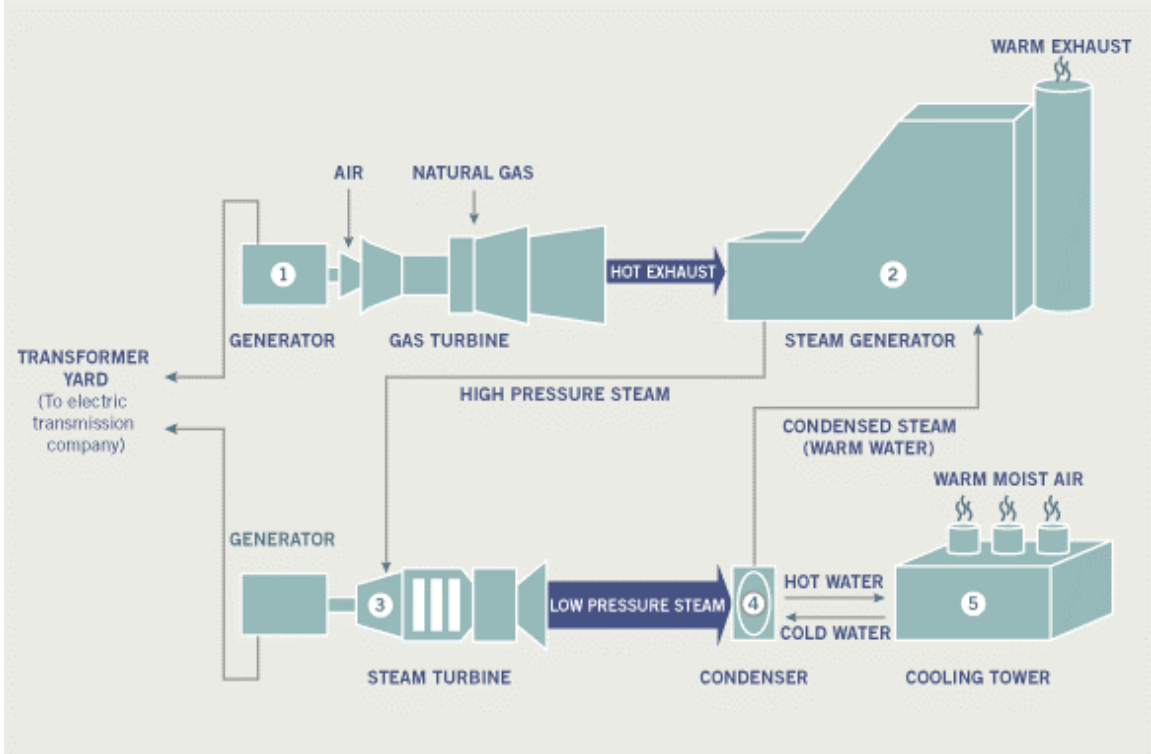


Diagram 1: Schematic Operation of a Combined-Cycle Power Plant

Air Emissions

The proposed facility would be allowed to emit up to the following maximum quantities of criteria air pollutants:

Nitrogen Oxides (NO ₂):	134.6 tons per year
Carbon Monoxide (CO):	389.3 tons per year
Precursor Organic Compounds (POC):	28.5 tons per year
Particulate Matter (PM):	86.8 tons per year
Sulfur Dioxide (SO ₂):	12.2 tons per year

The facility would also emit certain toxic air contaminants, the most significant of which (from a health risk perspective) are set forth in the following table. A full list of toxic air contaminants associated with the project is provided in the Statement of Basis for the proposed amended permit.

Toxic Air Contaminant	Project Emissions	
	lb/hour	lb/year
Ammonia	15.2	121,000
Benzene	0.0284	226
Formaldehyde	1.96	15,600
Diesel Particulate Matter	0.0740	4.00
Polycyclic Aromatic Hydrocarbons (as Benzo(a)pyrene equivalents)	0.00021	1.8

Pollution Control Equipment & Mitigation Measures

The proposed facility includes pollution control equipment to minimize the amounts of air pollutants it will emit.

The combustion turbines and waste heat boilers will use special burners that minimize the amount of nitrogen oxides they produce, and their exhaust will pass through a device called a “Selective Catalytic Reduction” system that will eliminate over 90% of the nitrogen oxides from the exhaust stream. The combustion turbines and heat recovery boilers will also use equipment known as an “Oxidation Catalyst” to reduce emissions of carbon monoxide and precursor organic compounds in the exhaust stream. The facility will also be required to fire only clean-burning low-sulfur natural gas in order to minimize particulate matter (soot) and sulfur dioxide emissions.

The cooling tower will be equipped with a device known as a “Drift Eliminator” that will reduce emissions of particulate matter.

The emergency firepump will be an EPA-certified “Tier 2” diesel engine, the cleanest type of diesel engine of its size currently on the market.

The facility will also use highly efficient generating equipment to minimize the amount of greenhouse gases that will be emitted.

The facility will also be required to offset and/or mitigate its air pollutant emissions. The facility will be required to offset its nitrogen oxide and precursor organic compound emissions increases through emissions reductions from the closing of other facilities, in the form of Emission Reduction Credits that represent “banked” emissions reductions. For nitrogen oxides, the facility will be required to submit 1.15 pounds of Emission Reduction Credits for every pound of new nitrogen oxide emissions, so the offset reductions will actually exceed the facility’s new emissions for that pollutant. The facility will also be required to undertake mitigation measures to reduce emissions of particulate matter in the area, in order to address the impacts of the facility’s particulate matter emissions. These and other mitigation requirements have been imposed by the California Energy Commission in its license for the project.

Potential Impacts to Air Quality and Public Health

The District has undertaken comprehensive analyses of the air quality and public health impacts associated with the proposed Russell City Energy Center. The analyses are set forth in detail in the Statement of Basis for the proposed amended permit. In summary, these analyses reached the following conclusions.

The Federal PSD Permit regulations require air quality modeling to predict potential impacts from the proposed facility on the levels of nitrogen oxides, fine particulate matter of less than 10 microns in diameter (PM₁₀), and Carbon Monoxide in the ambient air. The Federal PSD Permit regulations require the Air District to ensure that emissions will

not cause a violation of the federal ambient air quality standards for those pollutants, or of any PSD “increment” established for those pollutants. (A PSD “increment” is the maximum allowable increase in pollutant concentration that is allowed to occur above a baseline concentration.) The Air District reviewed modeling results for the proposed facility and found that the emissions will not cause a violation of the ambient air quality standards nitrogen oxides, PM₁₀, and Carbon Monoxide, and will not consume a significant amount of any applicable PSD increment.

The Federal PSD Permit regulations also require an analysis of the project’s impacts on visibility and on soils and vegetation. The Air District evaluated these impacts and found that there will be no significant impact to visibility, soils or vegetation.

The Federal PSD Permit regulations also require an analysis of impacts to federally-designated “Class I” areas, which are areas of special natural, scenic, recreational, or historic value (such as National Parks). The only Class I area within 100 km of the proposed facility is the Point Reyes National Seashore. The Air District found that there would be no significant impacts within that area.

Finally, in addition to the Federal PSD Permit requirement, Air District regulations also required that the District conduct a health risk assessment for the project. This assessment found that, under the worst-case scenario, the toxic health risk from the plant’s toxic emissions would be 0.7 in one million for cancer risk. The chronic non-cancer health risk index would be 0.007 and the acute non-cancer health risk index would be 0.024. A cancer risk of less than 1 in a million and non-cancer health risk indices are less than 1 are not significant for project permitting purposes.

Other Environmental Concerns

In addition to the air quality issues subject to the proposed Amended Federal PSD Permit, a number of other potential environmental impacts have been evaluated as part of the comprehensive permitting process for this project, including the following.

Accidental Chemical Releases from Ammonia Use and Storage

The Russell City Energy Center will use and store aqueous ammonia in a 29.4% (by weight) solution. Consequently, the project will be required to maintain a Risk Management Plan and implement a Risk Management Program to prevent accidental releases of ammonia. The California Energy Commission has modeled the health impacts arising from a catastrophic release of aqueous ammonia due to spontaneous storage tank failure at the proposed facility and found that the impact would not be significant.

Water Quality

The City of Hayward Water Pollution Control Facility will provide secondary effluent for process water supply to the facility. A Zero Liquid Discharge (ZLD) system and a Title

22 Recycled Water Facility would be added to the facility to replace the proposed Advanced Water Treatment facility. The quantities of wastewater produced would decrease significantly with the addition of the ZLD system (including zero discharge to the bay). Further treatment to the cooling and process water to be used at the proposed facility will be tertiary treated recycled water.

The Amended Federal PSD Permit That The Air District Is Proposing To Issue

The action that the Air District is currently proposing to take is to issue an Amended Federal PSD Permit for the proposed Russell City Energy Center. This permit is one of two major environmental permits the facility will require. The other is a license from the California Energy Commission issued in accordance with the Warren-Alquist State Energy Conservation and Development Act. The Energy Commission's amended license, which governs state-law environmental issues, was issued for this project in October of 2007. The Energy Commission is not authorized to issue Federal PSD Permits, however, and so it falls to the Air District to issue the Amended Federal PSD Permit for this project.

The Air District's current proposal extends to issuance of the Amended Federal PSD Permit only. Broader environmental concerns, such as those addressed in the Energy Commission's licensing proceeding under the Warren-Alquist Act, are not part of the Air District's proposal. The Energy Commission's process has been completed and the license for the project has been finalized. The Air District is not reopening the Energy Commission's licensing proceeding with this proposal.

The Air District is proposing to incorporate the changes that have been made to the proposed project into the Federal PSD Permit that was initially issued in 2002, including the new project site. The District has analyzed the entire project, however, including elements that are not being modified, and has reconfirmed that the entire project will satisfy all applicable Federal PSD Permit requirements.

The Air District is now seeking public input on its proposal to issue the Amended Federal PSD Permit. Information on how the public can get involved is provided at the end of this fact sheet. The Air District will review and consider all comments submitted by the public before taking final action on the proposed Amended Federal PSD Permit.

Proposed Permit Conditions

To ensure that the project's emissions will comply with all applicable state and federal air quality laws and regulations, the facility would be subject to a number of permit conditions. The California Energy Commission has already imposed conditions under state law in its license for the proposed project. The District is now proposing conditions for the Amended Federal PSD Permit. These conditions are intended to ensure compliance with the Federal PSD Program, which is a federal requirement implemented by EPA under the federal Clean Air Act.

The primary requirement of the Federal PSD Program is that the facility must use the “Best Available Control Technology” to reduce emissions to the greatest extent achievable, taking into account energy, environmental and economic impacts. The Air District has examined the proposed facility’s operations and equipment and has developed stringent numerical emissions limits for each Federal PSD-regulated pollutant. The proposed conditions also require monitoring of emissions on a regular basis to demonstrate ongoing compliance. If the facility exceeds any emissions limit, then the facility will be subject to enforcement action. The specific numerical limits for each pollutant and the basis for the limit are explained in the Statement of Basis.

A complete list of permit conditions that the facility would be subject to can be found in the Energy Commission’s licensing decision (setting forth conditions adopted under state law), and in the Statement of Basis for the proposed Amended Federal PSD Permit (setting forth conditions that the Air District is proposing to adopt under the Federal PSD program).

Opportunities for Public Participation and Comment

The Air District is seeking public input on its proposal to issue an Amended Federal PSD Permit for the Russell City Energy Center. The District invites all interested parties to comment on any aspect of the Amended Federal PSD Permit. Written comments should be directed to Weyman Lee, P.E., Senior Air Quality Engineer, Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, CA, 94109, (415) 749-4623, weyman@baaqmd.gov, and must be received by January 22, 2009. In addition, the District will hold a public hearing on the project on January 21, 2009, from 6:30 to 9:00 p.m., in the Hayward City Council Chambers located in City Hall, 777 B Street, Hayward, CA 94541. Air District staff will be available before the hearing from 6:00 to 6:30 p.m. with further background information and to answer any questions from the public on an informal basis. At 6:30 p.m., the District will convene the formal public hearing to receive comments from the public on the project. All comments received during the comment period (either in writing or orally at the public hearing) will be considered by the Air District in making a final determination on issuance of an Amended Federal PSD Permit for this project.

Interested members of the public are also invited to learn more about the project as part of the public review and comment process. Further information about the project and how it will comply with applicable regulatory requirements is available in the District’s Statement of Basis for the proposed amended permit. The Statement of Basis, proposed permit conditions, the permit application and all data submitted by the applicant, and all other supporting materials are available for public inspection at the Outreach and Incentives Division Office located on the 5th Floor of District Headquarters, 939 Ellis Street, San Francisco, CA, 94109. The Statement of Basis and proposed permit conditions are also available on the District’s website at www.baaqmd.gov. The public may also contact Mr. Lee for further information (see contact information above). **Para obtener la información en español, comuníquese con Brenda Cabral en la sede del Distrito, (415) 749-4686, bcabral@baaqmd.gov.**

Exhibit 30

(NOTE REVISED ADDRESS)
**Notice of Public Hearing and Notice Inviting Written Public Comment on
Proposed Air Quality Permit for the Russell City Energy Center, Hayward, CA**

The Bay Area Air Quality Management District (“District”) is proposing to issue an amended Prevention of Significant Deterioration (“PSD”) Permit for the Russell City Energy Center. Before doing so, the District is providing the public with notice of its proposal and an opportunity to review and comment on the proposed permit. The District is also holding a public hearing to provide the public with an opportunity to comment in person.

The proposed Russell City Energy Center is a 600-megawatt natural gas fired combined-cycle power plant to be built by Russell City Energy Company, LLC, (50 W. San Fernando Street, San Jose, CA 95113) an affiliate of Calpine Corporation. The proposed facility would be located at 3862 Depot Road, near the corner of Depot Road and Cabot Boulevard, in Hayward, CA. The proposed power plant will consist of two combustion turbine generators, two heat recovery steam boilers, a steam turbine generator and associated equipment, a wet cooling system, and a diesel fire pump. The District initially issued a permit for the project in 2002, but it was subsequently relocated approximately 1,500 feet to the north. The permit therefore needs to be amended.

Under the proposed amended permit, the facility would be allowed to emit significant amounts of certain PSD-regulated air pollutants, including the following:

Nitrogen Oxides (as NO ₂):	134.6 tons per year
Carbon Monoxide (CO):	389.3 tons per year
Particulate Matter (PM):	86.8 tons per year

The project will utilize the Best Available Control Technology to minimize emissions of these air pollutants as required by 40 C.F.R. Section 52.21. The proposed project will not consume a significant degree of any PSD increment.

The District initially issued an amended PSD permit for the new location on November 1, 2007. Subsequently, the U.S. Environmental Protection Agency’s Environmental Appeals Board determined that the District should provide notice of the proposed permit, and an opportunity to comment on it, to additional parties. The District is therefore re-noticing the proposed amended PSD permit at this time. The District will review and consider any comments received before determining whether to issue a final amended PSD permit.

The proposed amended PSD Permit is a federal permit issued by the District on behalf of the United States Environmental Protection Agency (“EPA”). The District issues PSD permits under a Delegation Agreement with EPA. The District also participates in the California Energy Commission’s licensing process under state law and issues a District Authority to Construct incorporating the Energy Commission’s requirements. The District issued an Authority to Construct for the Russell City Energy Center jointly in the same document with the federal PSD Permit on November 1, 2007. Only the federal PSD Permit has been remanded, and only the federal PSD permit is being re-noticed. The Authority to Construct is not being reopened and this notice applies only to the proposed amended PSD permit.

Further information about the project and how it will comply with applicable PSD regulatory requirements is available in the District’s Statement of Basis for the proposed amended permit. A fact sheet about the project, the Statement of Basis for the proposed permit, proposed permit conditions, the permit application and all data submitted by the applicant, and all other supporting materials are available for public inspection at the Communications and Outreach Office located on the 5th Floor of District Headquarters, 939 Ellis Street, San Francisco, CA, 94109. The fact sheet, Statement of Basis, and proposed permit conditions are also available on the District’s website at www.baaqmd.gov. Copies of any of these documents and further information about the project can also be obtained by calling or writing to Weyman Lee, P.E., Senior Air Quality Engineer, Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, CA, 94109, (415) 749-4796, weyman@baaqmd.gov. For information in Spanish, please contact Brenda Cabral at District Headquarters, (415) 749-4686, bcabral@baaqmd.gov.

The District invites all interested parties to comment on any aspect of the proposed amended PSD Permit pursuant to 40 C.F.R. Section 124.11. Comments should be made in writing and directed to Weyman Lee at the address provide above, and must be received by January 22, 2009. The District will also hold a public hearing on the project on January 21, 2009, from 6:30 p.m. to 9 p.m. at Hayward City Hall, located at 777 B Street, Hayward, CA, for the purpose of receiving written and oral comments regarding the proposed amended permit. District staff will be available from 6:00 to 6:30 pm to answer questions about the project informally. At 6:30 pm, the District will convene the hearing to receive formal comments from the public on the project. Speakers will be limited to 3 minutes each.

The District has previously issued notices relating to the proposed amended permit on April 12, 2007 and December 3, 2007.

Exhibit 31

**Notice of Public Hearing and Notice Inviting Written Public Comment on
Proposed Air Quality Permit for the Russell City Energy Center, Hayward, CA**

The Bay Area Air Quality Management District (“District”) is proposing to issue an amended Prevention of Significant Deterioration (“PSD”) Permit for the Russell City Energy Center. Before doing so, the District is providing the public with notice of its proposal and an opportunity to review and comment on the proposed permit. The District is also holding a public hearing to provide the public with an opportunity to comment in person.

The proposed Russell City Energy Center is a 600-megawatt natural gas fired combined-cycle merchant power plant to be built by Russell City Energy Company, LLC, (50 W. San Fernando Street, San Jose, CA 95113) a subsidiary of Calpine Corporation. The proposed facility would be located at 3806 Depot Road, at the corner of Depot Road and Cabot Boulevard, in Hayward, CA. The proposed power plant will consist of two combustion turbine generators, two heat recovery steam boilers, a steam turbine generator and associated equipment, a wet cooling system, and a diesel fire pump. The District initially issued a permit for the project in 2002, but it was subsequently relocated approximately 1,500 feet to the north. The permit therefore needs to be amended.

Under the proposed amended permit, the facility would be allowed to emit significant amounts of certain PSD-regulated air pollutants, including the following:

Nitrogen Oxides (as NO ₂):	134.6 tons per year
Carbon Monoxide (CO):	389.3 tons per year
Particulate Matter (PM):	86.8 tons per year

The project will utilize the Best Available Control Technology to minimize emissions of these air pollutants as required by 40 C.F.R. Section 52.21. The proposed project will not consume a significant degree of any PSD increment.

The District initially issued an amended PSD permit for the new location on November 1, 2007. Subsequently, the U.S. Environmental Protection Agency’s Environmental Appeals Board determined that the District should provide notice of the proposed permit, and an opportunity to comment on it, to additional parties. The District is therefore re-noticing the proposed amended PSD permit at this time. The District will review and consider any comments received before determining whether to issue a final amended PSD permit.

The proposed amended PSD Permit is a federal permit issued by the District on behalf of the United States Environmental Protection Agency (“EPA”). The District issues PSD permits under a Delegation Agreement with EPA. The District also participates in the California Energy Commission’s licensing process under state law and issues a District Authority to Construct incorporating the Energy Commission’s requirements. The District issued an Authority to Construct for the Russell City Energy Center jointly in the same document with the federal PSD Permit on November 1, 2007. Only the federal PSD Permit has been remanded, and only the federal PSD permit is being re-noticed. The Authority to Construct is not being reopened and this notice applies only to the proposed amended PSD permit.

Further information about the project and how it will comply with applicable PSD regulatory requirements is available in the District’s Statement of Basis for the proposed amended permit. A fact sheet about the project, the Statement of Basis for the proposed permit, proposed permit conditions, the permit application and all data submitted by the applicant, and all other supporting materials are available for public inspection at the Communications and Outreach Office located on the 5th Floor of District Headquarters, 939 Ellis Street, San Francisco, CA, 94109. The fact sheet, Statement of Basis, and proposed permit conditions are also available on the District’s website at www.baaqmd.gov. Copies of any of these documents and further information about the project can also be obtained by calling or writing to Weyman Lee, P.E., Senior Air Quality Engineer, Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, CA, 94109, (415) 749-4796, weyman@baaqmd.gov. For information in Spanish, please contact Brenda Cabral at District Headquarters, (415) 749-4686, bcabral@baaqmd.gov.

The District invites all interested parties to comment on any aspect of the proposed amended PSD Permit pursuant to 40 C.F.R. Section 124.11. Comments should be made in writing and directed to Weyman Lee at the address provide above, and must be received by January 22, 2009. The District will also hold a public hearing on the project on January 21, 2009, from 6:30 p.m. to 9 p.m. at Hayward City Hall, located at 777 B Street, Hayward, CA, for the purpose of receiving written and oral comments regarding the proposed amended permit. District staff will be available from 6:00 to 6:30 pm to answer questions about the project informally. At 6:30 pm, the District will convene the hearing to receive formal comments from the public on the project. Speakers will be limited to 3 minutes each.

The District has previously issued notices relating to the proposed amended permit on April 12, 2007 and December 3, 2007.

Exhibit 32

**Notice of Public Hearing and Notice Inviting Written Public Comment on
Draft Federal Prevention of Significant Deterioration (PSD) Permit for the
Russell City Energy Center, Hayward, CA**

The Bay Area Air Quality Management District ("District") is proposing to issue a federal Prevention of Significant Deterioration ("PSD") Permit for the Russell City Energy Center. The District is providing the public with notice of the proposed permit and an opportunity to review and comment on it. The District is also holding a Public Hearing to provide the public with an opportunity to comment in person.

The proposed Russell City Energy Center is a 600-megawatt natural gas fired combined-cycle power plant to be built by Russell City Energy Company, LLC (717 Texas Avenue, Suite 1000, Houston, TX 77002), an affiliate of Calpine Corporation. The proposed facility would be located at 3862 Depot Road, near the corner of Depot Road and Cabot Boulevard, in Hayward, CA. The proposed power plant consists of two combustion turbine generators, two heat recovery steam boilers, a steam turbine generator and associated equipment, a wet cooling system, and a diesel fire pump. The proposed facility would emit up to 127 tons of Oxides of Nitrogen, 330 tons of Carbon Monoxide, and 71.8 tons of Particulate Matter per year. The plant would use Best Available Control Technology to minimize these emissions, and would not consume a significant degree of any PSD increment.

The District previously proposed to issue a PSD permit for this facility on December 8, 2008, and held a public hearing on January 21, 2009. Based on comments received from the public, the District has revised the proposed permit and is including a number of more stringent permit conditions. The District's revised proposal is explained in detail in its Additional Statement of Basis for the proposed permit, as well as in the initial December 8, 2008, Statement of Basis and the other documentation the District is making available for public review (including the draft permit conditions, all data submitted by the applicant, and all administrative record documents the District has relied on for its proposal). These documents are available for public inspection at District headquarters during normal business hours, and the principal documents are also available on the District's website at www.baaqmd.gov. Further information about the project, and copies of the draft permit, Statement of Basis documents, application, and other relevant documentation, can be obtained by calling or writing to Weyman Lee, P.E., Senior Air Quality Engineer, Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, CA, 94109, (415) 749-4796, weyman@baaqmd.gov. Para obtener la información en español, comuníquese con Brenda Cabral en la sede del Distrito, (415) 749-4686, bcabral@baaqmd.gov.

The District invites all interested parties to submit written comments on any aspect of the proposed PSD Permit. Written comments should be directed to Weyman Lee at the address provided above, and must be received by **September 16, 2009**. The District also invites interested parties to attend the Public Hearing the District will hold for the purpose of receiving oral and written testimony from the public. The Public Hearing will be held from 6:30 to 9:00 pm on **Wednesday, September 2, 2009**, at Hayward City Hall Council Chambers, 777 B Street, Hayward, CA, 94541. Speakers will be limited to three minutes each. District staff will be available from 6:00 to 6:30 to discuss the project informally and answer any questions. Previous notices regarding the permit were issued 4/12/07, 12/3/07, 12/11/08, 12/12/08 and 1/23/09.

The District encourages all interested members of the public to comment in writing or at the Public Hearing. The District will consider all comments received during the comment period before making a final decision on the proposed PSD Permit. Comments submitted during the previous comment period **do not** need to be resubmitted at this time.

Exhibit 33



February 4, 2010

Planned Calif. Power Plant Would Be Nation's First With GHG Emissions Limits

By **ROBIN BRAVENDER AND COLIN SULLIVAN** of [Greenwire](#)

Calpine Corp. is poised to build the first U.S. power plant with federal limits on greenhouse gas emissions in California after clearing a final regulatory hurdle today.

The Bay Area Air Quality Management District granted the Houston-based utility its final air quality permit today, allowing the company to proceed with the planned construction of a 600-megawatt natural gas-fired Russell City Energy Center. The 15-acre project site is in Hayward, just east of the San Francisco Bay.

The Russell City plant will produce 50 percent fewer greenhouse gas emissions than even the most advanced coal-fired plants, Calpine said, and will emit 25 percent fewer heat-trapping gases than the California Public Utilities Commission's standard. Construction on the facility plant is expected to begin later this year.

"We applaud the BAAQMD and Calpine for going beyond existing federal law and being the first in the nation to require an enforceable greenhouse gas limit," said Linda Adams, secretary of the California EPA. "This action furthers efforts at a statewide level to balance our economic needs while meeting our environmental challenges."

The Prevention of Significant Deterioration, or PSD, permit was issued with an eye on greenhouse gas restrictions set to be implemented in California in less than two years. The state's Air Resources Board is still in the process of putting together rules for a cap-and-trade market intended to help cut greenhouse gases to 1990 levels by 2020; that market goes live Jan. 1, 2012.

Utilities like Calpine will most likely be participants in that market, though it is unclear how permits issued before the advent of the market might be counted under a regulated regime. Calpine is also promoting the project as a means to help achieve the state's 33 percent renewable power standard by 2020, claiming gas-fired plants would back up intermittent sources like wind and solar. So-called peaker plants, which only run when demand is highest, are often older and powered by coal.

Calpine spokeswoman Norma Dunn said the company intends to run the Russell plant as baseload generation, selling its power to Pacific Gas & Electric Co. Terms of that deal were not disclosed.

When asked how a baseload plant could be considered "backup" power to wind and solar, Dunn said PG&E will retain the ability to use gas-fired generation when solar and wind are unavailable.

"They have dispatching rights, and they will balance the supply from Russell City with all of their other energy sources, including power from our own geothermal assets," Dunn said. "When they have contracts for wind or solar, they will need other supply sources to fill in during periods when their renewable supplies are not available."

The Calpine permit is coming against the backdrop of rising political pressure to suspend California's climate law, A.B. 32. Voters will most likely get to decide for themselves this fall whether climate regulations should go forward, as opponents of A.B. 32 are in the process of gathering signatures to place on the November ballot a measure that would tie the law to high unemployment levels. If the measure makes it onto the ballot, and voters approve it, California could see its climate law delayed until unemployment dips below 5.5 percent.

Calpine is an active player in the renewable power industry in California. The company owns and operates the Geysers in Sonoma and Lake counties in Northern California, which is the largest complex of geothermal power plants in the world.

Precedent?

Environmentalists hailed the development as a signal that steep reductions in utilities' greenhouse gas emissions can be made under existing federal air laws, while some opponents insist that the Clean Air Act is an inappropriate tool for tackling global warming emissions.

"It's an example of what is possible," Sierra Club chief climate counsel David Bookbinder said. "Calpine is leading the way and showing how it's possible to generate all the electricity that America needs with half the greenhouse gases."

U.S. EPA is expected to soon begin regulating greenhouse gas emissions from stationary sources under the Clean Air Act. The agency is planning to finalize standards next month to limit automobile emissions of the heat-trapping gases, which would automatically trigger permitting requirements for industrial sources. EPA is planning to require only the largest stationary sources to install greenhouse gas controls but has not yet issued guidance about what pollution controls will be required for those facilities.

"This could become an important precedent," Clean Air Watch President Frank O'Donnell said of the Calpine permit. "It shows that the current Clean Air Act can be used to limit greenhouse gas emissions from power plants."

But Scott Segal, an industry attorney and director of the Electric Reliability Coordinating Council, said existing clean air permitting laws are inappropriate for regulating greenhouse gases.

"As a general proposition, we believe that the use of permitting conditions to advance a CO2 regulatory agenda is an inflexible mechanism that is likely to have a number of unintended consequences," Segal said.

By limiting greenhouse gases through air permits, Segal said, facilities located in other regions of the country -- including coal-rich areas -- would be at a disadvantage. "There is no mechanism to either contain cost or allow for trading if you use permit conditions as a basis for regulating CO2," he said.

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Exhibit 34



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

January 28, 2010

Mr. Barry Young
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109-7799

Subject: Section 7 Endangered Species Act Consultation for the Proposed Russell City Energy Center - Hayward, California

Dear Mr. Young:

I am writing to notify the Bay Area Air Quality Management District ("District") that the United States Environmental Protection Agency ("EPA") has fulfilled its obligations under the Endangered Species Act ("ESA") for the Russell City Energy Center ("RCEC") PSD permit proposed by the District. Enclosed is a letter from the Fish and Wildlife Service ("Service") dated January 25, 2010 which concludes that the proposed RCEC is not likely to adversely affect federally-listed or proposed species or their critical habitats that are under the administration of the Service. As EPA has met its ESA obligations with respect to the permitting action that authorizes construction of the RCEC, the District may issue a final PSD permit to the Calpine Corporation in accordance with the PSD Delegation Agreement between EPA and the District.

We appreciate your patience during the time that EPA was addressing ESA issues. If you have any questions, please contact Shaheerah Kelly of my staff at (415) 947-4156.

Sincerely,

A handwritten signature in blue ink that reads "Gerardo C. Rios".

for Gerardo C. Rios
Chief, Permits Office
Air Division

Enclosures

cc: Weyman Lee, Bay Area Air Quality Management District (via e-mail w/ enclosures)
Barbara McBride, Calpine Corporation (via e-mail w/ enclosures)



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846



In Reply Refer To:
81420-2009-I-0755

JAN 25 2010

Mr. Gerardo C. Rios
Chief, Region 9 Air Permits Office
Attn: Anita Lee
U.S. Environmental Protection Agency
75 Hawthorne Street (AIR-3)
San Francisco, California 94105

Subject: Endangered Species Informal Consultation on the Proposed Russell City Energy Center Project by Calpine/GE Capital; City of Hayward, Alameda County, California

Dear Mr. Rios:

This is in response to the U.S. Environmental Protection Agency's (EPA) March 2, 2009, electronic mail message concerning informal consultation related to your review of the Bay Area Air Quality Management District's Prevention of Significant Deterioration permit for the proposed Russell City Energy Center (proposed action) by Calpine/GE Capital (project proponent) in the City of Hayward in Alameda County, California. The U.S. Fish and Wildlife Service (Service) received your electronic mail message on March 2, 2009. This response is in accordance with the requirements of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

The EPA initially requested informal consultation concerning the proposed action on June 11, 2007. After review of the material provided by the EPA concerning the proposed action, the Service responded to the EPA's request in an electronic mail message on July 31, 2007. At that time, the Service concurred with the EPA's determination that the proposed action was not likely to adversely affect any federally listed species under the administration of the Service. Subsequent to that determination, the EPA decided to prepare additional information, especially concerning nitrogen emissions that would be generated by the proposed action. On March 2, 2009, the Service received the EPA's additional information with a request to review the information. The Service has reviewed this and other additional information provided by the EPA and project proponent to determine if the Service's original determination that the proposed action is not likely to adversely affect federally listed species is still valid.

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IN AMERICA 

Mr. Gerardo C. Rios

determination that the proposed action is not likely to adversely affect federally listed species is still valid.

At issue are the potential adverse effects of the proposed action to the endangered California clapper rail (*Rallus longirostris obsoletus*), salt marsh harvest mouse (*Reithrodontomys raviventris*), California least tern (*Sternula antillarum browni*), and Presidio clarkia (*Clarkia franciscana*); the threatened Pacific Coast Population of the western snowy plover (*Charadrius alexandrinus nivosus*) and its proposed critical habitat, California red-legged frog (*Rana aurora draytonii*) and its designated and revised proposed critical habitat, Central California Distinct Population Segment of the California tiger salamander (*Ambystoma californiense*) (California tiger salamander) and its designated critical habitat, and Alameda whipsnake (*Masticophis lateralis euryxanthus*) and its designated critical habitat; and any other federally listed or proposed species under the administration of the Service.

The Service has reviewed the following information: (1) *Application for Certification for the Russell Energy Center, Hayward, California* (volumes I and II) prepared by Calpine/Bechtel Joint Development and dated May 2001; (2) *Final Staff Assessment, Russell City Energy Center Project, Application for Certification (01-AFC-7), Hayward, California* prepared by the staff of the California Energy Commission and dated June 2002; (3) *Staff Assessment – Part 1 and Part 2, Russell City Energy Center, Amendment No. 1 (01-AFC-7C), Alameda County* prepared by the California Energy Commission and dated June 2007; (4) *Final Commission Report, Russell City Energy Center, Amendment No. 1 (01-AFC-7C), Alameda County* prepared by the California Energy Commission and dated October 2007; (5) *Russell City Energy Center, Hayward, California (01-AFC-7), Amendment No. 1* prepared by Russell City Energy Company, LLC, and CH2M Hill and dated November 2006; (6) *Russell City Energy Center (01-AFC-7C) Petition for Amendment No. 2* submitted by Russell City Energy Company, LLC, and CH2M Hill and dated November 2009; (7) *Technical Memorandum: Biological Site Assessment for Russell City Energy Center Amendment No. 2 – Addition of Construction Laydown/Parking Areas* prepared by CH2M Hill and dated December 10, 2009; and (8) miscellaneous correspondence and electronic mail concerning the proposed action between representatives of the Service, EPA, and project proponent; and (9) other relevant published and unpublished studies, and communications on the distribution and abundance of federally listed species under the administration of the Service.

The purpose of the proposed action is to construct a 600-megawatt natural gas fired power plant facility and associated infrastructure along the east side of San Francisco Bay in Hayward, California. The 18.8-acre site proposed for construction of the power plant facility is currently developed and occupied by a metal fabricating business, a lumber and equipment storage yard, automobile salvage facilities, and pallet storage facilities. A natural gas line extension would be constructed along Depot Road from the proposed plant site eastward to an existing gas line near the Union Pacific Railroad line. A tie-in electric transmission line would be developed from the proposed plant site to the Eastshore Substation, mostly along an existing Pacific Gas & Electric transmission line alignment. A water pipeline and sanitary sewer line would be constructed

Mr. Gerardo C. Rios

north of the proposed plant site. Five construction staging or laydown areas are proposed adjacent to or in the vicinity of the proposed plant site.

No habitat for any federally listed species under the administration of the Service occurs on the proposed power plant facility site, six construction staging areas, or the other areas identified above. Tidal marsh habitat for California clapper rails and/or salt marsh harvest mice is present northwest, west, and south of the proposed plant site, with the nearest habitat being approximately 1,300 feet to the south. Since 2005, California least terns have been successfully breeding and nesting on an "island" within an open water area approximately 3,400 feet southwest of the proposed plant site. Western snowy plovers also have been observed nesting at this location during the past two years and other suitable habitat for this species occurs west of the plant site along with open water foraging and resting/roosting habitat for California brown pelicans. Habitat, including critical habitat, for California tiger salamanders, California red-legged frogs, and/or Alameda whipsnakes occurs east and northeast of the proposed plant site. Critical habitat designated for the California tiger salamander (Central Valley Unit #18) is approximately 18-19 miles northeast of the proposed plant site, while critical habitat proposed for the California red-legged frog (Alameda Unit #1B) and designated for the Alameda whipsnake (Unit #3) are both at least five miles from the proposed plant site. The *Presidio clarkia* occurs in habitat located about 11 miles north-northwest of the proposed plant site in the Redwood Regional Park.

The Service has specifically reviewed information related to nitrogen emissions, nighttime lighting, wastewater discharge, and noise levels (both from construction and operations) at the proposed power plant facility. In particular, the Service has reviewed and evaluated data and information on anticipated nitrogen emissions from the proposed power plant facility (See enclosure.). As part of the proposed action, a variety of general and site-specific conservation measures would be implemented by the project proponent to avoid any potential adverse effects to federally listed species. These conservation measures are identified and fully discussed in the environmental documents for the proposed action identified above and other information provided to the Service. These conservation measures include, but are not limited to, the preparation of a construction noise abatement plan and a facility operations lighting plan, which would be provided to the Service for review and approval prior to being implemented. The proposed plant also would include a Zero Liquid Discharge facility which would substantially limit wastewater discharges from the power plant facility.

Based on our review of the information provided by the EPA and project proponent, we have determined that the proposed action is not likely to adversely affect any federally listed or proposed species and their critical habitat under the administration of the Service. We have determined that any potential effects to federally listed species are likely to be discountable or insignificant based on the design and location of the proposed action; the lack of habitat for any listed species on the power plant facility site and associated project areas; the low probability that any habitat, including critical habitat, for any of these species would be measurably affected



Mr. Gerardo C. Rios

off-site; and/or the successful implementation of conservation measures being proposed as part of the proposed action.

Therefore, we have determined that the proposed action is not likely to adversely affect any federally listed or proposed species or their critical habitats that are under the administration of the Service. Unless new information reveals effects of the proposed action that may affect listed or proposed species in a manner or to an extent not considered, or a new species or critical habitat is designated or proposed that may be affected by the proposed action, no further action pursuant to the Endangered Species Act of 1973, as amended, is necessary.

If you have any questions or concerns regarding our response, please contact Jim Browning (james_browning@fws.gov) or Ryan Olah (ryan_olah@fws.gov) at (916) 414-6625, or Thomas Maurer (thomas_maurer@fws.gov) concerning nitrogen emissions and deposition at (916) 414-6600.

Sincerely,


 Cay C. Goude
Assistant Field Supervisor

Enclosure

Technical Assessment:
Listed Species and Nitrogen Deposition from the
Russell City Energy Center

January 11, 2010

Thomas C. Maurer
Chief, Investigations and Prevention Branch
Sacramento Fish and Wildlife Office
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W-2605
Sacramento, California 95825
(916) 414-6594
fax 414-6713
thomas_maurer@fws.gov

I reviewed the environmental documents, historic bay area nitrogen oxides (NO_x) data, and recent nitrogen deposition model runs for the subject power plant that were provided to me. Of primary use were the CH2MHILL Technical Memorandum dated February 24, 2009 and its attachment with AERMOD and CALPUFF modeling results. Below is a summary of the information and my assessment.

Historic Nitrogen Sources and Deposition in the Area

Anthropogenic sources of nitrogen in the San Francisco Bay area are primarily from fossil fuel combustion including mobile sources (motor vehicles, trains, airplanes, etc.) and non-mobile sources (power plants, refineries, incinerators, cement plants, etc.). Sources of NO_x emissions within Alameda County in 2002 (Figure 1) include: on-road vehicles, 27,807 tons; non-road equipment, 15,457 tons; fossil fuel combustion, 2,295 tons; industrial processes, 1,213 tons; residential wood combustion, 120 tons; and other sources, 77 tons (Source: USEPA emissions database at <http://www.epa.gov/air/emissions/index.htm>). This is an annual total of 46,969 tons (~129 tons per day). As per Amendment 2 for the permit, using best available technologies, the Russell City Energy Center is projected to emit 127 tons per year (~0.35 tons per day) or 0.27 percent of the 2002 total emissions for Alameda County. For comparison, the top ten NO_x sources in the San Francisco Bay area are shown in Table 1. One source emits over 2,000 tons per year and another three sources emit over 1,000 tons per year (Source: California Air Resources Board at http://www.arb.ca.gov/aqd/almanac/almanac09/excel/tableA_28.xls)

Nitrogen concentrations in air and estimated deposition rates to soils and surfaces have been declining throughout the San Francisco Bay area due to improvements in motor vehicle emissions and control technologies for power plants and other sources. For example, the mean San Francisco Bay area air concentration of NO₂ in 1988 was around 23 ppb (range ~16-32 ppb) and steadily declined to a mean of 12 ppb (range ~ 7-17 ppb) by 2008 (USEPA AIRS database). Average ambient air concentrations of NO₂ for Alameda County in 2008 were 14 ppb, down from a high of 25 ppb in 1988. Although current 2009 nitrogen emission rates in Alameda County are likely in the lower range, ammonia sources have been of recent concern especially from agriculture (fertilizers and livestock), power plants, and mobile (on and off road) sources (CENR 2000). Although catalytic converters on mobile sources have reduced NO_x emissions,

ammonia emissions have increased for many vehicles up to 2001 model years (Durbin et al. unknown date). Also an increase in the number of vehicles and vehicle miles traveled may keep nitrogen emissions from declining as rapidly as expected.

Estimates provided by USEPA of South San Francisco Bay and the East Bay Hills nitrogen deposition rates ranged from 4 to 10.5 kg/ha/yr in the 1990s. In 2002, deposition rate estimates ranged from 6 to 10 kg/ha/yr (lower values along the shoreline and higher values along the foothills). These estimated deposition rates have large uncertainties in the 30 to 50 percent range. One would expect that deposition rates would be lower after 7 more years of declining total nitrogen emissions; however, site-specific rates may still be high especially if traffic levels increased nearby.

Impacts of Nitrogen Deposition

The most important impact of nitrogen deposition is excessive fertilization of nutrient poor soils such as the serpentine soils found in the hills east of Hayward. Plants adapted to survive in nutrient poor soils can not compete with invasive plants that take advantage of the increased nutrient load. A nitrogen deposition rate of 5 kg/ha/yr is a commonly used screening level for identifying potential impacts to nutrient poor soils and the native plant communities associated with them. Invasion of annual grasses in South San Francisco Bay area serpentine soils have been documented to be most intensified at nitrogen deposition rates of 5 to 11 kg/ha/yr. Nutrient poor soils such as sand dunes or serpentine soils may be impacted at even lower levels. Thus, nitrogen deposition rates have been at or above the levels of concern for decades throughout the San Francisco Bay area. There may be similar nitrogen enrichment concerns for tidal and seasonal marsh habitat along the Hayward shoreline.

Deposition Models Used for Russell City Energy Center

Two models, AERMOD and CALPUFF, were used to evaluate patterns of nitrogen depositional increases due to the new power plant. AERMOD and CALPUFF are the two air dispersion models EPA requires to be used for single source State Implementation Plan (SIP) revisions for existing sources and for New Source Review (NSR) and Prevention of Significant Deterioration (PSD) programs (http://www.epa.gov/scram001/dispersion_prefrec.htm). They both include wet and dry deposition and address ammonia emissions. The AERMOD model is not well suited for nitrogen deposition because it does not include chemical and phase transformation algorithms for nitrogen oxides. This was noted in the modeling report; however, it was assumed for the AERMOD model that all nitrogen emissions were instantaneously transformed to depositional nitrogen of concern which greatly increases the estimated depositional rates. Also, certain boundary conditions used in the model were conservative and led to increased estimations of depositional rates as well, with the end results being overestimations. CALPUFF on the other hand includes chemical transformation algorithms and is not limited by the boundary conditions of AERMOD. Thus CALPUFF likely represents a more realistic estimate of nitrogen deposition in the areas of concern.

Other input data and assumptions (chemical conversions, reactions, surface roughness, etc.) used for both models were also chosen to represent worse case scenarios for deposition. Thus, the results for both models are considered to be overestimations of what is likely to occur. Not surprisingly, of the two models, AERMOD produced results with the highest values (generally ten times higher than CALPUFF). For example, at the Garin/Dry Creek Regional Park

AERMOD estimated the mean annual deposition rate across the park to be 0.232 kg/ha/yr (max 0.321) while CALPUFF estimated 0.019 kg/ha/yr (max 0.024).

Model Results and Discussion

AERMOD

At the Hayward shoreline area maximum AERMOD deposition rates for “potentially occupied habitat” (identified using California Natural Diversity Database circles and polygons) of various species of concern within the area ranged from 0.12 to 0.37 kg/ha/yr. Assuming a current background deposition rate along the shoreline of 6 kg/ha/yr the AERMOD results represents an extreme worst case increase of 2 to 6 percent; however, the highest depositional areas (>0.25 kg/ha/yr) are industrial areas, auto junk yards, and upland sites that would not be considered habitat for the species of concern. Across the Hayward Regional Shoreline properties the AERMOD average deposition rate resulting from the power plant is 0.15 kg/ha/yr or an extreme worst case increase of 2.5 percent. St. Omer (1994) found that a South San Francisco Bay dyked, non-tidal salt marsh (New Chicago Marsh) and tidal salt marshes (Palo Alto Baylands) contained 100 to 244 kg/ha of available nitrogen. The average increase in depositional rate for the Hayward Regional Shoreline of 0.15 kg/ha/yr is 0.06 to 0.15 percent of the likely available nitrogen in the marshes.

For the Garin Regional Park the maximum AERMOD deposition rates for “potentially occupied habitat” of various species of concern ranged from 0.2 to 0.34 kg/ha/yr (an increase of 2 to 3.4 percent over an assumed 10 kg/ha/yr background depositional rate). Across the park, the average deposition rate is 0.23 kg/ha/yr, an average worst case increase of 2.3 percent.

At Redwood Regional Park the maximum AERMOD modeled deposition rate was 0.02 kg/ha/yr an increase of 0.2 percent.

At Chabot Regional Park the AERMOD maximum deposition rate was 0.03 kg/ha/yr for an increase of 0.3 percent).

In Santa Clara County the plant-available nitrogen in serpentine soils ranges from 6.1 to 6.6 mg/kg. If serpentine soils in the Regional Parks are similar then the AERMOD depositional rates modeled above would represent an increase of plant-available nitrogen of less than 1.4 percent (assuming 30 cm soil depth). Again, it is noted that these estimates represent the results using the extreme worst case AERMOD model with worst case model inputs and assumptions.

CALPUFF

For the Hayward shoreline area the more realistic, but also conservative, CALPUFF model estimated an average increase of nitrogen deposition of 0.003 kg/ha/yr with the maximum of 0.011 kg/ha/yr. These estimates are over 33 times lower than the AERMOD results. At a background deposition rate of 6 kg/ha/yr this represents an average increase of 0.05 percent (max 0.18 percent).

For the Garin Regional Park the average CALPUFF deposition rate for “potentially occupied habitat” of various species of concern was 0.019 kg/ha/yr with a maximum of 0.024 kg/ha/yr. At a background deposition rate of 10 kg/ha/yr this represents an average increase of 0.19 percent (0.24 percent max).

For Redwood Regional Park the CALPUFF average deposition rate was 0.006 kg/ha/yr with a maximum of 0.01 kg/ha/yr (0.06 and 0.1 percent increase respectively).

At Chabot Regional Park the CALPUFF maximum deposition rate was 0.02 kg/ha/yr an increase of 0.2 percent.

The CALPUFF model with estimates at least ten times lower than the AERMOD model results and also including conservative inputs and assumptions, is the more likely scenario for nitrogen deposition.

In Santa Clara County the plant-available nitrogen in serpentine soils ranges from 6.1 to 6.6 mg/kg. If serpentine soils in the Regional Parks are similar then the results of the more realistic and also conservative CALPUFF model would represent a worse case increase of plant-available nitrogen of less than 0.1 percent (assuming 30 cm soil depth).

Assessment

The CALPUFF results are likely the more realistic, but also conservative, nitrogen deposition estimates; therefore, I only considered the CALPUFF results in the final assessment. Certainly the new power plant will create a small incremental increase in nitrogen deposition in the area but because of the high uncertainties in background nitrogen deposition estimates (30 to 50 percent) it may be difficult to even measure the incremental increases within the areas of concern (for CALPUFF 0.05 to 0.24 percent increase). This increase appears to be insignificant and in some places of concern (Hayward shoreline), discountable.

Additional References

- St. Omer, Lucy. 1994. Soil and Plant Characteristics in a Dyked and a Tidal Marsh in San Francisco Bay. *American Midland Naturalist*, Vol. 132, No. 1 (Jul., 1994), pp. 32-43.
- CENR. 2000. Atmospheric Ammonia: Sources and Fate, A Review of Ongoing Federal Research and Future Needs Air Quality Research Subcommittee Meeting Report. Notes from the October 1999 meeting of the Committee on the Environment and Natural Resources (CENR) Air Quality Research Subcommittee, June 2000. 13 pp.
- Durbin, Thomas D.,* Ryan D. Wilson, Joseph M. Norbeck, J. Wayne Miller, Tao Huai, and Sam Rhee. Unknown date. Emissions of Ammonia from Light-Duty Vehicles Bourns College of Engineering, Center for Environmental Research and Technology (CECERT), University of California, Riverside, CA 92521 USEPA cooperative agreement No. CX827692-01-0

Figure 1—Nitrogen oxides emissions in Alameda County for 2002. Source: EPA emissions database at <http://www.epa.gov/air/emissions/index.htm>.

Nitrogen Oxides Emissions by Source Sector
In Alameda County, California in 2002

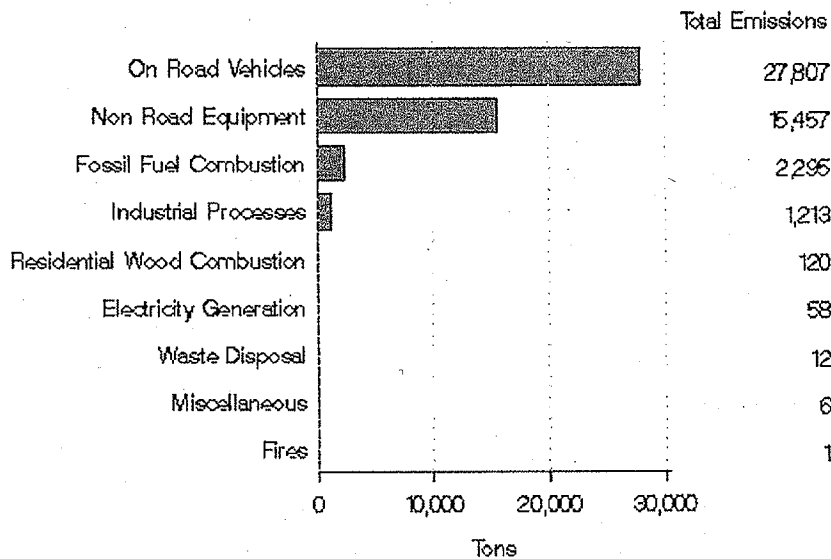


Table 1- Top ten nitrogen oxides sources in the San Francisco Bay area. Source: California Air Resources Board, 2009 Almanac at http://www.arb.ca.gov/aqd/almanac/almanac09/excel/tableA_28.xls

California Air Resources Board
2009 Almanac (web)

Appendix A

San Francisco Bay Area Air Basin

Oxides of Nitrogen (NOx)

Facility Name	City	Tons per Year
Valero Refining Company - Cali	Benicia	2253
Tesoro Refining And Marketing	Martinez	1635
Hanson Permanente Cement	Cupertino	1364
Shell Martinez Refinery	Martinez	1279
Chevron Products Company	Richmond	960
ConocoPhillips Refining	Rodeo	514
ConocoPhillips - San Francisco	Rodeo	367
Owens-Brockway Glass Container	Oakland	336
PG&E Hunters Point Power	San Francisco	216
Delta Energy Center	Pittsburg	165