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Date: Mon, Apr 17, 2006 4:22 PM
Subject: SFERP, Docket Number 04-AFC-01, OPENING TESTIMONY EXHIBITS AND RESUMES OF CARE

SFERP, Docket Number 04-AFC-01, OPENING TESTIMONY
EXHIBITS AND RESUMES OF CARE

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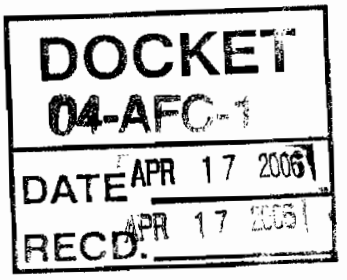

PROOF OF SERVICE (REVISED 2-17-06) FILED WITH
ORIGINAL MAILED FROM SACRAMENTO ON 4-19-06

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION FOR THE SAN FRANCISCO ELECTRIC RELIABILITY PROJECT

Docket No. 04-AFC-01
PROOF OF SERVICE
Revised 2/17/06

DOCKET UNIT

Instructions: *Send an original signed document plus 12 copies* ***or*** *an electronic copy plus one original paper copy to the address below:*

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 04-AFC-01
DOCKET UNIT, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

Also send a printed ***or*** *electronic copy of all documents to each of the following:*

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DECLARATION OF SERVICE

I, **Laura J. Murphy**, declare that on **April 19, 2006**, I deposited copies of the attached **SFERP, Docket Number 04-AFC-01, Opening Testimony Exhibits and Resumes of CARE**, in the United States mail at Sacramento, California with first class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above. Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. I declare under penalty of perjury that the foregoing is true and correct.

Laura J. Murphy

[signature]

CEC INTERNAL
DISTRIBUTON LIST ONLY

Parties DO NOT mail to the following individuals. The Energy Commission Docket Unit will internally distribute documents filed in this case to the following:

JAMES D. BOYD, Commissioner
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MS-34

JOHN L. GEESMAN, Commissioner
Associate Member
MS-31

Stan Valkosky
Hearing Officer
MS-9

Bill Pfanner
Project Manager
MS-15

Dick Ratliff
Staff Counsel
MS-14

Margret J. Kim
Public Adviser
MS-12

Testimony of:

Lynne Brown
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Davis, CA 95616
24 Harbor Road
San Francisco, CA 94124
l_brown369@yahoo.com

Presented to:

California Energy Commission

April 17, 2006

CAlifornians for Renewable Energy (CARE) asked me to prepare testimony on potential environmental and associated socioeconomic impacts of the proposed San Francisco Energy Reliability Project on Purpose and Need, Geology, and on the public health of Southeast San Francisco residents will bare from the project, which involves the continued generation of electrical power in the disproportionately impacted low-income community of color of Bayview Hunters Point in San Francisco. A copy of my resume is attached with my testimony. The City of San Francisco Peaker combustion turbine project is proposed to be located on the other side of PG&E's Hunters Point Power Plant right outside my window where I can see it. Now you want to put another one there not to shut down PG&E's plant but now its because the City is claiming it's going to get Mirant to shut down the Potrero Plant, and that is a lie just like the first Application by the City was a lie that the Peakers where going to shut down

PG&E's Hunters Point power plant when the first Application was filed. This lie was repeated over and over again in the alternative, air quality, transmission, and biological resources sections with out any evidence to prove it. This project has nothing to do with reliability so its very name is a fraud. It is about the City wanting to be like Enron and Calpine at my expense. The Commission's staff assessment didn't talk about liquefaction[1] of the project site during an earthquake or that the serpentine soil is filled with asbestos dust.

My qualifications for testifying on the project are based on the fact that I am low-income African American member and Vice-President of the board of directors of CARE who resides in the Bayview Hunters Point community of San Francisco California and I am therefore qualified to testify on potential environmental and socioeconomic impacts of the proposed project on Purpose and Need, Geology, and on the public health.

I am married, and I have six children, five boys and one girl. When we first moved out here in the late 90's there was a bad stink in the air. We didn't know anything about toxins. The only thing we notice was the beautiful panorama view of the San Francisco Bay Area.

One Saturday morning while I was waiting for the city bus, Mike Thomas of Communities for a Better Environment. He said, there are 412 toxic sites in Bay View Hunters Point, 100 Brown fields sites, 325 underground petroleum storage tanks, two old heavily polluting power plants, a sewage treatment plant

[1] The attached map from the USGS at http://gmw.consrv.ca.gov/shmp/download/pdf/ozn_sf.pdf shows the proposed project is to be sited in a liquefaction zone.

which handles 80% of the city's waste, and 20% from Brisbane, Pacifica, and Daly City which always emanates noxious fumes, 5 diesel buses, 2 freeways and two superfund sites, and one is the San Francisco Naval Shipyard which has Radiological material in the landfill. This was the day that I became an environmentalist.

In Bay View Hunters Point we have the highest asthma and respiratory diseases than any other place in the state of California.

Resolution:

San Francisco Department of Public Health

Endorsing Efforts To Develop Proposals To Address Asthma and Breast and Cervical Cancer In Bay View Hunters Point, January 20, 1998

WHEREAS, the Health Commission has previously endorsed the activities of the Bay View Hunters Point Health and Environmental Assessment Task Force; and,

WHEREAS, the Board of Supervisors Health, Family and Environment Committee has held hearings on health problems in Bay View Hunters Point as a result of information provided by the Bay View Hunters Point Health and Environmental Assessment Task Force; and,

WHEREAS, the hearings indicated a very troubling profile of health problems in the Bay View Hunters Point community; and,

WHEREAS, elevated rates of asthma and increased mortality from breast cancer and elevated rates of cervical cancer among women were among the health problems identified; and,

WHEREAS, other health problems including prostate cancer, hypertension, diabetes and homicide were identified and will be the focus of subsequent activities; and,

WHEREAS, broad coalitions have emerged to reduce the rates and problems associated with asthma and breast and cervical cancer; and,

WHEREAS, the Board of Supervisors Health, Family and Environment Committee has encouraged the Department of Public Health and the Bay View Hunters Point Health and Environmental Assessment Task Force to return with specific proposals to address asthma and breast and cervical cancer; now, therefore, be it

RESOLVED, that the Health Commission of the City and County of San Francisco does hereby endorse the development of proposals to address asthma and breast and cervical cancer in Bay View Hunters Point; and, be it further

RESOLVED, that the Health Commission of the City and County of San Francisco encourages the Department of Public Health and the Bay View Hunters Point Health and Environmental Assessment Task Force to complete a work plan which encompasses the full range of health problems and environmental risks as the basis for a more comprehensive response to improving health in the Bay View Hunters Point community.

I hereby certify that the foregoing resolution was adopted by the Health Commission at its meeting of Tuesday, January 20, 1998. Sandy Ouye Mori, Executive Secretary to the Health Commission

ASTHMA STUDY FINDS BAY VIEW CHILDREN AT RISK

Who: Diedra Epps-Miller of Healthy Start, Dr. Paul Sherick of Stanford, Veronica Lightfoot, counselor at Carver, and Marie Hoemke, School Health nurse

What: New report on children and asthma to be released

When: Wednesday, May 19, 1999 at Noon

Where: Dr. George Washington Carver Elementary School 1360 Oakdale Avenue, San Francisco

In recent years, school principals, counselors and nurses in Bay View/Hunters Point began noticing a dramatic rise in the numbers of children with asthma. The San Francisco Unified School District (SFUSD) along with community groups and health agencies as part of the Bay View/Hunters Point Healthy Start Collaborative formed an Asthma Task Force to study the problem and take actions against a problem that is increasingly affecting low-income urban communities of color. "Condition Critical" is a report based on a survey of 2200 students attending six elementary and middle schools in Bay view/Hunters Point between January and March of

1998. Significant findings of the study include:

- One out of four respondents reported a child in their family diagnosed with asthma;
- Nearly half of all respondents reported children with asthma-like symptoms;

Some families identified as many as three to five relatives in the same household with asthma;

- Hospitalization resulting from asthma is four times greater in the Bay View than the state average.

Based on its findings, the Bay View/Hunters Point Healthy Start Collaborative has taken actions to monitor air quality, ensure better health care and provide information through the "Yes We Can" asthma management project. For more information, contact Diedra Epps-Miller at 656-2553.

I live 500 feet from the Hunters Point Power Plant, and 10 blocks from the Mirant Potrero Hill Plant. The existing Potrero and Hunters Point Power Plant are the biggest and second biggest industrial air polluters in San Francisco according to the California Air Resources Board. Particulate air pollution in Bay View/ Hunters Point violates air quality standards. Children in the Southeast Section of San Francisco are hospitalized for asthma at four times the rate reported statewide. Adults are hospitalized for asthma, heart failure, diabetes, and hypertension at two to four times statewide rates. The 47-year-old Hunters Point Power Plant, and the 40-year-old Mirant Power Plant should be close. PG&E representatives have told me personally that they will shut-down the Hunters Point Power Plant when the Jefferson-Martian Transmission Line is constructed and completed. The CPUC has confirmed that the plant may be shut

down this month. [See attached Resolution E-3984. Pacific Gas and Electric Company (PG&E) proposes to permanently close the Hunters Point Power Plant.]

> The Commission affirmed its approval of the proposed closure of HPPP in the Jefferson-Martin Project CPCN proceeding, stating "We support the closure of Hunters Point, as evidenced by our approval in D.98-10-029 of PG&E's settlement agreement with CCSF, which provides that PG&E shut Hunters Point as soon as it is no longer needed to sustain electric reliability in San Francisco and the surrounding area." (D.04-08-046, p.43)
>
> The CAISO has indicated its agreement that HPPP is no longer needed for reliability, by agreeing to terminate PG&E's RMR contract ten days after notice of completion of the Jefferson-Martin and Potrero-Hunters Point transmission upgrades. PG&E has represented in its advice letter that these upgrades will be in full commercial operation by April 2006. In addition, PG&E represents that it has incorporated the planned shutdown of HPPP into its resource planning process and HPPP is no longer needed to meet reliability criteria in its service territory. Therefore, it is reasonable for the Commission to conclude that HPPP is no longer needed for reliability once the Jefferson-Martin and Potrero-Hunters Point transmission upgrades are operational. Accordingly we authorize PG&E to close HPPP ten business days after it provides written notice to the CAISO and the Commission that both the Jefferson-Martin and Potrero-Hunters Point transmission upgrades are in full commercial operation.

I participated in the CPUC evidentiary hearings on the Jefferson Martin 230KV transmission project, and had meetings with PG&E to get CARE to agree to support the line in return for PG&E shutting down their PG&E Hunters Point power plant when the line is done in 2006. I have a transcript from the hearing which is attached where they said that they didn't need the City's Peakers to shut down Hunters Point or Potrero in fact that they had enough transmission capacity once the Jefferson Martin and other transmission projects where

completed without existing in City generation. Now PG&E owns the line not ISO or the City so who you going to believe them or PG&E that owns the lines?

While I'm talking about PG&E lets talk about my electric bill, now I'm a poor black man living in public housing in Hunters Point I've got a wife and six kids and I can't afford to pay my PG&E bill right now. Now I have all these other charges on my PG&E bill in nuclear decommissioning, and DWR surcharges. Now isn't the City's Peakers going to increase my DWR surcharge, or is it just going to show up on my bill as a surcharge by the City of San Francisco? Either way I can't afford this and I don't want these plants in my neighborhood period.

Finally, I brought a civil rights Complaint against the City and County of San Francisco in June 2003 with the US Department of Energy Office of Civil Rights and Diversity alleging that the City was siting these Peakers in my neighborhood because I'm poor and black and to the degree the CEC Staff is supporting the City in their efforts to discriminate against me you are also discriminating against me. Now I understand the US DOE has dropped their investigation of Cal ISO but I know they haven't finished investigation the City and CEC. The fact that the Commission Staff didn't push for SCONOx emission controls, or the airport site, instead of putting the Peakers in my neighborhood shows the CEC is discriminating against me and my neighbors because we are poor and black.

It is my opinion that this prepared testimony is valid and accurate with respect to the issues that it addresses. I am personally familiar with the facts and conclusions related in the prepared testimony and if called as a witness could testify competently thereto. I declare under penalty of perjury, under the laws of the State of California, that the foregoing is true and correct to the best of my knowledge and that this declaration was executed at

Respectfully submitted,

Lynne Brown

Lynne Brown 12-15-03
Resident, Bayview Hunters Point
24 Harbor Road
San Francisco, CA 94124

Information Sources:

Thomas Gase:
Chronic Air, Bay View/ Hunters Point Resident hit hard by Asthma
Michael Thomas Lead Organizer

Source: http://www.cbecal.org/
Communities for a Better Environment 412 Toxic Sites

Diedra Epps-Miller of Healthy Start, Dr. Paul Sherick of Stanford,

Veronica Lightfoot, counselor at Carver, and Marie Hoemke, School

Health nurse:

Asthma Study Finds Bay View Children at Risk
Source: http://64.4.14.250/cgi-bin/linkrd?_lang=EN&lah=0080ce63ad3db9214b17ecf2b04d60c2&lat=1071522479&hm___action=http%3a%2f%2fwww%2esfusd%2ek12%2eca%2eus%2fnews%2fasthma05%2ehtml

BEFORE THE
STATE OF CALIFORNIA
ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

Application for Certification For the San Francisco Electric Reliability Project	Docket No. 04-AFC-1

Opening Testimony of CARE

In behalf of CAlifornians for Renewable Energy, Inc. (CARE) we provided a request, Pursuant to Title 20, California Code of Regulations, Section 1716.5, that the Commission grant CARE leave to file its testimony on the following topic areas on May 1, 2006 and that the evidentiary hearing schedule for these topic areas be adjusted accordingly, for the April 27, 2006 evidentiary hearing item number, and

3) Transmission System Engineering

4) Transmission Line Safety & Nuisance

9) Power Plant Reliability

for the May 1, 2006 evidentiary hearing item number,

1) Local System Effects.

On April 14, 2006 the Commission posted on the web site in the above captioned preceding the Testimony of Lawrence Tobias from the California Independent System Operator (CAISO), dated March 10, 2006. Since CARE was never provided a copy of this testimony[1] which addresses these topic areas until today we failed to have an opportunity to prepare testimony in response to the issues raised by the CAISO. Additionally it is not clear to CARE why such information was with held from us until this late date, who is sponsoring the CAISO testimony, and why additional discovery should not be allowed on Mirant to determine whether or not, as CAISO seems to contend, they plan on retiring their Mirant Potrero power plant units 2,3,4,5, and 6, and if the SFERP alone provides sufficient reliability to do so? In order to exercise the utmost

[1] Note that the Docket log number 36519 listed this item as being docketed on 3/13/06 without an attached Proof of Service (POS) on the Parties to this proceeding including CARE.

caution Mr. Lynne Brown Vice-President of CARE will attempt to address CARE's concerns in his Testimony filed this day.

CARE has requested the following topic items be deferred to a later date after CARE files testimony for the following the April 27, 2006 evidentiary hearing item numbers.

10) Cultural Resources

11) Geology

13) Traffic and Transportation

15) Hazardous Materials Management, excluding ammonia issues

On April 13, 2006 the Applicant requested additional time to prepare its testimony to respond to Staff's Supplemental Testimony of April 10, 2006, specifically in regards to existing contamination of the proposed site. CARE contends that it is improper for the Applicant to defer its Proposed Remedial actions to clean up the site until after the permit is issued for the project by the CEC. To do so violates the city's own ordinances, and the California Environmental Quality Act (CEQA) which requires all feasible mitigation be adopted or that the project be denied for inducing significant unmitigated adverse impacts on the environment. Cultural Resources testimony should be dependent on what Remedial Action is to be taken, especially if removal action is required. The same is true for geology because of potential soil liquefaction of the site and naturally occurring asbestos which is present in samples taken from the site. CARE supports the Applicants April 13, 2006 request for additional time to prepare its testimony on Traffic and Transportation (this testimony is dependent on whether or not there is a removal Remedial Action required), and Hazardous Materials Managements (i.e., preparation of a Remedial Action plan for the existing contamination of the proposed site).

These May 1, 2006 topic areas are relevant to the topic of the Proposed Remedial actions to clean up the site of existing contamination of the proposed site.

3) Waste Management

4) Soil and Water Resources

CARE also request the following topic items be deferred to a later date after

CARE files testimony, with good cause for doing so for the following unscheduled topic areas.

Public Health

Air Quality

Biological Resources

The public health issues biological resource and the air quality issues resulting from possible disturbance of contaminated soil at the site, offsite impacts on the bay, and the location of the reclaimed water pipeline are relevant to these issues.

I spoke this morning with Ms. Nancy Katyl (510) 622-2408 of the California Regional Water Quality Board who confirmed that the RWQCB has authority over the existing contamination on the proposed site, the remedial investigation of the site, and any required remedial action required to clean up the site. The Applicant has direct knowledge of the requirements under both state and federal law for meaningful and informed public participation in the remedial investigation of the site, and any required remedial action required to clean up the site do to its redevelopment and cleanup activities ongoing at the site of the former Hunters Point Naval shipyard. I gave Ms. Katyl the Hearing Officers phone number and asked her to call to confirm for the Hearing Officer that two weeks is not adequate time for the RWQCB to approve the remedial investigation of the site, and any required remedial action required to clean up the site.

In behalf of CARE I am including the Testimony and attachment of Lynne Brown, along with a copy of his resume, and the resume of CARE's witnesses including Robert Sarvey, Bill Powers, K. Shawn Smallwood, Michael E. Boyd, and Clifton Smith, REA. The testimony of Robert Sarvey, Mr. Powers, and Francisco DaCosta are being provided in hard copy form by Robert Sarvey to the PAO this day. CARE withdraws Ms. Richardson as a witness.

Mr. Smith provided a copy of some preliminary comments on preliminary remedial investigation of the existing contamination on the proposed site which I have included. Mr. Smith, like Dr. Smallwood, have requested they be allowed at least two weeks to prepare testimony once there is approval by RWQCB of the remedial investigation plan for the site, and any required remedial action plan required to clean up

the site.

Respectfully submitted,

Michael E. Boyd

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Verification

I am an officer of the Intervening Corporation herein, and am authorized to make this verification on its behalf. The statements in the foregoing document are true of my own knowledge, except matters, which are therein stated on information and belief, and as to those matters I believe them to be true.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 17th day of April 2006, at Soquel, California.

Michael E. Boyd

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PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

ENERGY DIVISION **RESOLUTION E-3984**
March 15, 2006

RESOLUTION

Resolution E-3984. Pacific Gas and Electric Company (PG&E) proposes to permanently close the Hunters Point Power Plant.

By Advice Letter 2790-E, filed February 23, 2006.

Summary

PG&E's proposal to permanently close its Hunters Point Power Plant (HPPP) is approved. Any issues that the Commission must address relating to ratemaking, decommissioning, or disposition of the plant and related assets shall be addressed by separate Commission orders.

BACKGROUND

In General Order (GO) 167, the Commission adopted Operation Standards for Power Plants. Operation Standard 24, requires Generating Asset Owners (GAOs) covered in GO 167 to obtain an affirmative declaration from the Commission, in consultation with the Control Area Operator, that a generation facility is no longer needed before it retires or makes long term changes in the status of a unit.

On February 6, 2006, PG&E sent a letter to the Commission providing formal notice in accordance with Operation Standard 23 of GO 167 that PG&E plans to permanently shut down all remaining units at HPPP in the second quarter of 2006, after the Jefferson-Martin and Potrero-Hunters Point transmission upgrades enter full commercial operation.[1] PG&E filed Advice Letter 2790-E on

[1]We note that PG&E's February 6, 2006 letter was not received a full 90 days before the planned closure of HPPP, as required by Operation Standard 23. However, because the Commission was aware of and had previously approved of the closure of HPPP, as discussed *infra*, the notice requirement is immaterial.

February 23, 2006 proposing to permanently shut down HPPP.

In 1998, PG&E entered into an agreement with the City and County of San Francisco (CCSF) in which PG&E agreed to permanently shut down HPPP as soon as 1) the facility was no longer needed to sustain electric reliability in San Francisco and the surrounding area and 2) PG&E was authorized to terminate the facility's Reliability Must Run (RMR) Contract. The Commission approved this agreement and the closure of HPPP in D.98-10-029.

In D.04-08-046, the Commission also acknowledged its support of the closure of HPPP as soon as it is no longer needed to sustain electric reliability in San Francisco and the surrounding area.

Effective January 1, 2006, PG&E's RMR Contract with the California Independent System Operator (CAISO) was amended to state that the RMR Contract will terminate ten business days after PG&E provides the CAISO with notice that both the Jefferson-Martin 230 kV Transmission Line Project (Jefferson-Martin Project) and the Potrero-Hunters Point 115 kV Transmission Cable Project (Potrero-Hunters Point Project) are in full commercial operation.

PG&E submits in its advice letter that the Jefferson-Martin and Potrero-Hunters Point transmission upgrades are expected to be completed and fully operational by April 2006 and March 2006, respectively. (Appendix A to AL 2790-E.) PG&E also represents that the closure of HPPP has been incorporated into its resource planning process, and that HPPP is no longer needed to meet reliability criteria in PG&E's service area.

Notice

Notice of AL 2790-E was made by publication in the Commission's Daily Calendar. PG&E states that a copy of the Advice Letter was mailed and distributed in accordance with Section III-G of General Order 96-A. PG&E also served its advice letter on all parties in A.05-12-002 and R.04-04-003.

Protests

On March 2, 2006 CCSF, and Greenaction for Health and Environmental Justice along with the Huntersview Tenants Association, All Hallows Gardens Residents Association, the Bayview Hunters Point Mothers Committee, and the Environmental Justice Air Quality Coalition (Greenaction, et al.) issued letters to

Energy Division in support of PG&E's AL 2790-E. CCSF, and Greenaction, et al., both urge the Commission to approve PG&E's advice letter so that PG&E may proceed with the scheduled closure of HPPP in April 2006.

Discussion

PG&E is a Generating Asset Owner as defined in GO 167, and the filing of this advice letter by PG&E is appropriate in order to ensure compliance with Operation Standard 24, which requires Commission approval before PG&E makes a long term change in the status of HPPP.

The Commission approved the closure of HPPP in 1998, long before the adoption of GO 167. In 1998, the Commission issued D.98-10-029 which approved the agreement between PG&E and San Francisco for the closure of HPPP. In that decision, the Commission concluded that Public Utilities Code section 363(c) requires the Commission to approve the closure of bayside generation facilities where there has been a proposal by a local government agency that such closure would serve the public interest. (D.98-10-029, Conclusion of Law No. 1.)

The Commission affirmed its approval of the proposed closure of HPPP in the Jefferson-Martin Project CPCN proceeding, stating "We support the closure of Hunters Point, as evidenced by our approval in D.98-10-029 of PG&E's settlement agreement with CCSF, which provides that PG&E shut Hunters Point as soon as it is no longer needed to sustain electric reliability in San Francisco and the surrounding area." (D.04-08-046, p.43)

The CAISO has indicated its agreement that HPPP is no longer needed for reliability, by agreeing to terminate PG&E's RMR contract ten days after notice of completion of the Jefferson-Martin and Potrero-Hunters Point transmission upgrades. PG&E has represented in its advice letter that these upgrades will be in full commercial operation by April 2006. In addition, PG&E represents that it has incorporated the planned shutdown of HPPP into its resource planning process and HPPP is no longer needed to meet reliability criteria in its service territory. Therefore, it is reasonable for the Commission to conclude that HPPP is no longer needed for reliability once the Jefferson-Martin and Potrero-Hunters Point transmission upgrades are operational. Accordingly we authorize PG&E to close HPPP ten business days after it provides written notice to the CAISO and the Commission that both the Jefferson-Martin and Potrero-Hunters Point

transmission upgrades are in full commercial operation.

PG&E states in its advice letter that it does not contemplate any issues related to shut-down of HPPP site regarding asset disposition matters which the Commission must address pursuant to Public Utilities Code Section (Section) 851. PG&E states that assets that remain useful will be redeployed by PG&E in other areas, and that any remaining assets that are no longer necessary or useful will be disposed of as salvage.

In authorizing PG&E to permanently close HPPP, we do not prejudge any issues that may relate to disposition of assets associated with the plant or the underlying land, including matters addressed pursuant to Section 851. If such issues need to be addressed by the Commission, they shall be considered in a separate order(s).

PG&E notes in its advice letter that it has made assumptions about the retirement date of HPPP, and plant decommissioning costs in its 2007 general rate case A.05-12-002. Ratemaking matters associated with closure of HPPP shall be addressed by the Commission in orders in A.05-12-002 or other appropriate proceedings. By authorizing PG&E to close HPPP we do not prejudge any ratemaking or decommissioning issues related to the plant. Those issues will be addressed in separate Commission orders.

Comments

Public Utilities Code section 311(g) (1) requires that draft resolutions be served on all parties and subject to at least 30 days public review and comment prior to a vote of the Commission. Section 311(g) (3) provides that this 30-day period may be reduced or waived pursuant to Commission adopted rule.

The 30-day comment period for this resolution has been reduced in accordance with the provisions of Rule 77.7(f) (9). Rule 77.7(f) (9) provides that the Commission may waive or reduce the comment period for a decision when the Commission determines that public necessity requires reduction or waiver of the 30-day period for public review and comment. For purposes of Rule 77.7(f) (9), "public necessity" refers to circumstances in which the public interest in the Commission's adopting a decision before expiration of the 30-day review and comment period clearly outweighs the public interest in having the full 30-day

period for review and comment, and includes circumstances where failure to adopt a decision before expiration of the 30-day review and comment period would cause significant harm to public health or welfare. The public necessity in this case is that the Commission needs to address PG&E's AL 2790-E prior to April 13, 2006, the earliest meeting that would allow for a 30 comment period.

In this case, the public necessity requiring a reduction in the comment period outweighs the public interest in having the full 30-day period for review and comment. Thus, pursuant to Rule 77.7(f) (9), we provide for a shortened comment period.

On March 9, 2006 PG&E submitted comments on the draft Resolution. PG&E supports the draft Resolution and proposes minor clarifying edits. PG&E's proposed edits have been incorporated into the Resolution. On March 13, 2006 the CAISO submitted comments indicating its support and urging the Commission to approve the draft Resolution.

Findings

1. Operation Standard 24 of GO 167 requires PG&E to seek Commission approval before retiring HPPP.

2. PG&E filed AL 2790-E on February 23, 2006, proposing to permanently shut down HPPP.

3. On March 2, 2006 the City and County of San Francisco, and Greenaction, et al., issued letters to Energy Division in support of PG&E's AL 2790-E.

4. In D.98-10-029 and D.04-08-046, the Commission indicated its approval of the agreement between PG&E and the City and County of San Francisco, allowing PG&E to permanently shut down of HPPP as soon as the facility was no longer needed to sustain electric reliability in San Francisco and the surrounding area, and authorizing PG&E to terminate its RMR Contract.

5. PG&E's RMR contract with the CAISO will terminate ten business days after the Jefferson-Martin Transmission Line Project and the Potrero-Hunters Point Transmission Cable Project are in full commercial operation, which is expected in April 2006.

6. With the completion of the Jefferson-Martin and Potrero-Hunters Point transmission upgrades, and the agreement of the CAISO, it is reasonable for the Commission to conclude that HPPP is no longer needed for reliability purposes.

7. Any issues related to the shut-down of HPPP site involving plant, and related asset disposition, or that of the underlying land, including matters that the Commission must address pursuant Section 851, should be considered in separate Commission orders.

8. Issues related to ratemaking and decommissioning of HPPP should be addressed by the Commission in separate orders in A.05-12-002 or other appropriate proceedings.

Therefore it is ordered that:

1. PG&E is authorized to permanently close HPPP ten business days after PG&E provides written notice to the CAISO and the Commission that both the Jefferson-Martin and Potrero-Hunters Point transmission upgrades are in full commercial operation.

2. This Resolution does not resolve any issues related to the shut-down of HPPP site that involve plant and related asset disposition, or that of the underlying land, including matters that the Commission must address pursuant to Section 851. Those issues shall be addressed in separate Commission orders.

3. This Resolution does not resolve any issues related to ratemaking and decommissioning of HPPP. Those issues shall be addressed by the Commission in separate orders in A.05-12-002 or other appropriate proceedings.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on March 15, 2005, the following Commissioners voting favorably thereon:

STEVE LARSON
Executive Director

MICHAEL R. PEEVEY
PRESIDENT
GEOFFREY F. BROWN
DIAN M. GRUENEICH
JOHN A. BOHN
RACHELLE B. CHONG
Commissioners

Michael Boyd

5439 Soquel Drive • Soquel, CA 95073 • michaelboyd@sbcglobal.net • 831.465.9809 • 408.891.9677

Qualifications Profile

Solutions-oriented **Engineer** with a proven track record of effective **component manufacturing development engineering** in the medical device, microelectronics, telecommunication, semi-conductor, and hard drive industry.

- In-depth knowledge and skill developing innovative components and automation applications to increase the productivity of manufacturing operations.
- Highly skilled analyst, able to quickly identify and leverage alternative components and manufacturing methods to expedite the cost-efficient completion of projects.
- Effective troubleshooting skills and ability to develop and implement resolutions to root cause issues.
- Skilled trainer and influential leader, with experience assembling, motivating and supervising productive, cohesive teams.
- Currently hold Secret Security Classification.

Core Competencies:

- Materials Acquisition
- Strategic Planning
- Project Management
- Testing Software Development
- Component QA & Testing
- Cost Reduction
- Inventory Optimization
- Team Leadership

Technical Background

Platforms:	UNIX, Windows, Embedded C
Languages:	Unix and Windows C/ C++, Visual C, Basic, Visual Basic, FORTRAN, FLEXTRAN, HPL, Machine, Assembly code
Digital Logic:	PROM, EEPROM, PAL, PLD, and Micro-controller programming and verification
Tools:	Agile, Oracle, AREV Relational Database for ECO & MCO, procurement and inventory control, EAGLE and ORCAD circuit design.
Testing:	Scanning Electron Microscope, X-Ray Fluorescence spectroscopy, X-Ray Diffraction, Fourier Transform IR spectroscopy, IBM Optical Defect Analyzer, Mass Spectroscopy, Atomic Force Microscope, Magnetic Force Microscope, Spectrum Analyzer, Oscilloscope, Arbitrary Waveform Generator, Disk Certification Tester (MC900, MG250 Certifier, PS5100).

Professional Experience

2004 - Present

ACCURAY, INC., Sunnyvale, CA

Senior Manufacturing Engineer

Responsible for the manufacturing of the CyberKnife a medical device with an entirely new approach to radiosurgery, that incorporates a compact, lightweight linear accelerator mounted on a robotic arm, the CyberKnife provides the surgeon flexibility in targeting. Advanced image guidance technology tracks patient and target position during treatment, ensuring accuracy without the use of an invasive head frame. Maintain developed and implemented procedures to ensure optimal implementation of manufacturing processes.

- Recommend, develop, and implement product design changes to improve reliability, quality, manufacturability, and cost on existing products.
- Verify the effectiveness of design changes and improvements to the Cyberknife system and

...Continued...

subsystem components; assess and evaluate changes to product reliability and quality.

- Work intimately with New Product Development (NPD) team to ensure new product features meet quality, reliability, manufacturability, and cost requirements. Manage the transfer of new products to production.
- Develop and implement essential elements of a product reliability program for the CK System and subsystem components.
- Participate in high-level negotiations with supply partners and vendors to assess performance and resolve technical, manufacturing and quality issues.
- Ownership of procedures, processes and documentation used in the manufacture of the Cyberknife system and subsystem components; works with the manufacturing leadership team to develop and sustain best-in-class standards, processes and procedures.
- Train and mentor junior members of the engineering team.

SOFTWARE QUALITY ASSOCIATES, Los Gatos, CA 2002

Component Engineer, Contractor

Provided technical support to company client Brooktrout Technology an $80 million supplier of innovative hardware and software platforms to enable the development of New Network™ applications, systems and services. Maintained current Approved Vendor List (AVL) with all requirements, establishing protocol to ensure users' access to complete, up-to-date Approved Materials List (AML) and due notice of parts pending obsolescence. Reviewed and approved Part Number Request forms for all vendors.

- Ensured availability of key materials by developing process to track single-sourced materials for procurement purposes.
- Effectively identified alternate materials for key items pending obsolescence to support development engineering, sustaining engineering and procurement staff.
- Increased quality of available materials by performing in-depth component analysis to identify root causes of product failure.
- Strategically identified and leveraged supplies of alternate components leading to a 20-30% reduction in procurement costs.
- Accurately validated programmable parts to ensure compatibility with customer systems.

ASPECT COMMUNICATIONS, San Jose, CA 1999 - 2002

Component Engineer, Manufacturing Engineering

Maintained current AVL for a leading provider of business communications solutions, approving Item Request Forms (IRF) for the AML and notifying personnel of components pending obsolescence. Identified alternate components, validating programmable parts to ensure compatibility. Developed and implemented procedures to ensure optimal levels of parts inventory to prevent production gaps.

- Designed and implemented process to identify single-sourced material for Procurement to ensure optimal inventory levels.
- Provided key input to development engineers, sustaining engineers and procurement staff in the resolution of component issues revealed by thorough component analysis.
- Expertly used Agile database to create and submit Engineering Change Orders (ECO) and Manufacturer Change Orders (MCO).
- Accurately identified alternate components for strategic cost reduction.

THE WATTS STOPPER, INC., Santa Clara, CA 1999

Test Engineer, Advanced Manufacturing

Provided technical expertise to manufacturer of energy efficient occupancy sensors incorporating ASIC and Microcontroller-based technologies. Created and modified test fixture for optical electronic, ASIC, and Microcontroller-based product characterization. Developed applications to automate electronic test apparatus performing the acquisition, logging, and reporting of critical data. Accurately determined and reported root causes of returned goods issues through extensive failure analysis.

Michael Boyd

PHASE METRICS, Fremont, CA 1996 - 1998

Engineer/Scientist, Customer Support and Standards

Served as key member of team performing quality control to new products of a supplier of hard disk testing equipment such as media certifiers, fly height testers, and optical inspection equipment. Designed and fabricated testing standards for application on magnetic media, utilized for certification, glide, and optical inspection. Developed system test plans and final acceptance test procedures for optical inspection equipment. Trained field engineering and manufacturing technicians to expedite transition of new products into production. Provided customer training and demonstration of new products.

- Programmed in (Visual Basic)·Design and fabricated standards disks for calibration and correlation of optical inspection to piezo-glide and certification errors.
- Performed electronic trouble shooting to discover design flaws in certification tester, and optical inspection equipment.
- Prepared and published paper on MR Glide using the MR transducer to detect and classify defects on the media surface.
- Performed ORCAD circuit design.
- Operated various test equipment including scanning tunneling microscope or Atomic Force Microscope (AFM), Magnetic Force Microscope (MFM), spectrum analyzers, oscilloscopes, arbitrary waveform generators, etc.
- Utilized various disk testers including MC900, MG250 certifiers, IBM ODA, and PS5100.

QUALIFIED PARTS LABORATORY, (Santa Clara, CA) 1993 - 1996

Test Engineer, Electronics Characterization

Supervised environmental laboratory to ensure accurate testing and test component development. Developed electronic device characterization test fixtures for QML certified company specializing in qualifying parts for government, industrial and space applications. Preparation of test plans according to specific military application e.g. MIL-STD-883, 202, etc. Designed automation software to acquire, log, and report critical data. Developed test plans in accordance with military application specifications. Resolved electronic issues and identified root causes.

- Expertly performed circuit modeling, test fixture fabrication, high voltage dialectric withstand and insulation resistance testing, and ORCAD circuit design for RF, digital, analog and mixed signal components.
- Served as LAN and Database Administrator, ensuring data accuracy and continuous network connectivity.
- Served as Residual Gas Analysis Certification Engineer, utilizing mass spectroscopy to identify internal water vapor content of components to military specifications

SANTA BARBARA RESEARCH CENTER, Goleta, CA 1982 - 1991

Senior Development Engineer

Monitored and improved IR-detector fabrication process for a subsidiary of Hughes Aircraft Co. Developed software for the analysis of data collected from automated data acquisition systems. Expedited the data transfer between Mac, HP, IBM, and VAX computer systems by developing flexible interfaces. Performed optical and electrical characterization of a wide variety of insulator, superconductor, and semiconductor materials.

- Developed software for the analysis of data collected from automatic data acquisition systems. Languages: Fortran, UNIX "C", FLEXTRAN. HPL, basic, and assembly code.
- Created interfaces for transfer of data between Mac to HP, IBM, and VAX computer systems.
- Implemented statistical process control (SPC) techniques in the material growth and detector array fabrication process line.
- Designed and developed of optical and electrical characterization apparatus. Analytic results from these apparatus were published in scientific journals (See Publications)·Optical and electrical characterization of a wide variety of insulator, superconductor, and semiconductor

...Continued...

Michael Boyd

materials utilizing cryogenic microprobe technology of IR detectors, MISFET, Focal Plane Gated Arrays (FPGA) and other semiconductor devices.

- Performed X-ray diffraction, X-ray Fluorescence Spectroscopy, scanning electron microscope (SEM) analysis including Wavelength and Energy Dispersive (WDX & EDX) analysis.

Education / Training

Bachelor of Science Degree • Major in Physics
Concentration in Electronics, Microprocessor Design and Material Sciences
University of California, Santa Barbara, California

Graduate Studies in Materials Sciences
Independent Research in IR-Detecting Cathode Luminescence Spectral Radiometry
University of California, Santa Barbara, California

Technical Publications

M.E. Boyd, Advantages of stereotactic radiosurgery (SRS) over other radiotherapy techniques, *The International Society for Optical Engineering Proceedings of SPIE, Photonic Therapeutics and Diagnostics*, 22 January 2005, Vol. 5686, pp. 291-300

M.E. Boyd, Xiaopeng Xu, MR Glide Inspection for Hard Disk Defect Detection, *The International Society for Optical Engineering Proceedings of SPIE, Surface Characterization for Computer Disks, Wafers, and Flat Panel Displays*, 28 January 1999, Vol. 3619, pp53. http://www.calfree.com/SPIEdoc.html

M.E. Boyd, Xiaopeng Xu, and Brian Vu. A Study of MR Glide Signals Using Precision Defects, *IDEMA Insight on Emerging Technologies*, September/October 1998 Vol. XI, No.5, pp7.

S.M. Johnson, D.R. Rhiger, J.P. Rosbeck, J.M. Paterson, S.M. Taylor, **M.E. Boyd**. Effects of Dislocations on Performance of LWIR Hg1-xCdxTe PV Detectors, *Proceedings of the IRIS Specialty Group on Infrared Detectors National Institute of Standards and Technology*, August 13, 1991 (Best Paper Award).

M.E. Boyd, E.L. Divita, M. Holtzman, B. Baumgratz, The Effects of Total Dose Gamma Radiation on Tolerant InSb Device Characteristics, *Proceedings of the IRIS Specialty Group on Infrared Detectors National Institute of Standards and Technology*, 1988 Vol. II pp103-204.

C.E. Jones, **M.E. Boyd**, W.H. Kunkel, S. Perkowitz, R. Braunstein, Noncontact electrical characterization of Hg1-xCdxTe, *Journal of Vacuum Science Technology*, A (4), Jul/Aug 1986 pp2056-2060

Professional Affiliations

International Society for Optical Engineering (SPIE) – 1999 to Present
Union for Concerned Scientists (UCS) – 1999 to Present

Community (volunteer) activities

1/80 - 12/92 Director (founding) President Let Isla Vista Eat, Inc. (LIVE) Non-profit Corp.
12/82 - 6/89 President (elected)-Isla Vista Community Council/Municipal Advisory Council
12/84 - 12/92 Director (elected)-Isla Vista Recreation & Park District
12/89 - 12/91 Director -First VP California Recreation & Park District Association
12/89 - 12/91 Director - Santa Barbara County Special Districts Association
12/89 - 5/93 Director (elected) Goleta West Sanitary District
12/96 -12/98 Commissioner Sunnyvale Housing & Human Services Commission
9/99 - Present President (founder) CAlifornians for Renewable Energy, Inc. (CARE) non-profit

SAN FRANCISCO, CALIFORNIA, JANUARY 12, 2004 - 10:05 A.M.

* * * * *

ADMINISTRATIVE LAW JUDGE TERKEURST: Please come to order.

This is the time and place for evidentiary hearing in Application 02-09-043, the application of Pacific Gas and Electric Company for a Certificate of Public Convenience and Necessity authorizing the construction of the Jefferson-Martin 230 kV Transmission Project.

I'm Charlotte TerKeurst. I'm the Administrative Law Judge assigned to this matter.

And Commissioner Lynch is the assigned Commissioner.

Let's take appearances as the first matter.

MR. RAUSHENBUSH: Richard Raushenbush, for Pacific Gas and Electric company.

MS. PELEO: Marion Peleo, for ORA.

MR. O'NEILL: Edward O'Neill and Jeff Gray, for 280 Citizens.

MR. ROSENBLUM: Grant Rosenblum, for the California Independent System Operator.

MS. ARMSTRONG: Jeanne Armstrong, appearing for City of Burlingame.

MS. RAFTERY: Mary Raftery, for the County of San Mateo.

MR. COMO: Joe Como, for the City and County of San Francisco.

MS. GEORGE: Barbara George, representing WEM.

ALJ TERKEURST: Have you filled out an appearance form?

MS. GEORGE: No.

ALJ TERKEURST: Anyone else?

(No response)

ALJ TERKEURST: Anyone else?

(No response)

ALJ TERKEURST: Okay. There are several rulings that I will deal with up front. There are three petitions to intervene, which I will grant: The motion of the City of Millbrae to intervene; the motion of Californians for Renewable Energy, Inc., to intervene; and Women's Energy Matters, petition to intervene.

CARE and Women's Energy Matters also had filed notices of intent for eligibility for intervenor compensation. I'm not ready to rule on those at this time, but I will grant their petition to intervene and will rule on their NOI request shortly.

PG&E had filed a motion to strike the January 5, 2003, statement of the County of San Mateo. We discussed this on the scheduling conference call that we had last week,

and I instructed San Mateo to prepare more substantive written rebuttal testimony than their January 5th filing. They distributed that electronically to the parties on Friday. We will need to discuss off the record the scheduling of Ms. Harris. So with that, I will deny PG&E's motion.

PG&E has filed a motion to submit certain

information under seal. I received from PG&E this morning a list of the specific pages that have material that PG&E is requesting be granted confidential treatment. I do want to review that list, so I'll defer ruling on that motion at this time.

The City of South San Francisco and Concerned Businesses East of Highway 101 filed a motion for the recirculation of the final environmental impact report, and PG&E responded to that motion.

The city of Daly City filed a joinder supporting that motion, I believe, on Friday.

Does PG&E plan to reply to that, Daly City's filings?

MR. RAUSHENBUSH: Yes, your Honor.

ALJ TERKEURST: Okay. Do you know when? With the hearings going on, I'm not going to press you to expedite it.

MR. RAUSHENBUSH: Well, certainly within the required time, and we will get to it as quickly as we can.

ALJ TERKEURST: All right. So I'll defer ruling on that motion.

City of Daly City had proposed to offer into evidence a letter from Daly City Mayor Sal Torres. And I've discussed this with him as well.

I don't believe that the letter from the Mayor qualifies for official notice. I had told them, though, that Mayor Torres was certainly welcome to appear as a witness if people -- and we discussed on Thursday whether anyone would have any cross-examination of Mayor Torres.

My understanding at this point is that there may not be any cross, so we may end up admitting this letter by stipulation, but I deny their request to take official notice of it.

I just wanted to mention on the record there had been an inquiry about this last week. I did undertake a site visit of the proposed project. I don't recall the date offhand. It was this June or July. The staff of the Energy Division, Project Manager Billie Blanchard, and Harriet Burt, the Public Advisor, and several representatives from Aspen,

the consultant they have retained, and I took a day and examined the route from south to north and all the variations that were under consideration.

The planned schedule for this hearing is in the scoping memo that was issued March 19th. The plan is to hold the hearings from, well, 10:00 to noon today, 1:30 to 3:30 this afternoon. Tuesday through Friday, the hearings will normally be 9:00 to noon and 1:30 to 3:30, except for next Tuesday, which will start at 10:00.

I had asked parties to submit cross-examination estimates. The estimates that came in exceeded the amount of hearing time that we have available.

I am assuming that there was some amount of overlap, and I certainly plan to complete the hearings within the allotted nine days. But I do ask that parties, in order to allow that to happen, use their cross-examination time wisely. And I will ask parties from time to time to either come early or stay later in order to take care of matters

that don't need to be on the record. So that would make the most efficient use of the hearing time possible.

We had come up with a tentative schedule of witnesses on Thursday. I sent an e-mail to the parties with that list. It can be expected that there will be some

deviation from that list, from that schedule, depending on how long the cross-examinations of specific witnesses take.

I will notify at least the parties that have asked to cross a witness if that witness -- if the schedule of that witness changes if there is time. If it's overnight I will notify all the parties by e-mail, but we do need some flexibility.

We had also identified on Thursday that there were several witnesses that at this point no one had stated an intention to have cross-examination questions. So we did not schedule time for those witnesses.

I do want to say, though, that I may end up having some questions for Mr. Sparks, the witness of South San Francisco. I wasn't aware of that on Thursday, so I'm taking him off the list of witnesses that at this point are not being asked to appear.

And there is no one from South San Francisco here today, is there?

I'll need to contact them to notify them of that.

MS. PELEO: Your Honor, also along the same lines, Mr. Powers from CARE, we didn't say that we were going to have cross for him; but after rereading of Mr. Boyd's testimony, he refers to Mr. Powers' testimony or the

attachments. So, you know, I need to find out from Mr. Boyd if he's able to answer questions based on his references to Mr. Powers' testimony. Otherwise, we might have questions for Mr. Powers if Mr. Boyd can't answer those questions.

ALJ TERKEURST: All right. Talk with him when he appears and let me know.

MS. PELEO: All right. Thank you.

ALJ TERKEURST: I think that's all the preliminary matters, other than marking some exhibits, before we start with the first witness. And I wanted to mark first the environmental documents that we have.

There are three volumes of the final environmental impact report, and I will mark Volume 1 as Exhibit 1; Volume 2 as Exhibit 2; and Volume 3 as Exhibit 3.

(Exhibits Nos. 1, 2, and 3 were marked for identification.)

ALJ TERKEURST: And at this time I think we're ready for PG&E to have its exhibits marked and call its first witness then.

MR. RAUSHENBUSH: Your Honor, did you want to do opening statements this morning?

ALJ TERKEURST: I was not planning to do opening statements because our schedule is very tight, and I think I have a pretty good idea what parties' positions are.

MR. RAUSHENBUSH: Okay, your Honor.

Your Honor, we will mark the direct testimony of Pacific Gas and Electric Company regarding need for the Jefferson-Martin 230 kV Transmission Project and its attached

attachments as Exhibit 4.

ALJ TERKEURST: All right.

(Exhibit No. 4 was marked for identification.)

ALJ TERKEURST: We need a copy for the reporter.

MR. RAUSHENBUSH: He's getting them. I don't want to get ahead of him.

ALJ TERKEURST: Let's go off the record.

(Off the record)

ALJ TERKEURST: On the record.

MR. RAUSHENBUSH: We will mark the direct testimony of Pacific Gas and Electric Company regarding need for the Jefferson-Martin 230 kV Transmission Project -- I'm sorry. I think I just read this looking at the wrong one.

We'll mark the testimony of Pacific Gas and Electric Company regarding issues other than need for the Jefferson-Martin 230 kV Transmission Line Project corrected as of January 7, 2004, as Exhibit 5.

ALJ TERKEURST: And that's the redacted version?

MR. RAUSHENBUSH: It will be the redacted version.

(Exhibit No. 5 was marked for identification.)

MR. RAUSHENBUSH: Your Honor, would you like the unredacted version to be marked as sort of with a "U" or an

"R," or do you want to have a separate exhibit for it?

ALJ TERKEURST: Let's go off the record.

(Off the record)

ALJ TERKEURST: On the record.

MR. RAUSHENBUSH: Exhibit 6C will be the unredacted version of the testimony of Pacific Gas and Electric Company regarding issues other than need for the Jefferson-Martin 230 kV Transmission Line Project corrected as of January 7, 2004.

(Confidential Exhibit No. 6C was marked for identification.)

ALJ TERKEURST: Normally, I mark the exhibits, but it's easier to let you go ahead.

MR. RAUSHENBUSH: Would your Honor like to have the attachments that go with that testimony marked independently or as part of it?

ALJ TERKEURST: It will be easier to give them separate numbers.

MR. RAUSHENBUSH: Okay. Exhibit 7 will be Volume 1 of the attachments to PG&E's non-need testimony, marked as Exhibit 5, redacted.

(Exhibit No. 7 was marked for identification.)

MR. RAUSHENBUSH: Exhibit 8 will be Volume 1 of the attachments to the non-need testimony, unredacted.

ALJ TERKEURST: That will be 8C.

MR. RAUSHENBUSH: 8C, thank you.

(Confidential Exhibit No. 8C was marked for identification.)

MR. RAUSHENBUSH: Exhibit 9 will be Volume 2 to the non-need testimony, redacted.

(Exhibit No. 9 was marked for identification.)

MR. RAUSHENBUSH: Exhibit 10C will be Volume 2 to the non-need testimony, unredacted.

(Confidential Exhibit No. 10C was marked for identification.)

MR. RAUSHENBUSH: Exhibit 11 will be Volume 3 of the attachments to the non-need testimony, redacted.

(Exhibit No. 11 was marked for identification.)

MR. RAUSHENBUSH: Exhibit 12 will be Volume 3 to the non-need testimony, unredacted. 12C

(Confidential Exhibit No. 12C was marked for identification.)

MR. RAUSHENBUSH: Exhibit 13 will be Volume 4 of the attachments to the non-need testimony, redacted.

(Exhibit No. 13 was marked for identification.)

MR. RAUSHENBUSH: Exhibit 14C will be Volume 4 to the non-need testimony, unredacted.

(Confidential Exhibit No. 14C was marked for identification.)

MR. RAUSHENBUSH: Exhibit 15 will be the rebuttal testimony of Pacific Gas and Electric Company regarding the Jefferson-Martin 230 kV Transmission Project, corrected as of January 7th, 2004.

(Exhibit No. 15 was marked for identification.)

MR. RAUSHENBUSH: And Exhibit 16 will be the Volume 1

of the attachments to the rebuttal testimony of PG&E regarding the Jefferson-Martin 230 kV Transmission Project.

(Exhibit No. 16 was marked for identification.)

MR. RAUSHENBUSH: And there is only one volume of that.

Exhibit 17 will be a copy of PG&E's application

for a Certificate of Public Convenience and Necessity authorizing the construction of the Jefferson-Martin 230 kV Transmission Project.

(Exhibit No. 17 was marked for identification.)

MR. RAUSHENBUSH: Exhibit 18 will be Volume 1 of the proponent's environmental assessment.

(Exhibit No. 18 was marked for identification.)

MR. RAUSHENBUSH: And Exhibit 19 will be Volume 2 of the proponent's environmental assessment.

(Exhibit No. 19 was marked for identification.)

MR. RAUSHENBUSH: Those are the exhibits, your Honor.

ALJ TERKEURST: All right. Thank you.

I believe we're ready for PG&E to call its first witness.

MR. RAUSHENBUSH: Yes, your Honor. What I propose to do is we have witnesses Manho Yeung, Corey Miller and -- sorry -- Corey Mayers and William Miller here.

Mr. Miller and Mr. Mayers are testifying about

energy efficiency and demand response programs.

Mr. Yeung co-sponsors that chapter to the extent

it touches on transmission planning and how the energy efficiency programs and the demand response programs are incorporated into energy efficiency.

So what I would propose to do is to call the three of those witnesses together for -- first, to cover that one chapter so that then hopefully Mr. Miller and Mr. Mayers can go back to their jobs once the questions on this chapter are finished.

ALJ TERKEURST: All right. Let's go off the record.

(Off the record)

ALJ TERKEURST: On the record.

PG&E may call its first witnesses.

MR. RAUSHENBUSH: Your Honor, PG&E calls Manho Yeung, William Miller and Corey Mayers as its initial witnesses. I am going to proceed to have them identify their testimony.

ALJ TERKEURST: Let me swear them first.

COREY MAYERS, WILLIAM MILLER, and MANHO YEUNG, called as witnesses by Pacific Gas and Electric Company, having been sworn, testified as follows:

ALJ TERKEURST: Thank you.

DIRECT EXAMINATION

BY MR. RAUSHENBUSH:

Q Mr. Yeung, would you please state your full name.

WITNESS YEUNG: A Manho Yeung, M-a-n-h-o, Y-e-u-n-g.

Q Are you a PG&E employee?

A Yes.

Q And what is your position with PG&E?

A My position is manager of electric transmission planning in the electric transmission and distribution and generating department in PG&E.

Q And what is your responsibility for the Jefferson-Martin 230 kV Transmission Project?

A I am responsible for the planning of the Jefferson-Martin 230 kV Transmission Project, including the need for the project.

Q I would like to direct your attention to what has been marked for identification as Hearing Exhibit No. 4, which is the direct testimony of Pacific Gas and Electric Company regarding need for the Jefferson-Martin 230 kV Transmission Project.

A Yes.

Q Will you understand me if ever I refer to that document as PG&E's direct need testimony?

A Yes.

Q Is a copy of your statement of qualifications attached as Attachment 1 to PG&E's direct need testimony?

A Yes.

Q Are you sponsoring the testimony in Chapters 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, and 13 of PG&E's direct need testimony?

A Yes.

Q Was this testimony prepared by you or at your

direction?

A Yes.

Q Are you familiar with the attachments to PG&E's direct need testimony that are identified in the testimony that you are sponsoring?

A Yes, I am.

Q Are true and correct copies of those documents that you were referring to in your testimony attached as the attachments to the direct need testimony?

A Yes.

Q Are you also sponsoring a portion of Chapter 6 of PG&E's direct need testimony?

A Yes.

Q Which portions of Chapter 6 are you sponsoring?

A The introductory paragraph. I am also cosponsoring Section 1-B and Section 2-B.

Q Were portions of Chapter 6 that you are sponsoring prepared by you or at your direction?

A Yes.

Q Do you have any corrections to make to your testimony in hearing Exhibit 4, PG&E's direct need testimony?

A Yes.

Q Could you identify that correction, please.

A On page 1, on lines No. 9 to 11, the City of Pacifica and town of Hillsborough were omitted from that list and should be identified as two of the communities that would benefit from increased transmission capacity as a result of the Jefferson-Martin project.

ALJ TERKEURST: What was the second city, Pacifica and?

WITNESS YEUNG: Hillsborough.

MR. RAUSHENBUSH: Q Can you explain how the town of Hillsborough and Pacifica benefit from increased transmission capacity as a result of project.

WITNESS YEUNG: A Yes. A portion of Hillsborough is served by the Burlingame substation. A portion of Pacifica is served by the Daly City substation. Both the Burlingame and Daly City substations are situated inside the project area and will receive benefit from the proposed Jefferson-Martin project.

The proposed project will allow more power to be imported into the project area. And secondly, the Jefferson-Martin project will provide a new transmission path into the project area and increase supply redundancy for the area.

Q I would like to direct your attention to what's been marked for identification as hearing Exhibit No. 5, which is the testimony of Pacific Gas and Electric Company regarding issues other than need for the Jefferson-Martin 230 kV Transmission Line project corrected as of January 7, 2004.

Do you understand me if I refer to that document as PG&E's direct nonneed testimony?

A Yes.

Q Are you sponsoring the testimony in Chapter 14 of PG&E's direct nonneed testimony?

A Yes, I am.

Q Was that testimony prepared by you or at your direction?

A Yes.

Q Are you familiar with Attachment 208 to PG&E's direct nonneed testimony which is identified in Chapter 14 of the testimony you are sponsoring?

A Yes.

Q Is that a true and correct copy of the order suspending proceedings attached as Attachment 208?

A Yes.

Q I would like to direct your attention to what has been marked for identification as Hearing Exhibit 15, which

is the rebuttal testimony of Pacific Gas and Electric Company regarding Jefferson-Martin 230 kV Transmission Project.

Will you understand me if I refer to that document as PG&E's rebuttal testimony?

A Yes.

Q Are you sponsoring the testimony in Chapter 2 of PG&E's rebuttal testimony along with cosponsoring Section 8 of Chapter 2 with Mr. Miller and Mr. Mayers?

A Yes.

Q Was this testimony prepared by you or at your direction?

A Yes.

Q Do you have any other corrections you wish to make to your testimony at this time?

A No.

Q Do you adopt your testimony and the attachment referenced in your testimony contained -- well, hold on one second.

Your Honor, do you want me to separately go through the unredacted versions, or can we assume that if the redacted versions I mentioned, if he is swearing to those, that he is fine with the other ones? I will ask him to swear

to all of them, but I can go through the individual chapters again if you wish.

ALJ TERKEURST: I don't think we need to do that. We will assume that you are referring to both the redacted -- or that his answers apply to both the redacted and unredacted portions.

MR. RAUSHENBUSH: Thank you, your Honor.

Q Mr. Yeung, do you adopt your testimony and any attachments referenced in your testimony contained in Hearing Exhibits 4 through 16 as your sworn testimony today?

A Yes, I do.

MR. RAUSHENBUSH: PG&E at this time has no further questions for Mr. Yeung in reliance upon his adoption of the written testimony.

PG&E reserves the right to redirect Mr. Yeung following cross-examination.

ALJ TERKEURST: That's understood for all the witnesses.

MR. RAUSHENBUSH: Thank you, your Honor.

Q Mr. Miller, would you please state your fall name.

WITNESS MILLER: A My name is William Miller, M-i-l-l-e-r.

Q Are you a PG&E employee?

A Yes, I am.

Q What is your current position at PG&E?
A I am a principal regulatory analyst in the customer energy management department.
Q Are you responsible for testifying regarding PG&E's energy efficiency programs?
A Yes.
Q I would like to direct your attention to what has been marked for identification as Exhibit 4, which is the direct testimony of Pacific Gas and Electric Company regarding need for the Jefferson-Martin 230 kV Transmission Project. Will you understand me if I refer to that as PG&E's direct need testimony?
A Yes.
Q Is a copy of your statement of qualifications attached as Attachment 5 to PG&E's direct need testimony?
A Yes.
Q Are you sponsoring the testimony in Chapter 6, Section 1, of PG&E's direct need testimony?
A Yes.
Q Was this testimony prepared by you or at your direction?
A Yes.
Q Do you have any corrections to make to this testimony?
A I have one correction.
Q Would you please identify it.
A On page 47, at line 2, the second to the last word is "federal," and it should be "state." So the sentence

should read: "This program encourages nonresidential building owners, tenants and design teams to exceed current state energy efficiency standards for their new construction or renovation projects."

Q Thank you.

ALJ TERKEURST: I'm sorry. What page was that on?

WITNESS MILLER: Page 47.

ALJ TERKEURST: All right.

WITNESS MILLER: Of Exhibit.

MR. RAUSHENBUSH: Q I would like to direct your attention to what has been marked for identification as Hearing Exhibit No. 15, which is the rebuttal testimony of PG&E regarding Jefferson-Martin 230 kV Transmission Project corrected as of January 7, 2004.

Will you understand me if I refer to that as PG&E's rebuttal testimony?

WITNESS MILLER: A Yes.

Q Are you sponsoring the testimony in Chapter 2, Section 8 of PG&E's rebuttal testimony that addresses energy efficiency issues?

A Yes.

Q Was this testimony prepared by you or at your direction?

A Yes.
Q Do you have any other corrections you wish to make to your testimony at this time?
A No.
Q Do you adopt your testimony contained in hearing

Exhibits 4 and 15 as your sworn testimony today?
A I do.
Q Mr. Mayers, will you state your full name.
WITNESS MAYERS: A Corey Allen Mayers.
Q Are you a PG&E employee?
A Yes.
Q What is your current position with PG&E?
A I am the manager of electric tariffs in the Tariffs and Compliance Department.
Q Are you responsible for testifying about PG&E's demand response programs?
A Yes, I am.
Q I would like to direct your attention to what has been marked for identification as Hearing Exhibit 4, which is a copy of the direct testimony of PG&E regarding the need for the Jefferson-Martin project.
Will you understand me if I refer to that document as PG&E's direct need testimony?

A Yes.
Q Is a copy of your statement of qualifications attached as Attachment 6 to PG&E's direct need testimony?
A Yes.
Q Are you sponsoring the testimony in Chapter 6, Section 2, of PG&E's direct need testimony?
A Yes, with respect to the demand response programs. But I will defer to Mr. Yeung in regards to the transmission planning aspects of it.
Q Was this testimony prepared by you or at your

direction?
A Yes, it was.
Q Do you have any corrections to make to your testimony?
A Yes, I have one.
Q Please identify it.
A On page 50 of the direct need testimony, Exhibit 4, line 3 should read "demand response programs DRPs can be effective in temporarily reducing demand when they are exercised." I have inserted "temporarily."
Q I would like to direct your attention to what has been marked for identification as Hearing Exhibit No. 15,

which is the rebuttal testimony of PG&E regarding the Jefferson-Martin 230 kV Transmission Project.

Will you understand me if I refer to that as PG&E's rebuttal testimony?

A Yes, I will.

Q Are you sponsoring the testimony in Chapter 2, Section 8 of PG&E's rebuttal testimony that addresses demand response programs?

A Yes, I am.

Q Was this testimony prepared by you or at your direction?

A Yes, it was.

Q Do you have any other corrections you wish to make to your testimony at this time?

A No, I don't.

Q Do you adopt your testimony contained in Hearing

Exhibits 4 and 15 as your sworn testimony today?

A I do.

MR. RAUSHENBUSH: Thank you, your Honor. We will turn the witnesses over for cross-examination.

ALJ TERKEURST: Thank you.

Mr. Boyd, you will go first.

MR. BOYD: Thank you.

CROSS-EXAMINATION

BY MR. BOYD:

Q I had a couple questions of Mr. Miller and one of Mr. Yeung.

Mr. Miller, could you describe for me what the benefit of the Jefferson-Martin project will be for distributed generation in San Francisco?

For example, the City -- recently the citizens of the City have enacted legislation to encourage the development of solar generation within the city. And also I am curious to know how this will benefit people that, like, have solar panels on their room and such? And I assume it is providing benefit by providing additional capacity. So I was just curious if you could elaborate on that.

MR. RAUSHENBUSH: Your Honor, I will object to that question being directed to Mr. Miller because it is not related to energy efficiency.

MR. BOYD: I thought it was including distributed generation as well.

MR. RAUSHENBUSH: Distributed generation is separate from energy efficiency. And that would be better directed to

Mr. Yeung who is the witness for distributed generation.

MR. BOYD: That's fine.

Q If Mr. Yeung could answer it better than Mr. Miller.

WITNESS YEUNG: A I am not quite sure I understand the question. Are you asking would the proposed Jefferson-Martin project help achieve renewable -- not renewable, I guess -- distributed generation goals.

MR. BOYD: Q Yes, exactly. Would it adversely impact it, or would it benefit that use?

A I don't believe there would be any direct impact to distributed generation. There may be some secondary effects in terms of increasing the transmission capability into and out of the project area.

Q Then I had only one other question for you, which was it seems to be a disagreement over the need for these four peakers in San Francisco in order to shut down the Bayview-Hunter's Point power plant. And I know that without -- my understanding is that without the Jefferson-Martin project, that that wouldn't be adequate new capacity to enable us to shut down that power plant; is that true? Do you know if that's true or correct?

A I don't believe there is a disagreement per se. The proposed Jefferson-Martin project along with other transmission projects that are being proposed for this area will provide enough capacity to meet all applicable planning requirements, even with the retirement of the entire Hunter's Point power plant.

And I also understand that the ISO has made a determination that assuming certain transmission projects not completed, including Jefferson-Martin, and assume that the four new combustion turbines are installed, there would be enough capacity to allow Hunter's Point power plant to also be retired.

So I don't believe there is a disagreement, but rather, there's two different scenarios that could allow Hunter's Point power plant to be retired and still meet all applicable planning requirements.

Q And what's your opinion about the four peakers? If we have the Jefferson-Martin project approved, do we need those four peakers in San Francisco, or is there sufficient capacity to meet the peak demand needs in San Francisco, in your professional opinion?

MR. RAUSHENBUSH: Vague and ambiguous and calls for speculation.

ALJ TERKEURST: Could you reread the question.

(Record read)

MR. RAUSHENBUSH: I think it is vague and ambiguous as to time.

ALJ TERKEURST: Can you put a time frame.

MR. BOYD: Q Upon construction of the Jefferson-Martin is the time period. If the Jefferson-Martin is constructed, do we need those peakers? Or is there sufficient capacity once the construction is complete to meet

the peak demand of San Francisco?

WITNESS YEUNG: A Are you referring to the year 2006,

2005 or beyond?

Q Assuming late 2005, 2006, early 2006 the project is complete, I am asking about at that time period would there be sufficient capacity with that transmission upgrade to meet the demand without those peakers?

A As described in my direct testimony on page 2, on page 2 there is a chart showing the capability of the transmission system. And if we are focusing on the year 2006, assuming that the proposed Jefferson-Martin project is constructed, then there would be enough capacity to meet the expected demand for the year 2006.

Q Without the need for the peakers?

A Without installation of the peakers.

Q Thank you.

That's all my questions.

ALJ TERKEURST: Thank you.

Ms. George, are you ready to proceed?

MS. GEORGE: Well, I can proceed, but the copies aren't going to be here for a little while.

ALJ TERKEURST: Do you have any other areas that you

have questions about?

MS. GEORGE: Other than energy efficiency?

ALJ TERKEURST: Other than ones that are relying on the copies.

MS. GEORGE: Well, I have some copies here that we can deal with, but --

ALJ TERKEURST: Off the record.

(Off the record)

ALJ TERKEURST: On the record.

Please proceed.

MR. GRAY: Thank you, your Honor.

CROSS-EXAMINATION

BY MR. GRAY:

Q Good morning, Mr. Mayers, Mr. Miller, and Mr. Yeung.

PANEL WITNESSES: Good morning.

Q I am Jeff Gray. I am one of the attorneys here today representing the 280 Corridor Concerned Citizens Group. And I have maybe just one or two questions for the panel. And depending on those answers we may be able to move on.

Do you have a copy of Exhibit 4 up there with you? That is the directed testimony on need. I am going to be looking at page 63, and I believe that that is a chapter that

is sponsored just by Mr. Yeung.

WITNESS MILLER: A I don't have it, but I will look at his.

Q Mr. Yeung, do you have it?

WITNESS YEUNG: A Yes.

Q Can I ask you to turn to page 63, please.

A Yes, I have it.

Q At page 63 in sub point 3 there you state that the effects of energy efficiency programs, conservation, demand response programs and distributed generation are included in PG&E's low and medium forecast; is that correct?

A That's correct.

Q And if I understand your testimony correctly, PG&E

assumes that the impacts of these programs on future load will be consistent with the historical effects of these programs on load?

A That's correct.

Q Mr. Miller, I guess with respect to energy efficiency, with respect to energy efficiency, did PG&E in its methodology include only PG&E administered programs?

MR. RAUSHENBUSH: Vague and ambiguous with respect to the "in its methodology."

MR. GRAY: Q In determining the historical impacts of energy efficiency, did PG&E only include PG&E-administered energy efficiency programs?

WITNESS MILLER: A I think Mr. Yeung would need to agree, but I think the historical impacts that he is speaking about are the ones that observe all impacts that occur.

So that if there were other -- if there were activities that were undertaken by others that impacted the loads that were manifesting themselves, then they will be part of the historical record on which he would be doing his projections.

Q And how -- and I am not sure who to ask this question to, either to you or Mr. Yeung -- how would you determine the impact of the programs that were not administered by PG&E on load?

WITNESS YEUNG: A Are you referring to historical program, or are you looking for in the future?

Q Well, I'm -- because the future load projection is based on historical impacts, I am referring to the

historical impacts.

A From historical impact perspective, the reduction, whether it is due to an energy efficiency program administrated by PG&E or someone else, the impact would show

up in the actual historical demand.

Q How can you tell if a program administered by someone other than PG&E is showing up in historical demand?

A We can see that because the actual demand is the actual demand net of any energy efficiency program. So it is regardless of who is proposing or who is administrating the program. The impact will show up in the actual demand of not being there.

Q If you are looking at demand and you see a change in demand, how can you determine that that change in demand was caused by an energy efficiency program administered by someone other than PG&E?

A I am not quite sure I understand the question. But if you are asking if we can see the difference, it is unclear to me on why that would be important from our perspective in looking at the historical demand and also looking at the future forecast. Because methodology takes into account of what happened in the past and assuming similar impact will happen in the future.

Q Is PG&E able to determine the impact of energy efficiency programs that it administers on demand?

WITNESS MILLER: A We propose to the public utilities Commission ever year a menu of evaluation studies as part of a public goods charge funding program process. And some of

the studies in that menu -- and we do this each year -- some of the studies in that menu are designed to try and determine what the impact of the programs that PG&E administers has been. And they are generally conducted on a systemwide basis, PG&E systemwide basis. So that is the work that occurs.

Q Is there any similar analysis to determine the impact of energy efficiency programs that are not administered by PG&E?

A Of the programs that the CPUC selects through its public goods charge administration oversight, I am aware that each project has to propose some evaluation, but I am not aware of the status of those evaluations and to the extent they have been completed or not.

Q If an entity other than the CPUC developed an energy efficiency program in the future, let's say in the year 2008, would PG&E's forecast take into account new energy efficiency programs implemented in the future?]

MR. RAUSHENBUSH: Vague and ambiguous, and incomplete hypothetical.

ALJ TERKEURST: Before you leave, can you reread --

(Record read)

ALJ TERKEURST: Okay. Are you saying does it now, or would it capture it in the future? I agree, it's vague.

MR. GRAY: Okay.

Q Would PG&E's demand forecast capture energy-efficiency programs that are new, administered by an entity other than PG&E, and adopted in the future?

ALJ TERKEURST: Their current forecast or their future forecast?

MR. GRAY: Right, the current forecast.

Your Honor, the question is -- PG&E has stated that its demand forecast with respect to energy efficiency is based on historical impacts. My question is whether the methodology -- that methodology will capture energy efficiency -- new energy-efficiency programs in the future.

MR. RAUSHENBUSH: Your Honor, my objection is that there is so little to this hypothetical, that it's very hard for anyone to answer. Could you capture something now that doesn't exist that might exist later? How would you know whether the new program -- he hasn't described the new program. Is it giving somebody an energy-efficiency refrigerator that's simply going to replace past, you know, energy-efficiency programs that currently lead to buying refrigerators? Is he coming up with something brand new that would be so new, so different from any prior energy-efficiency program, that it would have an impact on demand? And I can't tell it from his question.

MR. GRAY: Your Honor, that's the problem with PG&E's forecast. It doesn't matter what the new energy-efficiency program is in the future. The question is if there is a new

energy-efficiency program in the future, will PG&E's demand forecast capture that?

MR. RAUSHENBUSH: But he hasn't defined the program. So what is it?

MR. GRAY: It's a hypothetical. The program does not

matter.

ALJ TERKEURST: I think I understand the question. And I think you're bordering on, you know, argumentative. PG&E witnesses have explained what's in the forecast. And the implication is anything that's not in there is not in there.

MR. O'NEILL: Except there hasn't been an answer to this particular question, your Honor.

MR. GRAY: Yeah. I mean, if they'll answer the question that you just asked, your Honor, I think that that would be fine. If it's not in there, is it not in there? That's the question. We're talking about a forecast into the future.

ALJ TERKEURST: So could I take a stab at asking the question?

MR. GRAY: Sure. Please do.

ALJ TERKEURST: Does PG&E's forecast include any

programs -- the effect of any programs other than PG&E-sponsored programs?

WITNESS YEUNG: Your Honor, yes, it does, to an extent that if the so-called "new" program in the future, its relation to an existing program that has been ongoing, so the impact of such a program would be taken into account in the future forecast.

On the other hand, if we are talking about something that is non -- not in existence at all, and that we have no idea what that program will look like or maybe relates to, obviously, that is not in the forecast.

MR. GRAY: I don't think that the question you asked was exactly the one I asked, but I think his answer ultimately got to my question.

ALJ TERKEURST: Okay. I agree.

MR. GRAY: Okay.

Q Now, with -- hopefully not having to go through all of those questions with respect to conservation, is conservation treated the same way in the demand forecast as energy efficiency?

WITNESS YEUNG: A Yes, it is.

Q Would that be the same with demand-reduction programs?

A Yes, it is.

Q Okay. And would that also be the same with distributed generation?

A Yes, it is.

Q Okay. So for energy efficiency, conservation, demand-reduction programs, and distributed generation, PG&E's load forecasts consider the impacts of these programs based on historical impacts and extrapolates those into the future. Is that correct?

A That's correct.

Q Okay.

ALJ TERKEURST: How many more questions do you have?

MR. GRAY: I may have a few more, your Honor.

ALJ TERKEURST: Let's take a no more than 10-minute break.

(Recess taken)

ALJ TERKEURST: Please come to order.

Mr. Gray.

MR. GRAY: Thank you, your Honor.

ALJ TERKEURST: The hearing has begun.

MR. GRAY: Your Honor, I have two documents I'd like to pass out and have marked as exhibits.

ALJ TERKEURST: All right.

ALJ TERKEURST: Off the record.

(Off the record)

ALJ TERKEURST: On the record.

I'll mark the two documents that were distributed. The first one is selected pages, four pages, from the January 9, 2004, California Energy Markets document -- periodical, whatever you call it -- as Exhibit 20.

(Exhibit No. 20 was marked for identification.)

ALJ TERKEURST: And --

MR. GRAY: Your Honor, Exhibit 21 -- it's just Chapter 6 to the City of San Francisco's Electricity Resource Plan.

ALJ TERKEURST: All right. Yeah. The document I was about to mark is the "Electricity Resource Plan, Choosing San Francisco's Energy Future," revised December 2002. As Mr. Gray has described, it's Chapter 6 of that document. And that is Exhibit 21.

(Exhibit No. 21 was marked for identification.)

ALJ TERKEURST: Please proceed.

MR. GRAY: Thank you, your Honor.

Q Mr. Yeung, the Exhibit 21, as your Honor just stated, is Chapter 6 from the City of San Francisco's Electricity Resource Plan. Do you have that document in front of you? Exhibit 21?

WITNESS YEUNG: A Yes.

Q Yes? And the San Francisco Electricity Resource Plan is a document that you cite to in various places in your testimony; is that not correct?

A Yes.

Q Okay.

MR. RAUSHENBUSH: Your Honor, could Mr. Gray identify where it's cited?

MR. GRAY: Well, for example, footnote 71 is one example of where he cites to it. There are others.

Q And you've reviewed this document; is that correct, Mr. Yeung?

WITNESS YEUNG: A Yes.

Q Could you turn to the page that is marked page 65 of Exhibit 21?

A Is it page 65?

Q Yes. On the bottom?

A Yes, I have.

Q Okay. Now, at the bottom towards the bottom of page 65, it lists energy-efficiency goals: 16 megawatts by 2004, 55 megawatts which by 2008, and 107 megawatts by 2012. Do you see that?

A Yes, I see it.

Q Okay. Is it your understanding that these initiatives are new, and are not -- and were not considered in PG&E's demand forecast?

MR. RAUSHENBUSH: I'll object that he's asking the wrong witness as to the specifics of these energy-efficiency programs. That's covered by --

MR. GRAY: Whoever can answer it, your Honor. I'm sorry.

WITNESS MILLER: A I am not familiar with the method or the process by which this -- these forecasts were made. I would link the 16 megawatts to the joint San Francisco/PG&E Energy Pilot Program that we have launched. In my testimony, I describe a -- the fact that while this is a new initiative, it's basically relying -- relies on the same source of funds: public goods charge funds -- and that it -- it -- while it tailors many of these activities to San Francisco, it relies on vehicles that are similar to the kinds of historical programs that PG&E has offered.

MR. GRAY: Q My question is: does PG&E's demand forecast include an increase from 2004 to 2008 of 39 megawatts in energy efficiency in San Francisco?

MR. RAUSHENBUSH: Of 39 megawatts? Where did you obtain that number?

MR. GRAY: 55 megawatts minus 16 megawatts in 2004

would be a 39-megawatt increase.

WITNESS MILLER: For my part, since I don't know where the 59 came from or the assumptions underlying it, I don't

know to what extent that represents megawatts beyond what would have occurred otherwise -- beyond what would have occurred had, for example, PG&E's programs, you know, continued to run as they would have -- as authorized by the Commission.

MR. GRAY: Q Can you tell me if the methodology PG&E's used to forecast demand would take into account a more than doubling in megawatts related to energy efficiency in San Francisco?

MR. RAUSHENBUSH: Assumes a fact not in evidence, and calls for speculation. This question assumes there's a doubling in energy efficiency.

MR. GRAY: I would be more than happy to make it a hypothetical, your Honor.

ALJ TERKEURST: Please do.

MR. GRAY: Q Assuming energy efficiency in San Francisco doubled between 2004 and 2008, would PG&E's demand forecast account for that?

WITNESS MILLER: A So, as I understand it, the question is about the forecasting methodology?

Q If it would account for a doubling in San Francisco of megawatts related to energy efficiency between 2004 and 2008.

A My difficulty here -- or I think anyone's difficulty in answering the question is, while the number's larger, but we don't have -- what we don't know is what -- we don't know the underpinnings for this forecast. Is it just assuming a continuation of existing trends? Is it assuming a

continuation of the San Francisco pilot? We just don't know those. And that's what makes it difficult to say, "Well, this is a complete addition, and -- and isn't offset by what otherwise might have happened."

Q Well, are you familiar with the underpinnings in PG&E's demand forecast related to energy-efficiency programs?

A Well --

Q Or, as Mr. Yeung -- either one can answer the question.

WITNESS MILLER: A For the forecast?

WITNESS YEUNG: A Well, again, for the forecast, it assumes the historical level of conservation.

Q Okay.

A I'm sorry. Energy efficiency, I should say.

Q Okay. Okay. Now, in that historical level of energy efficiency, are you aware of the amount of megawatts associated with energy efficiency doubling over a four-year time period?

WITNESS MILLER: A Well, when I think about the increase that you identified of 39 megawatts, if I can take a step back in addressing your question, and if I look at my testimony on page 49, where I've tried to assess how much the first figure you identified in that stream -- the 16 megawatts -- how much of that would be additional or extra, we have -- we have made an estimate that there is approximately 7 megawatts a year that occurs in the project area or has occurred in the project area from existing programs; that the San Francisco pilot that's described -- or

that this amount here, if it, in fact, is the amount in the San Francisco PG&E energy pilot, it represents a two-year effort. And our sense is that represents something like 1 to 3 additional megawatts, beyond what would happen anyway.

So in looking at the 55-megawatt figure, the thing I don't know is: is that an entirely new source of funding, or does it assume a continuation of the pilot and the -- kind of the increment that we might expect from the pilot of 1 to 3 megawatts a year, or -- or what? I just simply don't have

that information.

Q What impact would a new source of funding have on the demand forecast?

A Is there a way to kind of bound that down a bit?

Q Well, I'm asking -- you mentioned a new source of of funding?

A Right.

Q I'm asking you what impact that would have on it working.

A Well, to answer a question like that, you have to have a sense of what kinds of programs are going to be offered, who they're going to be targeted to, what kinds of new equipment is likely to be put in place, its impact, and the time frame over which you're, you know, considering this new level of activity.

Q Now, Mr. Yeung, you're responsible for distributed-generation questions. Can I ask you to turn to page 69 of Exhibit 21?

WITNESS YEUNG: A Page 69 of -- which are you talking

about?

Q Exhibit 21, which is the Electricity Resource Plan that we've just been talking about.

A Yes. I have it.

Q Okay. There, at the top, it lists goals for small-scale distributed generation. Do you see that?

A Small-scale distributed generation? Yes, I see it.

Q Okay. And it lists 10 megawatts by 2004,? 38 megawatts by 2008, 72 megawatts by 2012.

Now, would PG&E's demand forecast capture these increases in small-scale distributed generation that are being developed by the City of San Francisco?

MR. RAUSHENBUSH: I'll object. Number one, it's vague.

Number two, it misstates this document. They are not programmed by the City and County of San Francisco. They are the goals that they are identifying. And it calls for speculation and assumes a fact not in evidence to assume that they actually have occurred.

MR. GRAY: Your Honor, I'll ask this in a hypothetical as well.

Q Assuming small-scale distributed generation in San Francisco increased from 10 megawatts in 2004 to 38 megawatts in 2008, would PG&E's demand forecast capture that increase?

WITNESS YEUNG: A Well, assuming the development of new additional generation is going to be 10 megawatts by

2004, 38 megawatts by 2008, and 72 megawatts by 2012, and assuming that these -- these increase above and beyond what we have been seeing on an historical basis, they would not be captured in the demand forecast. However, they would be included into the assessment of future generation or future resources in the area.

Q And how is it that they would be included in future resources in the area?

A That is being accounted for in my -- in Chapter 5 of my direct testimony.

Q Can you give me a reference to Chapter 5?

A It starts on page 32.

Q I am not sure I see it on page 32.

Can you --

A Sure.

Q -- point me to where that would be?

A Well, Chapter 5's title is, "Future Generation and Transmission Projects in the Project Area."

Q Mm-hm.

A And if you turn to page 38 -- I'm sorry -- page 40, starting on line number 10, Section D, "Proposed Distributed Generation Projects in the Project Area."

Q Now, in PG&E's demand forecast, is this 5.46 megawatts of proposed distributed generation specifically included, or is it included as part of the historical impact of distributed generation on load?

A My answer actually is on page 41; that PG&E has not made any specific adjustments to its load forecast to

reflect the planned 5.46 megawatts of distributed energy in the project area of which it is aware. As an initial matter, it is not certain that such plant distributed generation projects will come on line.

Moreover, in the past, distributed generation has not increased supply to the energy grid, and instead, has been felt only as load that the system does not need to serve.

Q So, in other words, that would be reduced demand, correct?

A That's correct.

Q Okay. So distributed generation, while it should not be reflected in additional generation resources, should be reflected in demand, correct?

MR. RAUSHENBUSH: Vague and ambiguous as to what you're talking about. You're deciding as a general principle, or are you trying to apply it to anything relative to this --

MR. GRAY: In PG&E's forecast.

WITNESS YEUNG: Again, the appropriate way to treat distributed generation is, to the extent that the amount is similar to the historical trend, that would have been

included in the demand forecast by looking at the historical demand information.

MR. GRAY: Q Now, at page 40 of Exhibit 4 -- and that's the direct need testimony that we were just talking about -- beginning on line 20, and actually going on to the next page, you state that the SFPUC's Electricity Resource

Plan has goals of generating 10 megawatts of distributed energy by 2004, 38 megawatts of distributed generation by 2008, and a total of 72 megawatts of distributed generation by 2012. Then you go on to state there is no guarantee these goals will be realized.

So is it correct to say that those numbers are not taken into account in PG&E's demand forecast for San Francisco?

MR. RAUSHENBUSH: Misstates the prior testimony.

MR. GRAY: I'm not sure it does misstate the testimony.

MR. RAUSHENBUSH: Well, it does misstate it.

Over a series of questions since he began asking questions, he's been told historical measures both for energy efficiency and for distributed generation have been incorporated into historical load forecasts that show up in actual demand and that they are taken into account in that

way.

And now he's saying, well, you don't take any of these into account, but the testimony is that we -- that if it's distributed generation consistent with past distributed generation, it's taken into account for the incorporation of the historical growth patterns, which is what Mr. Yeung just said.

And now he's just rephrasing the question and asking it again in a way that ignores what he's been told.

MR. GRAY: I'm asking what this paragraph in his testimony means, your Honor.

ALJ TERKEURST: Well, try to make the question as clear as you can. And I think there's some ambiguity. People are talking about would it do this, would it do that. It seems to me the point is what is in the current forecast. It's not a hypothetical. What is the in current forecast. And it might be clearer if you state it in that manner.

MR. GRAY: Okay.

Q Mr. Yeung, isn't it true that the numbers in the San Francisco electricity resource plan noted on page 40 of your testimony are not included in PG&E's demand forecast?

A The exact amounts that you are referring to, the

10 megawatt, the 38 and the 72, they were not. Because from a historical standpoint, we saw -- we're aware of 5.46 megawatts of actual energy from distributed generation in the past, and that they were incorporated into the forecast.

Q Now could I ask you to take a look at Figure 1-1, and that's on page 2 of Exhibit 4, the direct testimony.

ALJ TERKEURST: What page?

MR. GRAY: Page 2, your Honor.

ALJ TERKEURST: Thank you.

Q Now the diagonal lines that move across the horizontal access that are separately labeled "Low Forecast, Medium Forecast, High Forecast," those represent the demand forecast for project area over the time periods in the figure; is that correct?

A Yes.

Q Now if PG&E's demand forecast did not take into

account future energy efficiency programs, demand response programs, and in fact those programs resulted in lowering demand more than historically, isn't it true that these horizontal lines would move lower?

ALJ TERKEURST: I'm sorry, did you mean horizontal?

MR. GRAY: The diagonal, the diagonal lines, your

Honor, that represent each forecast.

MR. RAUSHENBUSH: Incomplete hypothetical. That's directly contrary to what he's just been told.

MR. GRAY: Q Well, would it mean that these forecasts overstated actual load in those time periods?

MR. RAUSHENBUSH: Same objection.

MR. GRAY: Your Honor, the question is if demand reduction as a result of energy efficiency, demand reduction programs, conservation are greater than what PG&E included in its forecast, these forecasts in the future would overstate actual demand.

ALJ TERKEURST: Well, are you asking -- these are point-in-time forecasts. They are what they are. I mean are you asking demand may be lower than forecast if conservation or energy efficiency kicks in?

MR. GRAY: Yes.

ALJ TERKEURST: And that has nothing to do with these lines. The end result with these lines may be incorrect, but they don't change.

MR. GRAY: Right. Well, the question is will these lines overstate what actual demand would be in the future.

THE WITNESS: Well, I would not say that these lines

would overstate the forecast. If I understand you correctly, you are saying -- you are asking with if there will be different forecasts in the future.

MR. GRAY: Q I'm not asking if there's going to be a different forecast.

I'm asking what the relationship between the forecast and the actual demand in the future will be.

MR. RAUSHENBUSH: Vague and ambiguous.

ALJ TERKEURST: Well, it seems you are asking could these forecasts be wrong. If there is more energy efficiency than is in the forecast, could demand be less than these forecasts. I mean it's almost argumentative. It's almost tautological, whatever, you know, so --

MR. GRAY: I'll move on, your Honor.

ALJ TERKEURST: Thank you.

MR. GRAY: Could I just have a second, your Honor?

ALJ TERKEURST: Yes.

MR. GRAY: Okay, your Honor.

Q Mr. Yeung, Could I ask you to take a look at what has been marked as Exhibit 20, which is an excerpt from a California Energy Markets dated January [sic] 9, 2004.

A I'm sorry, which page are you referring to?

Q It would be on the top marked page 13. That's three pages in.

A Okay. I have page 13.

Q Now, on the right-hand column under the headline LADWP to Update Integrated Resource Plan, it states:

The Los Angeles Department of Water &

Power is achieving the goal of meeting 50 percent of load growth with conservation, energy efficiency, distributed generation and renewable resources....

Do you see that?

A Yes, I see that.

Q Now if -- would a 50 percent reduction in load growth as a result of conservation, energy efficiency, and distributed generation be reflected in PG&E's load forecast?

A I don't understand the question.

Q Would PG&E's load forecast, would it account for a 50 percent reduction in load growth as a result of conservation, energy efficiency, distributed generation and renewable resources?

ALJ TERKEURST: Again, are you saying does -- could the current forecasts account for it, or is this a hypothetical?

MR. GRAY: Q Do the current forecasts account for a 50 percent reduction in load?

MR. RAUSHENBUSH: Your Honor, I don't understand the question. PG&E does not serve the Los Angeles area.

ALJ TERKEURST: And the reference is of 50 percent, that 50 percent of load growth is met through conservation, et cetera. So could you rephrase the question.

MR. GRAY: Q Does PG&E's load forecast account for a 50 percent reduction in load growth as a result of conservation, energy efficiency, distributed generation, and

renewable resources?

MR. RAUSHENBUSH: Again, your Honor, I don't understand the relationship between what's being done by the Los Angeles Department of Water & Power as described in this article, which includes installing 200 megawatts of quick-start natural gas combustion turbines and what that has to do with the question he's asking.

MR. GRAY: Your Honor, I'll make it a hypothetical.

Q If PG&E were able to reduce load growth by 50 percent as a result of conservation, energy efficiency, distributed generation and renewable resources, would that reduction -- is that reduction reflected in the demand forecast?

MR. RAUSHENBUSH: Calls for speculation.

MR. GRAY: Just asking him a hypothetical, your Honor.

MR. RAUSHENBUSH: If the sky were red, would it be red?

ALJ TERKEURST: Are you asking did PG&E forecast what their load growth would be without energy conservation,

et cetera, and then assume that 50 percent of that load growth would be met -- let me start that over.

I think your question has problems, and I don't quite know how to suggest that you rephrase it, because I don't see anything in their testimony that they approached their load forecasting in the manner that this reference indicates LADWP did, where -- I mean you can just assume from this first sentence that LADWP made some estimate of what their load growth would be without conservation, et cetera,

and then decided that half of that load growth would be met through conservation. So first you have to determine whether PG&E assessed what their load growth would be without conservation, et cetera, and then how much conservation, et cetera, they assumed. And, you know, there is just a string of questions that would be needed before you could -- before that question could be answered.

MR. GRAY: Your Honor, that's fine. I think we can leave that question.

That's all I have for the panel, your Honor. I still have additional questions for Mr. Yeung.

ALJ TERKEURST: All right. Thank you.

Well, we will take our lunch recess and reconvene and 1:30.

We are off the record.

(Whereupon, at the hour of 12:00 noon, a recess was taken until 1:30 p.m.)

* * * * *

AFTERNOON SESSION - 1:30 P.M.

* * * * *

ALJ TERKEURST: Please come to order.

WILLIAM C. MILLER
and
MANHO YEUNG

resumed the stand and testified further as follows:

ALJ TERKEURST: After we broke for lunch, we

determined off the record that there was no further need for Mr. Mayers to appear. So he is excused.

And, Mr. Gray, did you finish your cross?

MR. GRAY: Yes, your Honor.

ALJ TERKEURST: So we're ready for Ms. George.

MR. GRAY: Yeah, that was just on the panel, your Honor.

ALJ TERKEURST: Ms. George handed out some documents during the lunch break. I will go ahead and mark them before she commences her cross-examination.

MR. GRAY: Your Honor, we also handed out one document as well that we will likely use when we resume with just Mr. Yeung appearing without Mr. Miller.

ALJ TERKEURST: All right. I don't see that. Did I get a copy of that?

MR. O'NEILL: Yeah.

ALJ TERKEURST: That's the data request.

MR. O'NEILL: Yes.

ALJ TERKEURST: All right. We will mark that one later.

I will go ahead and -- off the record.

(Off the record)

ALJ TERKEURST: On the record.

Ms. George has distributed several documents. I will go ahead and mark most of them.

The first one is a 12-page document. The first line on the first page is, "SEE P[age] 10 RE EJ-ISO BOARD ORDERED THEM TO HELP CLOSE HPPP." That's Exhibit 22.

(Exhibit No. 22 was marked for identification.)

MR. O'NEILL: Your Honor, is that one dated right below the entry you made 9/9/03?

MS. GEORGE: Yes, that's 9/9/03. That's just a little note up on the top.

ALJ TERKEURST: Twenty-three will be the document entitled, "EXCERPTS from 11/7/03 Power Flow Meeting in San Francisco."

(Exhibit No. 23 was marked for identification.)

ALJ TERKEURST: Exhibit 24 will be the document EXCERPTS from 11/7/03 -- oh, that's the same one. I have two of those.

MS. GEORGE: Did that get collated? I'm sorry.

ALJ TERKEURST: Twenty-four will be the document, the first line is "12/10/03 power flow meeting."

(Exhibit No. 24 was marked for identification.)

MR. RAUSHENBUSH: 12/10/03 power flow meeting?

ALJ TERKEURST: Right.

MR. RAUSHENBUSH: Thank you, your Honor.

ALJ TERKEURST: Exhibit 25 will be the document that the first line is 12/11/03 grid standards meeting.

(Exhibit No. 25 was marked for identification.)

ALJ TERKEURST: Exhibit 26 will be comments from the Southeast Alliance for Environmental Justice.

(Exhibit No. 26 was marked for identification.)

ALJ TERKEURST: Twenty-seven --

MS. GEORGE: That's 26?

ALJ TERKEURST: Yes.

Twenty-seven is the document entitled, "ENRON LINKED TO CALIFORNIA BLACKOUTS."

(Exhibit No. 27 was marked for identification.)

ALJ TERKEURST: Exhibit 28 is the Final Report of the San Francisco Peninsula Long-Term Electric Transmission Planning Technical Study.

(Exhibit No. 28 was marked for identification.)

ALJ TERKEURST: And this appears to be just selected pages, not the entire document.

Exhibit 29 is selected pages from Appendix 5 of the 2004 Reliability Must-Run Study Report, final version.

(Exhibit No. 29 was marked for identification.)

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MS. GEORGE: That's 29?

ALJ TERKEURST: Yes.

Exhibit 30 is a letter dated July 28th, 2003, from Kevin Dasso to Mr. Armando J. Perez.

(Exhibit No. 30 was marked for identification.)

ALJ TERKEURST: Thirty-one are two tables. The first table is entitled, "Forced outage data for Bay Area generators."

(Exhibit No. 31 was marked for identification.)

ALJ TERKEURST: Exhibit 32 is the Final Report of the San Francisco Internal Transmission System After AB 1 Technical Study.

And this is selected pages. It's not the entire report.

(Exhibit No. 32 was marked for identification.)

ALJ TERKEURST: Exhibit 33 is the Women's Energy Matters' Opening Comment on the Jefferson-Martin Transmission Project.

And I will attach to that the two pages that are

entitled "Barbara George Qualifications" rather than mark that as a separate exhibit.

(Exhibit No. 33 was marked for identification.)

ALJ TERKEURST: Exhibit 34 will be Women's Energy Matters' Rebuttal Comments on the Jefferson-Martin

Transmission Project.

(Exhibit No. 34 was marked for identification.)

ALJ TERKEURST: Ms. George also distributed pages from the Commission's Decision 03-12-060.

There is no need to mark that as an exhibit. The Commission has full ability to use its own decisions. So you may refer to it in cross-examination, but I won't mark it.

With that, have I got all the documents? I believe I did.

MS. GEORGE: I think so, yeah.

ALJ TERKEURST: You may proceed, Ms. George.

CROSS-EXAMINATION

BY MS. GEORGE:

Q Mr. Miller --

A Ms. George.

Q -- we have met in energy efficiency proceedings in the past, yes?

A Yes.

Q And you have been involved in the annual earnings assessment proceedings that measures energy efficiency from past programs as well as the new energy efficiency proceeding which is designing new programs; is that right?

A I have been a witness in AEAPs in the past.

Q Right. And that was to determine how much of a shareholders' incentives that PG&E was going to get from their energy efficiency programs?

That was the earnings assessment that was --

A Yes, that was a major -- that was a major focus of those proceedings.

Q And it was also about measurement, how to measure the program's accomplishment, right, how much energy savings that they got?

There were reports on how much energy was saved in those?

A There were reports. The how was typically dealt with in other forums prior to that, but --

Q Right. Well, there -- each year the programs were designed for the following year, and then they were measured

in the AEAP as what they had accomplished?

A There was a report out of what --

Q What actually happened.

A -- what had occurred.

Q Right. Would you agree with the statement that energy efficiency can be the least expensive way to produce energy?

A I think as a general proposition it can be a very low-cost way to produce -- to meet energy needs.

Q To meet energy needs, yeah, that would be a better way to say it.

Including no cost for conservation measures where people just save energy, like the Flex Your Power Program, the statewide energy efficiencies -- turning off the light switch, that doesn't cost anything, right? Or hanging clothes on a clothes line --

A Yeah, I'm not --

Q -- that's free, yeah?

A Well, it's, except for the advertisements, low cost certainly.

Q Except for the advertisements.

A But I -- okay.

Q Okay. And PG&E's advertisements, are they expensive?

A Well, I don't --

MR. RAUSHENBUSH: Vague and ambiguous as to the context of expensive.

THE WITNESS: Yeah, I was having trouble with what is expensive and --

MS. GEORGE: How much of the PG&E program budget would you say is spent on advertising every year?

A I don't know the exact number. Some advertising is done through a non-PG&E statewide entity, and I don't know the exact number across all advertising activities.

Q All right. In PG&E territory, there's -- how much is there to spend on all of the programs in -- energy efficiency programs, public-goods-charge-funded programs in 2003 and 2004?

A The number that I know is that there's authorized for electric programs 106 million approximately. To the extent that that varies from year to year depending on program history, I don't know the exact answer to your question.

Q So it's 106 million for electricity, and then there is other programs that say gas, right?

A That's accurate.

Q And that's another 20, 30 million?

A It's between 12 and 13, I believe.

Q Okay. And PG&E does -- had control of all of that funds -- all of those funds in the past, right, up until very recently?

MR. RAUSHENBUSH: Vague and ambiguous as to control in the context of the CPUC authorized program, and also beyond the scope of his direct testimony.

MS. GEORGE: Well, currently there are -- in the past, PG&E would design the programs with sometimes directives from the CPUC. So they weren't necessarily always the programs that PG&E decided to do themselves, but they had a fair amount of ability to control what happened within some certain parameters, wouldn't you say?

And there were no other entities until very recently who were given the program funds to design their -- the programs that they run.

MR. RAUSHENBUSH: Compound.

MS. GEORGE: Compound?

ALJ TERKEURST: Are you asking the witness?

MS. GEORGE: I'm sorry. I just trying to clarify the question.

Q Basically, one of the issues in the future energy efficiency proceeding is whether or not there can be independent nonutility programs who have their -- they design them, they make proposals. And PG&E now makes proposals, and those are considered along with other proposals; would you

say that's correct?

MR. RAUSHENBUSH: Beyond the scope of his direct testimony.

THE WITNESS: In that I haven't testified to anything around or towards those issues.

MS. GEORGE: Q And you don't know whether that's so or not?

A Well, I think the issues are addressed in another CPUC proceeding.

Q Well, I think that it has significance in terms of how much the -- you know, how much PG&E can say about what energy efficiency is going to be produced.

In the past, they could -- they had the responsibility and the control of the funds, and they could say, we're going to spend this much money and we are projecting this much energy efficiency. And then they came to the AEAP afterwards and said, we accomplished this much energy efficiency. So I think it is directly related.

You did testify in the needs assessment about how much energy efficiency was accomplished in the PG&E area; isn't that so?

THE WITNESS: Could we find the spot?

MR. RAUSHENBUSH: Objection.

MS. GEORGE: Yeah --

ALJ TERKEURST: You do need to tie your cross to his testimony.

MS. GEORGE: I have the needs testimony. This is what we're talking about right here.

Four, I believe you said that there were four megawatts a year that you know that PG&E typically saves about four megawatts a year in San Francisco. And that's on page 49.]

Seven megawatts annually in the project area. This is page 49. This is seven lines down; is that right?

WITNESS MILLER: A Hm-hmm.

MS. GEORGE: Q But in the future, and actually right now, there are other entities that are also saving energy in San Francisco and northern San Mateo County other than PG&E?

ALJ TERKEURST: Is that a question?

MS. GEORGE: I'm asking the witness, yeah.

WITNESS MILLER: I actually don't know if any of the current third-party programs have targeted that area or not and whether that represents additional or substitution of savings.

MS. GEORGE: So you don't know if there's any other savings in San Francisco going on, any other programs operating in San Francisco?

MR. RAUSHENBUSH: Offered by an entity other than PG&E?

MS. GEORGE: Right.

WITNESS MILLER: No, I don't.

MS. GEORGE: Q And this is the -- I'm sorry. I didn't catch what exhibit number you gave that.

ALJ TERKEURST: I am not marking Commission decisions as exhibits. You can just refer to the decision.

MS. GEORGE: This is the interim opinion adopting

funding for 2004 and '5 the solicitation for energy efficiency programs.

WITNESS MILLER: I have that.

MS. GEORGE: Q This was just mailed out on the 22nd of December.

And this is a decision that allocates funding to PG&E and to other entities to run the programs for the next two years; is that your understanding

WITNESS MILLER: A Yes.

Q So in other words, your 7 megawatts in the project area would be offered in this proceeding, the money would be authorized here, right?

MR. RAUSHENBUSH: Objection; vague and ambiguous.

They are two different things.

MS. GEORGE: I am just trying to establish that PG&E gets money for energy efficiency programs from the public goods charge fund, right?

WITNESS MILLER: That's correct.

Q And the decision on how that money is spent is made in this proceeding, and this is the decision for the upcoming two years of programs?

MR. RAUSHENBUSH: Vague and ambiguous. "This proceeding," I think she means the one to which --

MS. GEORGE: It's Rulemaking 01-08-028. And this Decision 03-12-060, 12-18, 2003.

Q This established -- this says who the winners are for energy efficiency programs statewide?

WITNESS MILLER: A My understanding is it selected --

in this decision the Commission selected the programs and activities to -- for which public goods charge funds would be spent over the next two years.

Q And PG&E programs are among those programs, yes?

A Yes.

Q And there are other programs that PG&E is not in charge of fully but you are administering -- PG&E gets five percent for doing some oversight on those other programs, but

other than that you have no ability to determine what they do with their money? You just --

MR. RAUSHENBUSH: Objection. Outside the scope of the direct testimony.

MS. GEORGE: Well, the direct testimony talks about how much the load reduction -- this says PG&E estimates the annual load reduction is approximately 7 megawatts. However, this is from historical data.

Q And when PG&E ran the programs in the past, you would have an ability to estimate that it would be the same as what you did in the past, right? Isn't that what you are saying here?

Is that the meaning of the sentence PG&E derives this estimate from historical data? I mean, right here, this particular line is talking about the San Francisco pilot project which you're doing with the City and County of San Francisco.

WITNESS MILLER: A The level of public goods charge funding has been essentially the same since mid 1990s. So when we looked at the -- to derive this historical estimate

we looked at data from PG&E activity over that time frame, and we came with this number. And to the extent that the

same amount of money is being allocated differently in the future, we will have to see.

Q The amount of money is the same. However, the types of programs changed after deregulation; is that right?

There was something called market transformation programs which did not have an emphasis on saving energy, all of them? There was a much greater ability to do information programs, hold seminars, that type of thing, rather than save a certain amount of megawatts because you installed a certain number of lights, right? There was an ability to just give seminars and that was allowed? It didn't have to be pegged to energy savings?

A It's true that there was a shift in emphasis. And to what extent that manifested itself in a significantly changed mix of programs we have to examine further.

Q There was a decision to reimpose more rigorous energy savings requirements, however, after the energy crisis, that Commissioner Lynch decided to go back to a more rigorous energy savings goals rather than the market transformation?

A I don't have reference to that here.

Q You don't have reference to that here.

Well, I'm talking about your historical load. Didn't the energy savings go down after deregulation?

A I would have to look at the actual figures. I don't have that in front of me.

Q Okay. So when you produced this testimony, you didn't look at the chart -- Judge Walwyn had asked for a chart to be put together which has the amounts of energy that was saved each year. And it did vary quite a lot. You didn't check that out for this testimony?

A No.

MR. RAUSHENBUSH: Your Honor, I don't have a copy of this chart that she is referencing. Could she provide it?

MS. GEORGE: I don't have it with me. I'm sorry. But Mr. Miller remembers that chart.

WITNESS MILLER: There have been lots of charts.

MS. GEORGE: Q There have been lots of charts. I can totally appreciate that.

Getting back to this decision, there are different criteria that the PUC put together that they measured in determining who was going to run what programs. They had different criteria, and they were weighted in terms of -- this is on page 7, this is criteria and process -- the general criteria is cost effectiveness long term annual energy savings; is that right? And one of those criteria on page 9 is to alleviate transmission constraints in an area identified by the California ISO?

WITNESS MILLER: A I see that on the page.

Q So that is one of the values that the Public Utilities Commission put forward as something that energy efficiency could -- you get points if you alleviate transmission, right? Your program would be more likely to be

selected if you can show that you are alleviating

transmission constraints? So it would be a positive, in other words?

A Suffice it to say --

MR. RAUSHENBUSH: Your Honor, the document speaks for itself as to the different criteria and the points. She has merged together a lot of different questions that had eventually an assumption that I think was not supported by what is in the document.

MS. GEORGE: I am not sure what the assumption is. I am just saying that transmission constraints is one criteria that the PUC uses to evaluate the programs.

Can we agree on that?

ALJ TERKEURST: Let me interject just a minute.

As I said earlier, we have full access to any Commission decisions. You don't need to establish what this decision says through a witness. You can quote this decision at will in your brief.

MS. GEORGE: Okay. Well, I was just asking Mr. Miller if he was aware of this.

WITNESS MILLER: I see it.

MS. GEORGE: Q And this decision also authorizes --

so there is basically two things now in this decision. One is public goods charge funds. And the other is procurement funds, that there will be two different pots of money that PG&E can use to run energy efficiency programs, yes? It authorizes -- this is -- if we can just establish this here, that page 19, these are a lot of cross-proceeding issues because the procurement proceeding authorized -- directed

Edison, PG&E and San Diego Gas and Electric to propose up to $245 million worth of energy efficiency programs for evaluation and adoption in this proceeding. And in this proceeding, in other words, in the new energy efficiency proceeding, the utilities proposed several types of programs to be funded at a two-year level. And PG&E proposed $75 million to spend over the next two years. It is right here on page 19.

MR. RAUSHENBUSH: Your Honor, there is no question pending, but is there a link to the Jefferson-Martin project, because --

MS. GEORGE: Yes, this is absolutely a link to the Jefferson-Martin project because I am establishing that there is an energy efficiency option that has been belittled and dismissed in Mr. Miller's testimony. So I just wanted to establish first of all what the funding is.

I think that when we look at how much energy efficiency can be done in this area, this is where my questions are going, and I will get there.

So may I proceed, please?

ALJ TERKEURST: Well, yes, but my concern is this is taking a lot of hearing time, establishing things that are in a Commission decision that you didn't need to take hearing time. And if you go through all of the exhibits that you've marked at this speed, you won't have time to.

So I really -- you need to focus your cross to get information into the record that you need efficiently.

MS. GEORGE: I did ask for 45 minutes to cross

Mr. Miller.

ALJ TERKEURST: Yes.

MS. GEORGE: So this is what I'm working on, trying to get there.

Q PG&E and San Francisco are doing a pilot project together. You mention that in your testimony here on page 48 and 49?

WITNESS MILLER: A Yes.

Q And that one of the purposes of that pilot is to improve reliability, and there is a suggestion that the

Hunter's Point power plant, that it would help close down the Hunter's Point power plant.

MR. RAUSHENBUSH: I don't see that in this testimony.

MS. GEORGE: It is not in his testimony, that's right.

Q It isn't in your testimony but that is in fact what the Commission, when they approved the pilot, the Commissioners were very moved by the idea of shutting down the Hunter's Point power plant. That was discussed the day that they made their decision.

MR. RAUSHENBUSH: Your Honor, I wasn't at that hearing. That is not a question to Mr. Miller. It seems that Ms. George is testifying.

MS. GEORGE: It is in the PG&E proposals. PG&E and SF made a proposal for this pilot project on December 9th, 2002. And that is part of the proposal.

Q How much energy is the pilot project supposed to save? $16.3 million dollars -- it is going to save 16 megawatts; is that correct? That's the -- it is in your

testimony somewhere.

WITNESS MILLER: A 16 megawatts.

Q Great.

MR. RAUSHENBUSH: Excuse me, your Honor. Misstates his prior testimony. Is she asking whether that's the goal,

or whether that is what Mr. Miller said, because that is not what Mr. Miller said. It is right in his testimony.

MS. GEORGE: Q You didn't say that it was a goal?

WITNESS MILLER: A On page 48, line 4, San Francisco PUC, San Francisco Energy Resource Plan has set a goal of 16 megawatts.

Q Okay.

Your Honor, I have to say that PG&E is slowing my testimony down considerably by all this quibbling. What is the problem with what I said? I just don't see it.

ALJ TERKEURST: You need to have an accurate representation of what he said.

MS. GEORGE: I said that they set a goal of reducing 16 megawatts of load. That is what I said. It is right there in the testimony.

ALJ TERKEURST: But I think you referred to that PG&E set a goal or something. It was not precise --

MS. GEORGE: I said that the pilot project that PG&E and San Francisco are both doing as a collaboration together, that they set a goal of reducing -- I'm sorry. I guess this does say San Francisco Electricity Resource Plan. And then PG&E and CCSF recognize that modifications, blah, blah, blah, were necessary to meet the needs and achieve the

San Francisco PUC goals. Therefore, they jointly decide the San Francisco pilot and submitted a project implementation plan to the CPUC which said they were going to save -- that they had a goal of 16 megawatts, and this is a collaborative project that you are doing with San Francisco.

WITNESS MILLER: A That is in my testimony on page 48.

MS. GEORGE: Q Yes. Thank you.

Now do you think that is the best you could do? Is it possible that they could get more than 16 megawatts? There is a variation in the amount of energy efficiency that you can get out of different measures, right? You can install light fixtures. You can put in a washing machine. There's different ways to save energy?

A There are different ways to save energy, yes.

Q And some are more cost effective than others? I mean some, you spend more money to save a megawatt than if you -- if you did a lot of compact fluorescent light bulbs like the pilot is proposing, then you can figure out based on the DEER database how much energy efficiency you are going to get from that? Isn't that how PG&E designs their programs? They look at the kinds of measures that they are going to do, they determine how much money they are going to spend, and then they add up what that measure is going to give them?

MR. RAUSHENBUSH: Compound.

WITNESS MILLER: A If we could back it up, maybe we can get somewhere.

The Commission has directed us to look at the DEER

database first in determining, predicting the forecast savings from energy measures that we would install.

MS. GEORGE: Q Right. And DEER is an acronym, right? And it is the --

A To the best of my recollection.

Q Deemed Energy Efficiency Measurement?

A It is Database of Energy Efficiency Resources, I believe. It is actually held by the California Energy Commission.

Q Okay. But PG&E consultants and/or staff work on each measure? They say the DEER database has in it, if you put in a refrigerator, if you put in lighting, that you can figure this unit will give you this much savings, isn't that what the DEER database, one of the things that the DEER database does? It has to do with measuring energy efficiency.

A I actually haven't used it, but it is my understanding that that is one of its uses.

Q Okay. And the studies -- there are studies that are done by consultants to prepare -- they will study how much energy was saved by a certain measure, and that gets established -- that is how the DEER database got put together was a compilation of a bunch of those studies. And that is being updated.

That's compound. Sorry.

Anyway, is that correct, there are consultants that work on these measures that put together the DEER database studies?

MR. RAUSHENBUSH: Calls for speculation and compound.

ALJ TERKEURST: He can testify to his knowledge. I certainly wouldn't want him to speculate.

WITNESS MILLER: I actually don't have direct knowledge of that, Barbara.

MS. GEORGE: Q You don't go to Cal MAC meetings.

A Not for several years.

Q Cal MAC is the California Measurement Advisory Council or something like that?

A Something like that.

Q And that is a group of energy measurement professionals who come together under the umbrella of the utilities to talk about these issues, about how to measure energy efficiency?

A Utilities participate. ORA can participate. Energy Division frequently participates. Others can participate.

Q Right. But PG&E -- but the utilities are the ones

who run Cal MAC? It is under their direction?

A Could you help me with direction?

Q They are the ones who send out the meeting notices. They put the agenda together. They determine what is going to be discussed.

A I think it's the case that they send out meeting notices. They probably send out a proposed agenda. As I said, I haven't been to one for some time. Agendas were adjusted as necessary to meet folks' interests and needs, depending on what those were.

Q Are you aware of the best practices study?

MR. RAUSHENBUSH: Beyond the scope of his direct testimony.

MS. GEORGE: I am establishing the question of how much energy savings can you get for a certain amount of expenditures. The best practices study is a study of different energy measures and how much energy saving they got and how much it costs to get them. And I believe your one million dollars per megawatt is what PG&E is getting on the pilot. However, the best practices study of 1998 said the rock bottom price would be near $100 and an average price would be in the neighborhood of $500.

ALJ TERKEURST: Ms. George, I hate to keep

interrupting, but you need to be aware that what you say on that side is acting as statement of counsel. It is not testimony. So you need to be asking questions of the witness.

MS. GEORGE: That is what I am asking him. I am asking him -- my question to Mr. Miller was can you get more than a megawatt of energy efficiency if you spend a million dollars? Is it possible that you could get 1-1/2 megawatts or 1.1 megawatts?

MR. RAUSHENBUSH: Calls for speculation.

ALJ TERKEURST: I instructed the witness I don't expect him to speculate.

MS. GEORGE: Q PG&E, on page 65 of your testimony, you dismissed the potential for getting a large amount of energy efficiency.

The demand forecast implicitly assumes a continuation of these programs at levels comparable to historical levels. So you are not anticipating an increase in energy efficiency in the project area?

WITNESS MILLER: Mr. Yeung will answer that.

WITNESS YEUNG: A I'm sorry. Can you point out the testimony to me.

Q Page 65: The demand forecast implicitly assumes a continuation of these programs at levels comparable to historical levels. And on the earlier page it said the historical level was about 7 megawatts -- or 4 megawatts. I'm sorry.

MR. RAUSHENBUSH: It is page 49.

MS. GEORGE: PG&E estimates the annual load reduction is approximately 7 megawatts. And down here it says the San Francisco PEP can be expected to result in a modest net increase to the order of 1 to 3 megawatts.

Q So would you say that 16 megawatts is included -- this is basically over two years. So it is 8 megawatts a year. So what you're saying is ordinarily you got 7 megawatts. You are going to add the pilot program, and it is going to bump it up a little bit to maybe 8, 9, 10 megawatts, is that --

WITNESS MILLER: A The way I said it, page 49, line 14, on balance the SF PEP can be expected to result in a modest net increase in total energy efficiency on the order of 1 to 3 megawatts within the City of San Francisco.

Q So that's all that you think is going to be

happening here.

I want to go back to the decision on the

procurement. You have got this $75 million of procurement money that's going to be available over the next two years. This is on top of the public goods charge money, right?

A It is in addition to those funds, yes.

Q And you have an opportunity to propose using that for alleviating transmission constraints, because that is one of the values that the PUC honors?

A In September, along with our other program proposals, we actually made a proposal about what would happen with these funds, as part of the process that led up to this decision.

Q Right, but you actually didn't propose specific programs in that? That was my understanding. For the 75 million, I believe that PG&E did not make specific programs; basically said, "Give us the money. We'll figure out what to do with it"?

A No. We said, "Here's a proposed budget. And here are the targets that we propose to achieve in order to reduce procurement costs."

Q Right. Okay. Now, there was a workshop on energy-efficiency potential in the new energy-efficiency proceeding in about -- in October. Is that right?

A I've heard of it. I did not participate.

Q You were not able to attend, but parties had filed comments on what the potential is for saving energy, and you've read those comments?

A I have not read those comments.

Q But you're aware that that was a Ruling; that the Judge asked for comments on the energy-efficiency potential, and your consultant, Xenergy, I believe -- is Xenergy your -- PG&E's measurement -- does -- PG&E has a measurement contractor who measures programs, right; measures the results of your programs for the AEAP, basically? They verify the measurements that PG&E has come up with?

MR. RAUSHENBUSH: Compound.

Just identify which question you're answering.

WITNESS MILLER: In terms of consultants that we use to perform measurement studies, we generally bid each project. And Xenergy -- now KEMA -- is one of the firms that has participated and done energy evaluation work for us.

MS. GEORGE: Q Right. And Quantum is another one, yes?

A Quantum is another one.

Q Right. And the energy-efficiency potential workshop was -- used a report that Xenergy had produced for PG&E on energy-efficiency potential? It was part -- it actually it wasn't produced for PG&E. It was a statewide study, but PG&E got to choose who -- who -- who ran that study. Is that correct?

MR. RAUSHENBUSH: Compound.

MS. GEORGE: Q Did PG&E hire the contractors for the energy-efficiency potential study, that statewide --

statewide study that was, you know, let out last February?

WITNESS MILLER: A Yes.

Q Yes? And Xenergy was the winner? Xenergy --

A I believe they had some subs, but Xenergy was the contractor.

Q Yeah, right. There -- in the energy-efficiency workshop itself -- you weren't there, but parties filed a lot of suggestions for how to save energy that PG&E may not have considered. Do you think it's possible -- I mean, maybe this is speculation, but there are many, many ways to save energy in the world, right? Do you think PG&E pursues all of them, or are there some that PG&E does not pursue? I mean, do you think -- I mean, it's like a huge -- there are all these possibilities, right? So PG&E couldn't possibly pursue them all every year?

A Let me just go back. In terms of the contracting that happened for the potential study that you referenced, it's my understanding there was a statewide committee that included -- a number of members from this CALMAC organization beyond just PG&E --

Q Mm-hm, mm-hm.

A -- were involved, including some nonutility members, but I don't know the specifics, but the question

that you've asked me is pretty vague. Could we --

Q Well, I'm asking you whether there may be energy-efficiency measures that PG&E doesn't use, but -- you're aware that there are measures that you don't use?

A Well, I think -- I think the whole process of proposing and -- and reviewing programs pretty thoroughly vets all the activities that are funded through the

public-goods charge. So PG&E also offers something called a "standard performance contract" for large -- larger sites, where essentially anyone that works for a larger customer can be brought in. So I am not -- I am not quite sure how to, you know, come to grips to answer your question.

Q Well, for instance, a solar water heater. Does PG&E offer solar water heaters?

A I don't know that we do.

Q I don't think you do right now. I mean, maybe you did once upon a time, but all I'm saying is that there is a, you know, vast array. And you choose a certain slice of it for your programs in a given year. Does that -- I mean, does that sound --

MR. RAUSHENBUSH: Asked and answered.

MS. GEORGE: Q -- like your experience?

On page 49, you say that it's very difficult to determine the impacts of the -- of the peak energy project.

WITNESS MILLER: A Could we get to a particular --

Q The degree to which activity within the SFPEP would alter the typical level of energy efficiency in the project area is very difficult to determine.

A Lines 8, 9, 10. Yes.

Q Yeah. One of the things that I've been getting at is there's a very large variety of energy-efficiency programs that can be done. There are a lot of variables that happen while you're doing an energy-efficiency program that may change the outcome -- could be different from what your goals are -- the outcome. I mean, you're saying that it's very

difficult to determine how much it will alter the typical level of energy efficiency. Is that the meaning of that statement?

MR. RAUSHENBUSH: Compound.

ALJ TERKEURST: Could you clarify your question?

WITNESS MILLER: Thank you.

MS. GEORGE: Q Well, you're saying that it's very difficult to determine. What is it that is difficult to determine?

WITNESS MILLER: A The issue that was addressed here

was the net impact of the pilot compared to our historical experience in that same area. And while we were able to gauge our previous experience averaged about 7 megawatts a year, we -- you know, to really know, you know, the difference in the increment, as I refer to it on this page on line 15, when we say that the net increase in total energy efficiency, you'd have -- essentially, you'd have to determine who -- the end of 2004, who had participated in pilot that would not -- would not have participated in the programs that PG&E perhaps would have been offering had the pilot not occurred.

Would a small business have participated in our express efficiency program? Or -- but rather, they found the pilot was what was available, so they participated in that; but in that case, perhaps there's no net gain, but perhaps there would be as part of the whole San Francisco Peak Energy Pilot Program. We did try and tailor activities to this particular area, so we think there will be some increase.

And our estimate of that is it's 1 to 3 megawatts.

Q So those are free riders -- what you were just talking about are people who are, in a sense, not free riders. People who participate in this pilot, but would not

have participated in the standard programs? That's -- is that what you were just saying?

A Yes. And I was saying that it -- given the -- given the absence of a great deal of information about that, it's difficult to determine, but this is our estimate.

Q Okay. And then there is a measurement of that, though, afterwards? That would be one of the things that your consultant -- your energy -- EM&V -- energy -- evaluation, measurement, and verification contractors -- they measure all of these different variables, right? So it's difficult to determine in advance, but after the fact, can it be determined? And is that what they're measuring: those types of things?

A After the fact, an estimate could be made. And I -- I don't know the exact EM&V plan for the San Francisco Energy Pilot. I don't know that we have proposed one yet ourselves in San Francisco.

Q The pilot program has just begun? Is that right?

A Well, it was in the -- in the process of beginning this fall. I don't know the exact --

Q Mm-hm.

A -- start date.

Q So you don't have a measurement plan in place, even though the project has already begun?

A Well, I think we've -- in our current program approval -- evaluation approval process, part of the conundrum is that until programs are picked, you don't know which ones you're going to be evaluating. So it becomes sort of difficult to plan in advance. Though the Commission's choice -- in this particular case, there were -- you know, a proposal was made. There was some concerns on the part of the Commission. Some adjustments were made. I think the form of the program wasn't final until quite late in 2003.

Q That's right. So it was almost a year that it took to get -- to get this up and running, because there were questions that came up, partly from Women's Energy Matters, and their consultant -- our consultant, SESCO?

A I don't -- it's not in my testimony what the causes were around the timing of this particular program.

Q Right. Well, what I'm trying to get at is the measurement; that this is going to be measured ultimately, but what you have testified appears to be that the measurement is very difficult. There are a lot of variables.

A What I'm trying to testify to is that at this point in time, the separation of who -- who'll participate in the San Francisco Energy Pilot and how much will be saved, as opposed to who would have participated in PG&E's other programs, is very difficult to guess or anticipate. And we're looking forward into that -- with this program over the next year or so.

Q Would you say that energy efficiency is a more complicated field than just producing energy with a power

plant? There are more variables?

MR. RAUSHENBUSH: Overbroad, incomplete, and calls for speculation.

ALJ TERKEURST: I agree.

MS. GEORGE: Okay.

ALJ TERKEURST: And we're --

MS. GEORGE: I'll wrap it up in about three minutes.

ALJ TERKEURST: All right.

MS. GEORGE: Okay.

Q The $75 million that you have for the procurement --

WITNESS MILLER: A Mm-hm.

Q If you spent -- is it possible to spend that all in one place? There's no -- there's no -- there's nothing to prevent it from being spent all in one place, is there?

MR. RAUSHENBUSH: Vague and ambiguous, and calls for speculation.

MS. GEORGE: Q Well, you know the documents, and I know the documents. And there is nothing that forbids that money being spent in one place, is my understanding. You would not agree with that?

MR. RAUSHENBUSH: Vague and ambiguous as to "all in one place."

MS. GEORGE: In the project area. "In the project area," is what I meant to say.

Q Theoretically, you could spend $75 million and get 75 megawatts of energy savings. Is that right?

MR. RAUSHENBUSH: Calls for speculation.

ALJ TERKEURST: You can set it up as a hypothetical.

MS. GEORGE: That's what I said: "Theoretically."

ALJ TERKEURST: He doesn't need to answer. Just set it up as a hypothetical.

MS. GEORGE: Q Theoretically, you could spend 75 million and get 75 megawatts of energy based on the amount that you saying you're getting in the pilot project: $1 million a megawatt?

WITNESS MILLER: A I don't think so, actually. First of all, we haven't talked about a time frame. And secondly, it isn't clear without -- without looking at what actually would be done whether that would be feasible.

Q And you have not looked at that?

A We have not looked at that.

Q All right. There was a retreat, and energy-efficiency measurement contractors got together with utility people in the summer of 2002. Is that correct?

MR. RAUSHENBUSH: Beyond the scope of this direct

examination.

MS. GEORGE: Well, Women's Energy Matters filed a motion forbidding utilities from using the same consultants to prepare studies who had been doing their energy-efficiency measurements, because we considered it a conflict of interests, on the order of Enron and Andersen.

WITNESS MILLER: I don't have any knowledge of this.

MS. GEORGE: Q Okay. Well, I'd just like to point out that you do use the same consultant, Xenergy, to do your energy measurements, which make you money in the energy -- in

the AEAP, and those same parties do studies for you and for the Commission which PG&E had the opportunity to hire.

MR. RAUSHENBUSH: If that's meant as a question, it's argumentative and certainly beyond the scope of this direct examination -- direct testimony.

ALJ TERKEURST: Are you asking him whether he has knowledge of this?

MS. GEORGE: Yes.

Q Do you have knowledge of that?

WITNESS MILLER: A Could you repeat, please?

Q I'm not sure if I can repeat it.

A I can't remember it completely.

Q Basically, you had the same -- you use Xenergy, for one example.

A Okay.

Q Quantum, for another example. They do measurement studies for PG&E. They are your EM&V contractors for different parts of your programs. And they are also hired as --

A I -- yes.

Q Okay. Yes. They are also hired to do studies for you -- in other words, consulting work for you -- in the same way that Andersen was hired by Enron to do studies for them?

ALJ TERKEURST: Let's take out the reference to Andersen and Enron. That is outside the scope.

MS. GEORGE: Q I believe that Enron is an energy company that's very much involved in this area, and may have had something to do with the blackouts, so I think Enron

actually is fairly important. And I think that the question of measurement of -- you know, if you -- it seems to me to be a conflict with a contractor or consultant who is measuring your programs and getting you money based on the shareholders' incentives, and is also being hired by you to do studies which show how much energy-efficiency potential there is, how much energy you can get from a particular

measure. It would seem to me that that's a conflict of interest for the -- for you and your --

ALJ TERKEURST: Ms. George, you can make arguments like that in your brief. I don't think that's a question for this witness.

MS. GEORGE: All right.

Q Then I'll just have one last question, which is: do you think that utilities have any conflict of interest with energy efficiency? Isn't it your -- isn't it PG&E's business to sell electricity?

MR. RAUSHENBUSH: Beyond the scope of his direct testimony.

ALJ TERKEURST: You've also made it compound. One question at a time.

MS. GEORGE: All right. I'll go back.

Q Energy efficiency saves energy. In other words, you don't -- PG&E doesn't sell as much electricity if they save energy? Is that correct?

WITNESS MILLER: A All right. I know we're going down --

Q You know where we're going. I mean, that's -- so

utilities could be said to have a conflict of interests with

energy efficiency. And that's why shareholders' incentives were set up. Isn't that correct?

MR. RAUSHENBUSH: Compound.

ALJ TERKEURST: Yeah, it's compound. One at a time.

MS. GEORGE: Okay. One thing at a time.

Q Utilities -- do they have a conflict of interest with energy efficiency?

WITNESS MILLER: A I do not believe so.

Q Do you think other people might believe so?

MR. RAUSHENBUSH: Calls for speculation.

WITNESS MILLER: I have no control over what others believe.

MS. GEORGE: Q Okay. All righty.

WITNESS MILLER: A I also believe this will be addressed in the efficiency rulemaking, so --

Q Well, I just wanted to establish that energy efficiency has not been given -- has not been proposed as a way to achieve a large amount of energy savings. In other words, that would offset or perhaps even eliminate the need for Jefferson-Martin. Would you say that that's true? It has not been -- energy efficiency was not proposed? The transmission line was proposed instead?

MR. RAUSHENBUSH: Compound.

MS. GEORGE: And I just realize that I forgot to put -- no. Never mind. That's this afternoon.

WITNESS MILLER: So the first question is?

MS. GEORGE: Q The question is whether or not PG&E

ever proposed to do massive energy-efficiency programs in the project area rather than a transmission line.

A Not to my knowledge in the time frame that's being considered.

Q But the $75 million can be -- is for the next two years. Is that correct?

A It's --

Q It's 2004/2005?

A It's actually 25 in 2004, and 15 -- 25 in 2004, and 50 in 2005.

Q That's what I meant. It's spread over two years.

A And it's in that time frame that the company has to achieve its procurement goals that it set.

Q Right. And then the energy-efficiency public-goods-charge money is a little over $100 million every year? And part of that money is spent around here?

ALJ TERKEURST: Okay. It's compound. And you need to wrap up.

MS. GEORGE: Q Well, I mean, we talked about that in the beginning. You said it was 100 million -- it was over $100 million this year. 105 is what you said.

WITNESS MILLER: A Well, that's -- as part of the -- how do I describe this? It's that in offering these programs -- eligible state service territory wide. So to the extent that they are next to the -- in San Francisco or Oakland or, you know, other parts of the service territory, they're

eligible to participate.

Q Right, but the 16 million was set aside just for

San Francisco?

A It was a special pilot to basically explore how this kind of activity might work.

Q So it is possible to get more money for a particular area, and it was justified based on the reliability concerns of San Francisco?

A Well, I'm --

MR. RAUSHENBUSH: Compound, and calls for speculation as to why the Commission approved the expenditure of 16 million.

ALJ TERKEURST: I agree.

MS. GEORGE: I believe that was in PG&E's proposal, that it was to -- you know, to bolster the reliability in San Francisco.

WITNESS MILLER: I actually didn't -- I am not familiar with the specific language in PG&E's proposal, and whether that was included or not. So --

MS. GEORGE: Q Recognize that modifications to PG&E's existing energy-efficiency programs were necessary to meet the needs of San Francisco. What were those needs?

ALJ TERKEURST: Ms. George, you've got about one minute left. Okay?

MS. GEORGE: Well, I -- I'm sorry, your Honor. I just feel that they have objected to every single question that I've answered [sic], and then eventually he gets the answers wrong, so --

ALJ TERKEURST: You need to wrap up.

MS. GEORGE: Well, that's -- I can -- I can wrap it

up.

Q If you could answer that last question, I'd appreciate it it.

WITNESS MILLER: A So I was not involved in discussions with San Francisco in terms of the development.

Q I said: what does that mean when it says that it was to meet San Francisco's need -- necessary to meet the needs of San Francisco?

A Well, it's my understanding we entered into negotiations/discussions with them about the form of this, in terms of proposing it. To what extent they had needs that they wanted met, I don't know the specific details; but from our side, the effort was how to -- you know, how to adapt the programs that we have so that they could, you know, in essence, align with San Francisco's, you know, direction. So

our effort was in terms of how to tailor these programs for this specific part of the service territory.

Q Which -- and to close down Hunters Point Power Plant was one of the needs to San Francisco. And to -- and for the reliability of San Francisco, this is what was in the proposal, and in the discussions at the Commission based on the proposal that PG&E made?

MR. RAUSHENBUSH: Calls for speculation, and compound.

MS. GEORGE: It isn't speculation. That's a fact. I'm sorry I don't have that document with me right now.

Q But that's why, if you're not aware of that; but you did say that it was to meet the needs of San Francisco, so that makes it seem like San Francisco had particular

needs. And we know here that's what we're here for, is to meet the needs of San Francisco. That's what Jefferson-Martin is partly about, isn't it? -- is to meet the reliability needs for San Francisco?

MR. RAUSHENBUSH: Is that the question?

MS. GEORGE: Well, I'm just saying the reliability for San Francisco is the issue in this proceeding; was also the issue for the pilot project. That's also why the pilot project was approved. And in order to close down Hunters

Point Power Plant was one of the things that was -- that was named in that decision -- in that -- those proposals, like this proposal.

Q I am just asking you for the -- you know, the Jefferson-Martin proposal, the San Francisco pilot proposal had that in common, that they were both -- they both discussed the need for reliability in San Francisco, and the need to close down Hunters Point Power Plant?

MR. RAUSHENBUSH: I'll object as compound, argumentative, and calling for speculation as to the Commission's reasoning for the --

MS. GEORGE: No, I'm not saying the Commission's reasoning. I'm saying this is what's in PG&E's proposal. Nothing to do with the Commission's reasoning.

WITNESS MILLER: A Before I could answer that, I'd have to go back and review those documents. I assume they're part of a public process.

MS. GEORGE: Q Maybe you could get back to me on that, then?

WITNESS MILLER: A Well --

ALJ TERKEURST: No.

WITNESS MILLER: They're in the public record.

ALJ TERKEURST: He doesn't know. He hasn't reviewed

the documents. He doesn't know.

MS. GEORGE: Thanks. Okay. That's it.

ALJ TERKEURST: Okay. Any additional cross for this witness?

Any redirect?

MR. BOYD: Is this recross? Is that what this is?

ALJ TERKEURST: Redirect.

MR. BOYD: Redirect. Okay.

MR. RAUSHENBUSH: We have no redirect for Mr. Miller.

ALJ TERKEURST: All right. You are excused, then, Mr. Miller.

MR. BOYD: I have a question.

ALJ TERKEURST: There's no redirect. There's no recross.

MR. BOYD: That's what I was asking.

ALJ TERKEURST: Okay. You are excused, Mr. Miller.

WITNESS MILLER: Thank you.

ALJ TERKEURST: We'll take a ten-minute break, and then resume with Mr. Yeung after the break.

(Recess taken)

ALJ TERKEURST: Please come to order.

We're ready for ORA's questions of Mr. Yeung, please.

MS. PELEO: Thank you, your Honor.

CROSS-EXAMINATION

BY MS. PELEO:

Q Good afternoon, Mr. Yeung.

A Good afternoon.

Q If you could please turn to Exhibit 4, page 16 starting at line 27. Let me know when you are there, please.

A Page 16?

Q Yes.

A Line 27?

Q Right.

A I have it.

Q Starting on that line, you discuss Decision 02-12-066, the Commission's Valley-Rainbow decision. You cite the fact that the Commission used a five-year planning horizon for this particular case. And you state on page 17, starting at line 6, that if the same five year standard was applied in this case, the Jefferson-Martin Project is needed well within the five-year planning horizon; isn't that correct?

A That's correct.

Q Does PG&E adopt a five-year planning horizon for the Jefferson-Martin Project?

A No.

Q Do you adopt any planning horizon for Jefferson-Martin?

A We do not adopt a specific planning horizon for the project.

As stated in my direct testimony on Chapter 3,

which starts on page 15, in here we talk about the appropriate planning horizon can easily exceed ten years or more for a project like this. And also that in our long-term studies, we typically use a ten-year planning horizon.

Q Should the Commission then adopt the ten-year planning horizon in deciding on this case?

A I don't have a strong opinion on it one way or the other, but I think that a minimum five-year planning horizon must be adopted.

Q Minimum five years?

A Minimum five years.

Q So if we adopted that here, that would be -- that would have a start date of October 2003, which is when you submitted your testimony?

A Yes.

Q Still in Exhibit 4, at page 37, starting at line 7, and also in your rebuttal, Exhibit 15, at page 11, you discuss the City and County of San Francisco's turbines and the issues surrounding their siting and regulatory approval with the California Energy Commission; isn't that correct?

A I have the first reference, but what is the second reference again?

Q Oh, rebuttal. It's Exhibit 15, page 11, is the second reference?

A Yes, I have the pages.

Q Okay. And, in particular, you discuss the public opposition to the siting of the turbines; isn't that correct?

A That's correct.

Q In your opinion, is the fact that there may be public opposition to a generation or transmission project reason enough for a project proponent to not attempt to gain the necessary regulatory approvals?

MR. RAUSHENBUSH: Vague and ambiguous.

ALJ TERKEURST: I'll allow the question.

THE WITNESS: Can you repeat the question?

MS. PELEO: Q Sure.

In your opinion, does the fact that there may be public opposition to a project, a generation or transmission project, reason enough for a project proponent, whether it's PG&E or some other entity, to not attempt to gain the necessary regulatory approvals?

MR. RAUSHENBUSH: Vague and ambiguous. Approvals of the transmission project or of the power project?

MS. PELEO: Approval of the project through the

approving authority.

ALJ TERKEURST: I think it's broader than just transmission.

MR. RAUSHENBUSH: But what I'm not understanding is here there is public opposition to a city's project, and she's asking him whether we should be seeking approvals -- whether that's enough for us to stop seeking approvals?

ALJ TERKEURST: I'm assuming that the question was referring to a single project, not tying it from City and County of San Francisco to Jefferson-Martin.

Am I correct?

MS. PELEO: That's right.

MR. RAUSHENBUSH: Okay.

THE WITNESS: Well, if you're asking me given the -- given the public opposition to the city's generation project, would the city apply for an application for certification for its project? Is that what you're asking me?]

MS. PELEO: Q I'm asking would any -- you discuss at length here the public opposition to the City's seeking regulatory approval for its turbines. My question was, since you were discussing that, I wanted to know what your opinion was of whether the fact that there may be public opposition to a particular project, would that be reason for PG&E, for

example, to not attempt to get approval for that project?

A I'm sorry. I still don't quite understand the question. If you are asking me that would PG&E file an application for a transmission project such as Jefferson-Martin project -- and obviously we did, we did file an application with the Commission --

Q Even though there was public opposition to it, correct?

A Even though there was public opposition to it.

Q So the fact that -- excuse me?

A Yes, we did file for an application.

Q So the fact that there was public opposition to it did not stop PG&E -- was not the factor in PG&E's decision whether to file or seek approval of the project; isn't that correct?

A Again, we did file for an application.

Q And there was public opposition to the application or siting? There is?

A There is now, as I know it.

Q And that hasn't changed PG&E's mind about seeking approval for the Jefferson-Martin project, correct, because you're still here?

A Yes, we're still here. And again, the application was filed in -- if I remember it correctly -- the application was filed in September, 2002, more than a year ago.

Q Is PG&E -- we're back to the turbines now -- is PG&E cooperating with the City and County of San Francisco in its efforts to site the turbines?

MR. RAUSHENBUSH: Vague and ambiguous as to cooperating.

MS. PELEO: Q Does PG&E have a position on CCSF's efforts to site the turbines?

A Yes, we do have a position.

Q What's that position?

A That position was articulated in a letter dated April 23rd, 2003, to Mr. Terry Winter of the ISO. In there we said PG&E has no preference regarding the location of new generation in San Francisco and northern San Mateo County. The proposal to construct generation resources available, we recognize this decision falls within the sole purview of those wishing to site new generation. It is appropriate regulatory agencies.

Q So you wouldn't call that actively supporting the CCF turbine project or siting effort?

A I am not quite sure what you mean by actively

supporting.

Q Your first sentence that you read from that letter was something like PG&E takes no position.

A We have no preference.

Q So that's neither actively supporting nor not supporting?

A If that is how you are defining it, yes.

Q If it chose to, could PG&E either actively support or voice a preference contrary to what that letter says to the CCSF siting and gaining approval for the turbines?

A What is the question again?

Q If it chose to, could PG&E voice a preference for a position regarding the CCSF siting and gaining approval for the turbines?

A Well, we decided not to. And if we decided to voice a preference, we can always do that. But we decided not to.

Q And why hasn't PG&E voiced a preference either actively supporting the turbines or not supporting the turbines?

A The main reason being that the decision is not with PG&E. The decision is with the parties that are proposing new generation and also the corresponding regulatory agencies that would have to be involved in granting such an approval.

Q Isn't the decision to support something PG&E's decision to make?

MR. RAUSHENBUSH: Argumentative.

MS. PELEO: I am asking who makes the decision -- my question was why hasn't PG&E voiced a preference or a position on CCSF.

MR. RAUSHENBUSH: That is what he just answered. Asked and answered.

MS. PELEO: No. He answered it's not up to PG&E to essentially voice a preference on the project. That was the answer.

ALJ TERKEURST: I think the question was pretty much the same.

MS. PELEO: The response was it is not up to PG&E to approve the project, and that was an answer to my question why hasn't PG&E voiced a preference or position on the turbines.

ALJ TERKEURST: Then didn't you ask the question again?

MS. PELEO: No. I was trying to remind him what the question was. And I asked wasn't it -- isn't it PG&E's decision what position it takes on a particular project or event.

MR. RAUSHENBUSH: That is not my recollection of the question or answer.

ALJ TERKEURST: Ask a question and we will take it from there.

MS. PELEO: All right.

Q Still in Exhibit 4, at page 38, starting at line 14, you state that pursuant to prudent transmission planning

principles, PG&E excludes the CCSF turbines from supply forecasts for the Jefferson-Martin project's planning horizon. Do you see that?

A Yes, I do.

Q Assuming that the turbines were included in PG&E's supply forecast to come on line by, say, 2006, would the Jefferson-Martin project be needed by 2006?

A Well first of all, I cannot agree to the assumption that the CCSF turbines would be constructed and in operation by 2006.

Q Why not?]

A I believe I answered that question in my direct testimony on -- starting from page 36 through 38.

ALJ TERKEURST: Well, I think the question was a hypothetical one, though. If you included it, would your studies show that Jefferson-Martin would be needed, aside from the question of whether you think it's wise to include it, right?

MS. PELEO: Right.

WITNESS YEUNG: If you turn to page 2 of my direct

testimony, on Figure 1-1, again, assuming that the CCSF trend models are operational by 2006, if one's just looking at the year 2006, and assuming that the other assumptions that were taken in this analysis remain to be true, then for the year 2006, with the four UCTs from CCSF, there will be enough capacity to meet planning requirements for the year 2006.

MS. PELEO: Q Assuming a five-year planning horizon starting in October 2003, as we talked about earlier, would

it be prudent to include both the Jefferson-Martin Project and the turbines?

A No, it would not be prudent to assume the turbines to be in place within that time frame.

Q Along with Jefferson-Martin? That was the hypothetical I posed.

A And I'm sorry. What is the question again?

Q The question was: assuming a five-year planning horizon starting in October of 2003, would it be prudent to include both Jefferson-Martin and the City turbines?

A Well, I believe my answer to the turbine was no.

Q Oh.

A And my answer to the question on Jefferson-Martin Transmission Project -- I believe that is an issue for this

proceeding. In the analysis that we have done, we actually looked at with or without the proposed transmission project.

Q The question was, though -- the hypothetical was: if both were included, would you think that was prudent?

A And my answer still is no.

Q Okay. In response to some questions from Mr. Boyd earlier, I believe you said something to the effect that if Jefferson-Martin was built, it would meet the applicable grid planning standards. Do you remember that testimony?

A Yes.

Q So that means that Jefferson-Martin alone would meet the reliability need in the project area. Is that correct?

A Right.

MR. RAUSHENBUSH: Vague and ambiguous as to time. In 2006, or forever?

MS. PELEO: In 2006, when it's built.

WITNESS YEUNG: I believe the question was addressing the year 2006. And the answer was yes for the year 2006.

MS. PELEO: Q Okay. Here's another hypothetical. Assuming both the Jefferson-Martin Project and the CCSF turbines did come on line within the five-year planning horizon, do you believe that the electric system for the

project area would be overbuilt, from a reliability perspective?

A I am not quite sure what you mean by "overbuilt."

Q You said earlier that Jefferson-Martin alone would meet the reliability need in the project area, correct?

A That's correct.

Q So assuming Jefferson-Martin's built, and assuming the CCSF turbines come on line, would you agree that the supply there would be more than what was needed for the area, reliability wise -- more than the reliability need?

A If I understand your question correctly, you're asking me if both the transmission project, which is Jefferson-Martin, and the four new CGs are constructed, would the system be capable to be planning requirements for the year 2006. The obvious answer is yes, because, as I stated before, that even with Jefferson-Martin alone, the answer is yes for the year 2006.

Q If that was the case, do you believe that would be consistent with prudent transmission planning principles?

A That word is including the --

Q If both those projects came on line within -- by 2006.

A Yes.

Q On page 85 in Exhibit 4, you discuss PG&E's plan of action if Jefferson-Martin is not built. Isn't that correct?

A Yes.

Q And if I read your testimony correctly, the plan is essentially PG&E will take the steps necessary to keep Hunters Point Power Plant operating if the Jefferson-Martin Project is not approved and that's not built. Is that a correct summary?

A Not entirely.

Q Please explain.

A Yes. You are correct that if Jefferson-Martin Project is not built, it's -- it is expected that the Cal ISO would require PG&E to delay shutdown of Hunters Point Power Plant, but the difference is that we also expect Hunters Point Power Plant to continue rerunning under minor contract.

Q Right. If we don't receive a CPCN for Jefferson-Martin?

A That's correct.

Q And therefore, PG&E would have to work to keep Hunters Point Power Plant operating then?

A And again, that is if the Cal ISO requires PG&E to do so.

Q Okay. Is it your testimony, then, that in

determining the need for Jefferson-Martin, the need to replace the power currently provided by Hunters Point is what drives the need?

A Not exactly. It's very -- we believe that Hunters Point Power Plant will be retired. And we are looking at the end of 2005 as the most reasonable expected date. So the proposed Jefferson-Martin transmission planning project -- transmission project is to provide the needed capacity to serve this area -- the project area -- in 2006 and beyond.

Q Is it correct to say that Jefferson-Martin is PG&E's proposed or preferred solution to replacing the power currently provided by Hunters Point?

A No. It is PG&E's preferred alternative to provide the capacity to meet all planning requirements in this project area.

MS. PELEO: Should we stop now?

ALJ TERKEURST: Are you at a good breaking point?

MS. PELEO: Yes. Thank you.

ALJ TERKEURST: We will be adjourned until 9:00 tomorrow morning.]

(Whereupon, at the hour of 3:32 p.m., this matter having been continued to 9:00 a.m., January 13, 2004, at San Francisco, California, the Commission then adjourned.)

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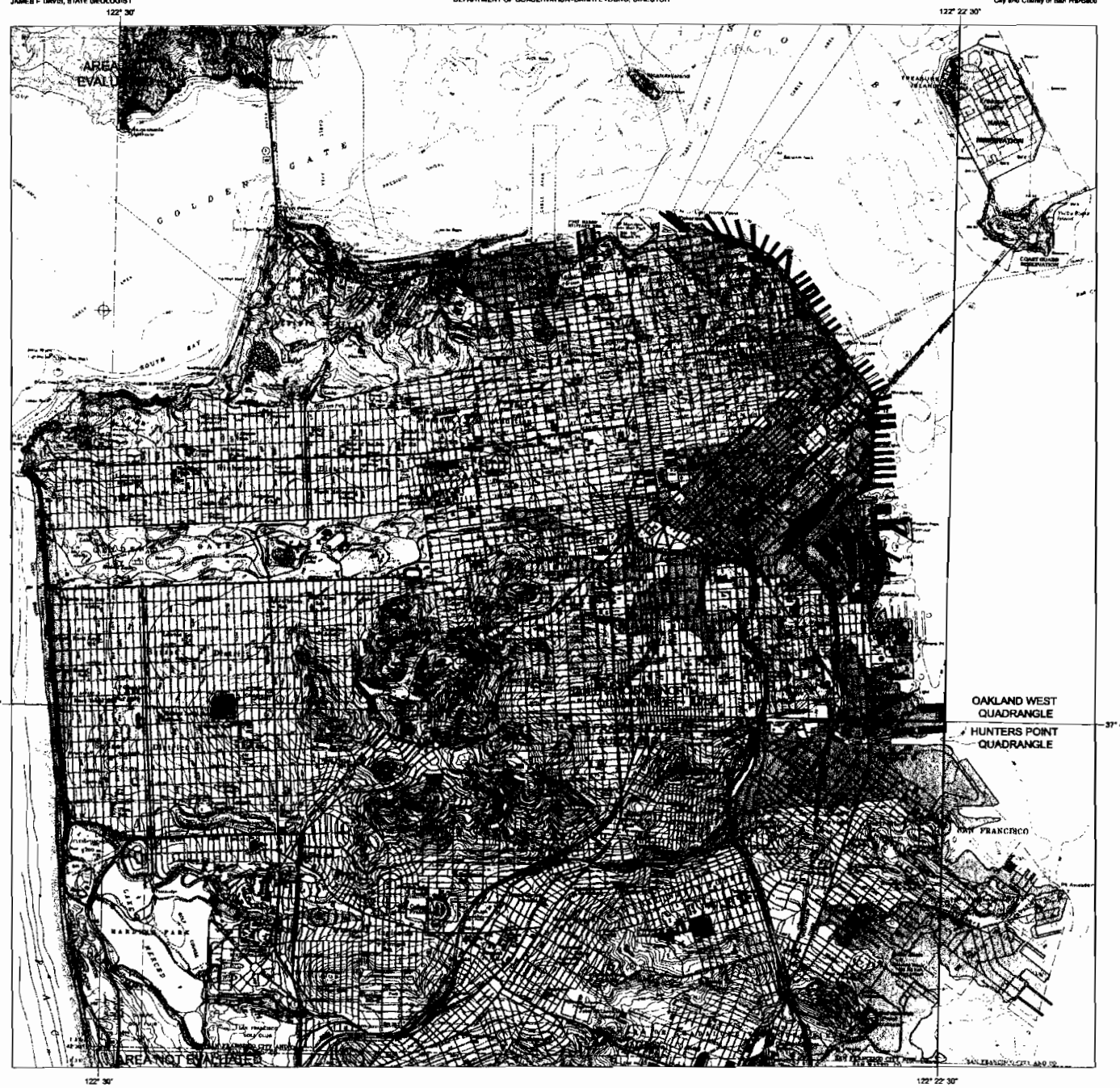
DIVISION OF MINES AND GEOLOGY
JAMES F. DAVIS, STATE GEOLOGIST

STATE OF CALIFORNIA–GRAY DAVIS, GOVERNOR
THE RESOURCES AGENCY–MARY D. NICHOLS, SECRETARY
DEPARTMENT OF CONSERVATION–DARRYL YOUNG, DIRECTOR

SEISMIC HAZARD ZONES
City and County of San Francisco



Base Map prepared by U.S. Geological Survey, various dates

PURPOSE OF MAP

This map will assist cities and counties in fulfilling their responsibilities for protecting the public safety from the effects of earthquake-triggered ground failure as required by the Seismic Hazards Mapping Act (Public Resources Code Sections 2690-2699.6).

For information regarding the scope and recommended methods to be used in conducting the required site investigations, see CMG Special Publication 117, Guidelines for Evaluating and Mitigating Seismic Hazards in California.

For a general description of the Seismic Hazards Mapping Program, the Seismic Hazards Mapping Act and regulations, and related information, please refer to the draft User's Guide (site: http://www.consrv.ca.gov/dmg/shezp/shezpguide).

Production of this map was funded by the Federal Emergency Management Agency's Hazard Mitigation Program and the Department of Conservation in cooperation with the Governor's Office of Emergency Services.

IMPORTANT - PLEASE NOTE

1) This map may not show all areas that have the potential for liquefaction, landsliding, strong earthquake ground shaking or other earthquake and geologic hazards. Also, a single earthquake capable of causing liquefaction or triggering landslide failure will not uniformly affect the entire area zoned.

2) Liquefaction zones may also contain areas susceptible to the effects of earthquake-induced landslides. This situation typically exists at or near the toe of existing landslides, downslope from rocktall or debris flow source areas, or adjacent to steep stream banks.

3) This map does not show Alquist-Priolo earthquake fault zones. If any that may exist in this area. Please refer to the latest official map of earthquake fault zones by maps/zones and other actions that are required by the Alquist-Priolo Earthquake Fault Zoning Act. For more information on this subject and an index to available maps, see CMG Special Publication 42.

4) Landslide zones on this map were determined, in part, by adopting methods originally developed by the U.S. Geological Survey (USGS). Landslide hazard maps prepared by the USGS typically use supervised approaches to assess earthquake-induced and other types of landslide hazards. Although aspects of these new methodologies may be incorporated in future CMG seismic hazard zone maps, USGS maps should not be used as substitutes for Official SEISMIC HAZARD ZONES maps.

5) U.S. Geological Survey base map standards provide that 90 percent of cultural features be located within 40 feet (horizontal accuracy) at the scale of this map. The identification and location of liquefaction and earthquake-induced landslide zones are based on available data. However, the quality of data used is varied. The zone boundaries depicted have been drawn as accurately as possible at this scale. Zone boundaries reflect digital topographic data that may differ slightly from the shorelines shown on the base map.

6) Information on this map is not sufficient to serve as a substitute for the geologic and geotechnical site investigations required under Chapters 7.5 and 7.8 of Division 2 of the Public Resources Code.

7) DISCLAIMER: The State of California and the Department of Conservation make no representations or warranties regarding the accuracy of the data from which these maps were derived. Neither the State nor the Department shall be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of this map.

SCALE 1:24,000

STATE OF CALIFORNIA
SEISMIC HAZARD ZONES

Delineated in compliance with
Chapter 7.8, Division 2 of the California Public Resources Code
(Seismic Hazards Mapping Act)

CITY AND COUNTY OF SAN FRANCISCO

OFFICIAL MAP

Released: November 17, 2001

STATE GEOLOGIST

MAP EXPLANATION

Zones of Required Investigation:

Liquefaction

Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Earthquake-Induced Landslides

Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

DATA AND METHODOLOGY USED TO DEVELOP THIS MAP ARE PRESENTED IN THE FOLLOWING:

Seismic Hazard Investigation of the City and County of San Francisco, California: California Division of Mines and Geology, Open-File Report 2000-008.

For additional information on seismic hazards in this map area, the rationale used for zoning, and additional reference consulted, refer to CMG's World Wide Web site (http://www.consrv.ca.gov/dmg/).

BILL POWERS, P.E.

PROFESSIONAL HISTORY

Powers Engineering, San Diego, CA 1994-
ENSR Consulting and Engineering, Camarillo, CA 1989-93
Naval Energy and Environmental Support Activity, Port Hueneme, CA 1982-87
U.S. Environmental Protection Agency, Research Triangle Park, NC 1980-81

EDUCATION

Master of Public Health – Environmental Sciences, University of North Carolina
Bachelor of Science – Mechanical Engineering, Duke University

PROFESSIONAL AFFILIATIONS

Registered Professional Mechanical Engineer, California (Certificate M24518)
American Society of Mechanical Engineers
International Gas Turbine Institute
San Diego County Air Pollution Control District Hearing Board

TECHNICAL SPECIALTIES

Twenty-two years of experience in:

- Power plant air emission control/water conservation assessments
- Combustion equipment permitting, testing and monitoring
- Air pollution control equipment retrofit design/performance testing
- Air emissions testing/criteria and hazardous air pollutants
- Petroleum refinery emission inventory development
- Oil and gas production emission inventory development
- Latin America environmental project experience

POWER PLANT AIR EMISSION CONTROL/WATER CONSERVATION ASSESSMENTS

Utility Boiler – Assessment of Air Cooling and Integrated Gasification/Combined Cycle for Proposed 500 MW Coal-Fired Plant. Provided expert testimony on the performance of air-cooling and IGCC relative to the conventional closed-cycle wet cooled, supercritical pulverized coal boiler proposed by the applicant. Steam Pro™ coal-fired power plant design software was used to model the proposed plant and evaluate the impacts on performance of air cooling and plume-abated wet cooling. Results indicated that a conservatively designed air-cooled condenser could maintain rated power output at the design ambient temperature of 90 °F. The IGCC comparative analysis indicated that unit reliability comparable to a conventional pulverized coal unit could be achieved by including a spare gasifier in the IGCC design, and that the slightly higher capital cost of IGCC was offset by greater thermal efficiency and reduced water demand and air emissions.

Utility Boiler – Assessment of Closed-Cycle Cooling Retrofit Cost for 1,200 MW Coal-Fired Plant. Prepared an assessment of the cost and feasibility of a closed-cycle wet tower retrofit for the 1,200 MW Roseton Generating Station. Determined that the cost to retrofit the Roseton plant with plume-abated closed-cycle wet cooling was well established based on cooling tower retrofit studies performed by the original owner (Central Hudson Gas & Electric Corp.) and subsequent regulatory agency critique of the cost estimate. Also etermined that elimination of redundant and/or excessive budgetary line items in owners cost estimate brings the closed-cycle retrofit in line with expected costs for comparable new or retrofit plume-abated cooling tower applications.

Utility Boilers – Evaluation of Correlation Between Opacity and PM_{10} Emissions at Coal-Fired Plant. Provided expert testimony on whether correlation existed between mass PM_{10} emissions and opacity during opacity excursions at large coal-fired boiler in Georgia. EPA and EPRI technical studies were reviewed to assess the correlation of opacity and mass emissions during opacity levels below and above 20 percent. A strong correlation between opacity and mass emissions was apparent at a sister plant at opacities less than 20 percent. The correlation suggests that the opacity monitor correlation underestimates mass emissions at opacities greater than 20 percent, but may continue to exhibit a good correlation for the component of mass emissions in the PM_{10} size range.

Utility Boilers – Retrofit of SCR and FGD to Existing Coal-Fired Units.
Expert witness in successful effort to compel an existing coal-fired power plant located in Massachusetts to meet an accelerated NO_x and SO_2 emission control system retrofit schedule. Plant owner argued the installation of advanced NO_x and SO_2 control systems would generate > 1 ton/year of ancillary emissions, such as sulfuric acid mist, and that under Massachusetts Dept. of Environmental Protection regulation ancillary emissions > 1 ton/year would require a BACT evaluation and a two-year extension to retrofit schedule. Successfully demonstrated that no ancillary emissions would be generated if the retrofit NO_x and SO_2 control systems were properly sized and optimized. Plant owner committed to accelerated compliance schedule in settlement agreement.

Utility Boilers – Retrofit of SCR to Existing Natural Gas-Fired Units.
Lead engineer in successful representation of interests of California coastal city to prevent weakening of an existing countywide utility boiler NO_x rule. Weakening of NO_x rule would have allowed a merchant utility boiler plant located in the city to operate without installing selective catalytic reduction (SCR) NO_x control systems. This project required numerous appearances before county air pollution control hearing board to successfully defend the existing utility boiler NO_x rule.

Nuclear Power Plant – Assessment of Closed-Cycle Cooling Retrofit Cost for 2,000 MW Plant. Prepared an assessment of the cost and feasibility of a closed-cycle wet tower retrofit for the 2,000 MW Indian Point Generating Station. Determined that the most appropriate arrangement for the hilly site would be an inline plume-abated wet tower instead of the round tower configuration analyzed by the owner. Use of the inline configuration would allow placement of the towers at numerous sites on the property with little or need for blasting of bedrock, greatly reducing the cost of the retrofit. Also proposed an alternative circulating cooling water piping configuration to avoid the extensive downtime projected by the owner for modifications to the existing discharge channel.

Kentucky Coal-Fired Power Plant – Pulverized Coal vs IGCC. Expert witness in Sierra Club lawsuit against Peabody Coal Company's plan to construct a 1,500 MW pulverized-coal fired power plant in Kentucky. Presented case that Integrated Gasification Combined Cycle (IGCC) is a superior method for producing power from coal, from environmental and energy efficiency perspective, than the proposed pulverized-coal plant. Presented evidence that IGCC is technically feasible and cost competitive with pulverized coal.

Power Plant Dry Cooling Symposium – Chair and Organizer.
Chair and organizer of the first symposium held in the U.S. (May 2002) that focused exclusively on dry cooling technology for power plants. Sessions included basic principles of wet and dry cooling systems, performance capabilities of dry cooling systems, case studies of specific installations, and reasons why dry cooling is the predominant form of cooling specified in certain regions of North America (Massachusetts, Nevada, northern Mexico). All technical papers presented at the symposium are available at http://awmasandiego.org/SDC-2002/.

EPRI Combined-Cycle Power Plant Permitting Documents – Co-Author.
Co-authored two Electric Power Research Institute (EPRI) gas turbine power plant siting documents. Responsibilities included chapter on state-of-the-art air emission control systems for simple-cycle and combined-cycle gas turbines, and authorship of sections on dry cooling and zero liquid discharge systems.

1,000 MW Coastal Combined-Cycle Power Plant – Feasibility of Dry Cooling.
Expert witness in on-going effort to require use of dry cooling on proposed 1,000 MW combined-cycle "repower" project at site of an existing 1,000 MW utility boiler plant. Project proponent argued that site was two small for properly sized air-cooled condenser (ACC) and that use of ACC would cause 12-month construction delay. Demonstrated that ACC could easily be located on the site by splitting total of up to 80 cells between two available locations at the site. Also demonstrated that an ACC optimized for low height and low noise would minimize or eliminate proponent claims of negative visual and noise impacts.

COMBUSTION EQUIPMENT PERMITTING, TESTING AND MONITORING

Ethanol Plant Dryer – Penn-Mar Ethanol, LLC. Lead engineer on Best Available Control Technology (BACT) evaluation for ethanol dryer. Dryer nitrogen oxide (NO_x) emission limit of 30 ppm determined to be BACT following exhaustive review of existing and pending ethanol plant air permits and discussions with principal dryer vendors.

Microturbines – Ronald Reagan Library, Ventura County, California.
Project manager and lead engineer or preparation of air permit applications for microturbines and standby boilers. The microturbines drive the heating and cooling system for the library. The microturbines are certified by the manufacturer to meet the 9 ppm NO_x emission limit for this equipment. Low-NO_x burners are BACT for the standby boilers.

Hospital Cogeneration Microturbines – South Coast Air Quality Management District.
Project manager and lead engineer for preparation of air permit application for three microturbines at hospital cogeneration plant installation. The draft Authority To Construct (ATC) for this project was obtained two weeks after submittal of the ATC application. 30-day public notification was required due to the proximity of the facility to nearby schools. The final ATC was issued two months after the application was submitted, including the 30-day public notification period.

Gas Turbine Cogeneration – South Coast Air Quality Management District. Project manager and lead engineer for preparation of air permit application for two 5.5 MW gas turbines in cogeneration configuration for county government center. The turbines will be equipped with selective catalytic reduction (SCR) and oxidation catalyst to comply with SCAQMD BACT requirements. Aqueous urea will be used as the SCR reagent to avoid trigger hazardous material storage requirements. A separate permit will be obtained for the NO_x and CO continuous emissions monitoring systems. The ATCs is pending.

Industrial Boilers – NO_x BACT Evaluation for San Diego County Boilers.
Project manager and lead engineer for preparation of Best Available Control Technology (BACT) evaluation for three industrial boilers to be located in San Diego County. The BACT included the review of low NO_x burners, FGR, SCR, and low temperature oxidation (LTO). State-of-the-art ultra low NO_x burners with a 9 ppm emissions guarantee were selected as NO_x BACT for these units.

Peaker Gas Turbines – Evaluation of NO_x Control Options for Installations in San Diego County.
Lead engineer for evaluation of NO_x control options available for 1970s vintage simple-cycle gas turbines proposed for peaker sites in San Diego County. Dry low-NO_x (DLN) combustors, catalytic combustors, high-temperature SCR, and NO_x absorption/conversion ($SCONO_x$) were evaluated for each candidate turbine

make/model. High-temperature SCR was selected as the NOx control option to meet a 5 ppm NO_x emission requirement.

Hospital Cogeneration Plant Gas Turbines – San Joaquin Valley Unified Air Pollution Control District. Project manager and lead engineer for preparation of air permit application and Best Available Control Technology (BACT) evaluation for hospital cogeneration plant installation. The BACT included the review of DLN combustors, catalytic combustors, high-temperature SCR and $SCONO_x$. DLN combustion followed by high temperature SCR was selected as the NO_x control system for this installation. The high temperature SCR is located upstream of the heat recovery steam generator (HRSG) to allow the diversion of exhaust gas around the HRSG without compromising the effectiveness of the NO_x control system.

Industrial Cogeneration Plant Gas Turbines – Upgrade of Turbine Power Output. Project manager and lead engineer for preparation of Best Available Control Technology (BACT) evaluation for proposed gas turbine upgrade. The BACT included the review of DLN combustors, catalytic combustors, high-, standard-, and low-temperature SCR, and $SCONO_x$. Successfully negotiated air permit that allowed facility to initially install DLN combustors and operate under a NO_x plantwide "cap." Within two major turbine overhauls, or approximately eight years, the NO_x emissions per turbine must be at or below the equivalent of 5 ppm. The 5 ppm NO_x target will be achieved through technological in-combustor NO_x control such as catalytic combustion, or SCR or SCR equivalent end-of-pipe NO_x control technologies if catalytic combustion is not available.

Gas Turbines – Modification of RATA Procedures for Time-Share CEM. Project manager and lead engineer for the development of alternate CO continuous emission monitor (CEM) Relative Accuracy Test Audit (RATA) procedures for time-share CEM system serving three 7.9 MW turbines located in San Diego. Close interaction with San Diego APCD and EPA Region 9 engineers was required to receive approval for the alternate CO RATA standard. The time-share CEM passed the subsequent annual RATA without problems as a result of changes to some of the CEM hardware and the more flexible CO RATA standard.

Gas Turbines – Evaluation of NO_x Control Technology Performance. Lead engineer for performance review of dry low-NO_x combustors, catalytic combustors, high-, standard-, and low-temperature selective catalytic reduction (SCR), and NO_x absorption/conversion ($SCONO_x$). Major turbine manufacturers and major manufacturers of end-of-pipe NO_x control systems for gas turbines were contacted to determine current cost and performance of NO_x control systems. A comparison of 1993 to 1999 "$/kwh" and "$/ton" cost of these control systems was developed in the evaluation.

Gas Turbines – Evaluation of Proposed NO_x Control System to Achieve 3 ppm Limit. Lead engineer for evaluation for proposed combined cycle gas turbine NO_x and CO control systems. Project was in litigation over contract terms, and there was concern that the GE Frame 7FA turbine could not meet the 3 ppm NO_x permit limit using a conventional combustor with water injection followed by SCR. Operations personnel at GE Frame 7FA installatins around the country were interviewed, along with principal SCR vendors, to corroborate that the installation could continuously meet the 3 ppm NO_x limit.

Gas Turbines – Title V "Presumptively Approvable" Compliance Assurance Monitoring Protocol. Project manager and lead engineer for the development of a "presumptively approval" NO_x parametric emissions monitoring system (PEMS) protocol for industrial gas turbines. "Presumptively approvable" means that any gas turbine operator selecting this monitoring protocol can presume it is acceptable to the U.S. EPA. Close interaction with the gas turbine manufacturer's design engineering staff and the U.S. EPA Emissions Measurement Branch (Research Triangle Park, NC) was required to determine modifications necessary to the current PEMS to upgrade it to "presumptively approvable" status.

Environmental Due Diligence Review of Gas Turbine Sites – Mexico. Task leader to prepare regulatory compliance due diligence review of Mexican requirements for gas turbine power plants. Project involves eleven potential sites across Mexico, three of which are under construction. Scope involves identification of all environmental, energy sales, land use, and transportation corridor requirements for power projects in Mexico. Coordinator of Mexican environmental subcontractors gathering on-site information for each site, and translator of Spanish supporting documentation to English.

Development of Air Emission Standards for Gas Turbines - Peru. Served as principal technical consultant to the Peruvian Ministry of Energy in Mines (MEM) for the development of air emission standards for Peruvian gas turbine power plants. All major gas turbine power plants in Peru are currently using water injection to increase turbine power output. Recommended that 42 ppm on natural gas and 65 ppm on diesel (corrected to 15% O_2) be established as the NO_x limit for existing gas turbine power plants. These limits reflect NO_x levels readily achievable using water injection at high load. Also recommended that new gas turbine sources be subject to a BACT review requirement.

Gas Turbines – Title V Permit Templates. Lead engineer for the development of standardized permit templates for approximately 100 gas turbines operated by the oil and gas industry in the San Joaquin Valley. Emissions limits and monitoring requirements were defined for units ranging from GE Frame 7 to Solar Saturn turbines. Stand-alone templates were developed based on turbine size and NO_x control equipment. NO_x utilized in the target turbine population ranged from water injection alone to water injection combined with SCR.

Gas Turbines – Evaluation of NO_x, SO_2 and PM Emission Profiles. Performed a comparative evaluation of the NO_x, SO_2 and particulate (PM) emission profiles of principal utility-scale gas turbines for an independent power producer evaluating project opportunities in Latin America. All gas turbine models in the 40 MW to 240 MW range manufactured by General Electric, Westinghouse, Siemens and ABB were included in the evaluation.

Stationary Internal Combustion Engine (ICE) RACT/BARCT Evaluation. Lead engineer for evaluation of retrofit NO_x control options available for the oil and gas production industry gas-fired ICE population in the San Joaquin Valley affected by proposed RACT and BARCT emission limits. Evaluation centered on lean-burn compressor engines under 500 bhp, and rich-burn constant and cyclically loaded (rod pump) engines under 200 bhp. The results of the evaluation indicated that rich burn cyclically-loaded rod pump engines comprised 50 percent of the affected ICE population, though these ICEs accounted for only 5 percent of the uncontrolled gas-fired stationary ICE NO_x emissions. Recommended retrofit NO_x control strategies included: air/fuel ratio adjustment for rod pump ICEs, Non-selective catalytic reduction (NSCR) for rich-burn, constant load ICEs, and "low emission" combustion modifications for lean burn ICEs.

Development of Air Emission Standards for Stationary ICEs - Peru. Served as principal technical consultant to the Peruvian Ministry of Energy in Mines (MEM) for the development of air emission standards for Peruvian stationary ICE power plants. Draft 1997 World Bank NO_x and particulate emission limits for stationary ICE power plants served as the basis for proposed MEM emission limits. A detailed review of ICE emissions data provided in PAMAs submitted to the MEM was performed to determine the level of effort that would be required by Peruvian industry to meet the proposed NO_x and particulate emission limits. The draft 1997 WB emission limits were revised to reflect reasonably achievable NO_x and particulate emission limits for ICEs currently in operation in Peru.

Air Toxics Testing of Natural Gas-Fired ICEs. Project manager for test plan/test program to measure volatile and semi-volatile organic air toxics compounds from fourteen gas-fired ICEs used in a variety of oil and gas production applications. Test data was utilized by oil and gas production facility owners throughout California to develop accurate ICE air toxics emission inventories.

RACT/BARCT/BACT EVALUATIONS

BACT Evaluation of Wool Fiberglass Insulation Production Line. Project manager and lead engineer for BACT evaluation of a wool fiberglass insulation production facility. The BACT evaluation was performed as a component of a PSD permit application. The BACT evaluation included a detailed analysis of the available control options for forming, curing and cooling sections of the production line. Binder formulations, wet electrostatic precipitators, wet scrubbers, and thermal oxidizers were evaluated as potential PM_{10} and VOC control options. Low NO_x burner options and combustion control modifications were examined as potential NO_x control techniques for the curing oven burners. Recommendations included use of a proprietary binder formulation to achieve PM_{10} and VOC BACT, and use of low-NO_x burners in the curing ovens to achieve NO_x BACT. The PSD application is currently undergoing review by EPA Region 9.

RACT/BARCT Reverse Jet Scrubber/Fiberbed Mist Eliminator Retrofit Evaluation. Project manager and lead engineer on project to address the inability of existing wet electrostatic precipitators (ESPs) and atomized mist scrubbers to adequately remove low concentration submicron particulate from high volume recovery boiler exhaust gas at the Alaska Pulp Corporation mill in Sitka, AK. The project involved thorough on-site inspections of existing control equipment, detailed review of maintenance and performance records, and a detailed evaluation of potential replacement technologies. These technologies included a wide variety of scrubbing technologies where manufacturers claimed high removal efficiencies on submicron particulate in high humidity exhaust gas. Packed tower scrubbers, venturi scrubbers, reverse jet scrubbers, fiberbed mist eliminators and wet ESPs were evaluated. Final recommendations included replacement of atomized mist scrubber with reverse jet scrubber and upgrading of the existing wet ESPs. The paper describing this project was published in the May 1992 TAPPI Journal.

Aluminum Smelter RACT Evaluation - Prebake. Project manager and technical lead for CO and PM_{10} RACT evaluation for prebake facility. Retrofit control options for CO emissions from the anode bake furnace, potline dry scrubbers and the potroom roof vents were evaluated. PM_{10} emissions from the coke kiln, potline dry scrubbers, potroom roof vents, and miscellaneous potroom fugitive sources were addressed. Four CO control technologies were identified as technologically feasible for potline CO emissions: potline current efficiency improvement through the addition of underhung busswork and automated puncher/feeders, catalytic incineration, recuperative incineration and regenerative incineration. Current efficiency improvement was identified as probable CO RACT if onsite test program demonstrated the effectiveness of this approach. Five PM_{10} control technologies were identified as technologically feasible: increased potline hooding efficiency through redesign of shields, the addition of a dense-phase conveying system, increased potline air evacuation rate, wet scrubbing of roof vent emissions, and fabric filter control of roof vent emissions. The cost of these potential PM_{10} RACT controls exceeded regulatory guidelines for cost effectiveness, though testing of modified shield configurations and dense-phase conveying is being conducted under a separate regulatory compliance order.

RACT/BACT Testing/Evaluation of PM_{10} Mist Eliminators on Five-Stand Cold Mill. Project manager and lead engineer for fiberbed mist eliminator and mesh pad mist eliminator comparative pilot test program on mixed phase aerosol (PM_{10})/gaseous hydrocarbon emissions from aluminum high speed cold rolling mill. Utilized modified EPA Method 5 sampling train with portion of sample gas diverted (after particulate filter) to Ratfisch 55 VOC analyzer. This was done to permit simultaneous quantification of aerosol and gaseous hydrocarbon emissions in the exhaust gas. The mesh pad mist eliminator demonstrated good control of PM_{10} emissions, though test results indicated that the majority of captured PM_{10} evaporated in the mesh pad and was emitted as VOC.

Aluminum Remelt Furnace/Rolling Mill RACT Evaluations. Lead engineer for comprehensive CO and PM_{10} RACT evaluation for the largest aluminum sheet and plate rolling mill in western U.S. Significant sources of CO emissions from the facility included the remelt furnaces and the coater line. The potential CO RACT options for the remelt furnaces included: enhanced maintenance practices, preheating combustion air,

installation of fully automated combustion controls, and energy efficiency modifications. The coater line was equipped with an afterburner for VOC and CO destruction prior to the initiation of the RACT study. It was determined that the afterburner meets or exceeds RACT requirements for the coater line. Significant sources of PM_{10} emissions included the remelt furnaces and the 80-inch hot rolling mill. Chlorine fluxing in the melting and holding furnaces was identified as the principal source of PM_{10} emissions from the remelt furnaces. The facility is in the process of minimizing/eliminating fluxing in the melting furnaces, and exhaust gases generated in holding furnaces during fluxing will be ducted to a baghouse for PM_{10} control. These modifications are being performed under a separate compliance order, and were determined to exceed RACT requirements. A water-based emulsion coolant and inertial separators are currently in use on the 80-inch hot mill for PM_{10} control. Current practices were determined to meet/exceed PM_{10} RACT for the hot mill. Tray tower absorption/recovery systems were also evaluated to control PM_{10} emissions from the hot mill, though it was determined that the technical/cost feasibility of using this approach on an emulsion-based coolant had not yet been adequately demonstrated.

BARCT Low NO_x Burner Conversion – Industrial Boilers. Lead engineer for evaluation of low NO_x burner options for natural gas-fired industrial boilers. Also evaluated methanol and propane as stand-by fuels to replace existing diesel stand-by fuel system. Evaluated replacement of steam boilers with gas turbine co-generation system.

BACT Packed Tower Scrubber/Mist Eliminator Performance Evaluations. Project manager and lead engineer for Navy-wide plating shop air pollution control technology evaluation and emissions testing program. Mist eliminators and packed tower scrubbers controlling metal plating processes, which included hard chrome, nickel, copper, cadmium and precious metals plating, were extensively tested at three Navy plating shops. Chemical cleaning and stripping tanks, including hydrochloric acid, sulfuric acid, chromic acid and caustic, were also tested. The final product of this program was a military design specification for plating and chemical cleaning shop air pollution control systems. The hydrochloric acid mist sampling procedure developed during this program received a protected patent.

BACT Packed Tower Scrubber/UV Oxidation System Pilot Test Program. Technical advisor for pilot test program of packed tower scrubber/ultraviolet (UV) light VOC oxidation system controlling VOC emissions from microchip manufacturing facility in Los Angeles. The testing was sponsored in part by the SCAQMD's Innovative Technology Demonstration Program, to demonstrate this innovative control technology as BACT for microchip manufacturing operations. The target compounds were acetone, methylethylketone (MEK) and 1,1,1-trichloroethane, and compound concentrations ranged from 10-100 ppmv. The single stage packed tower scrubber consistently achieved greater than 90% removal efficiency on the target compounds. The residence time required in the UV oxidation system for effective oxidation of the target compounds proved significantly longer than the residence time predicted by the manufacturer.

BACT Pilot Testing of Venturi Scrubber on Gas/Aerosol VOC Emission Source. Technical advisor for project to evaluate venturi scrubber as BACT for mixed phase aerosol/gaseous hydrocarbon emissions from deep fat fryer. Venturi scrubber demonstrated high removal efficiency on aerosol, low efficiency on VOC emissions. A number of VOC tests indicated negative removal efficiency. This anomaly was traced to a high hydrocarbon concentration in the scrubber water. The pilot unit had been shipped directly to the jobsite from another test location by the manufacturer without any cleaning or inspection of the pilot unit.

Pulp Mill Recovery Boiler BACT Evaluation. Lead engineer for BACT analysis for control of SO_2, NO_x, CO, TNMHC, TRS and particulate emissions from the proposed addition of a new recovery furnace at a kraft pulp mill in Washington. A "top down" approach was used to evaluate potential control technologies for each of the pollutants considered in the evaluation.

Air Pollution Control Equipment Design Specification Development. Lead engineer for the development of detailed Navy design specifications for wet scrubbers and mist eliminators. Design specifications were based on field performance evaluations conducted at the Long Beach Naval Shipyard, Norfolk Naval Shipyard, and

Jacksonville Naval Air Station. This work was performed for the U.S. Navy to provide generic design specifications to assist naval facility engineering divisions with air pollution control equipment selection. Also served as project engineer for the development of Navy design specifications for ESPs and fabric filters.

CONTINUOUS EMISSION MONITOR (CEM) PROJECT EXPERIENCE

Process Heater CO and NO_x CEM Relative Accuracy Testing. Project manager and lead engineer for process heater CO and NO_x analyzer relative accuracy test program at petrochemical manufacturing facility. Objective of test program was to demonstrate that performance of onsite CO and NO_x CEMs was in compliance with U.S. EPA "Boiler and Industrial Furnace" hazardous waste co-firing regulations. A TECO Model 48 CO analyzer and a TECO Model 10 NO_x analyzer were utilized during the test program to provide ± 1 ppm measurement accuracy, and all test data was recorded by an automated data acquisition system. One of the two process heater CEM systems tested failed the initial test due to leaks in the gas conditioning system. Troubleshooting was performed using O_2 analyzers, and the leaking component was identified and replaced. This CEM system met all CEM relative accuracy requirements during the subsequent retest.

Performance Audit of NO_x and SO_2 CEMs at Coal-Fired Power Plant. Lead engineer on system audit and challenge gas performance audit of NO_x and SO_2 CEMs at a coal-fired power plant in southern Nevada. Dynamic and instrument calibration checks were performed on the CEMs. A detailed visual inspection of the CEM system, from the gas sampling probes at the stack to the CEM sample gas outlet tubing in the CEM trailer, was also conducted. The CEMs passed the dynamic and instrument calibration requirements specified in EPA's Performance Specification Test - 2 (NO_x and SO_2) alternative relative accuracy requirements.

LATIN AMERICA ENVIRONMENTAL PROJECT EXPERIENCE

Preliminary Design of Ambient Air Quality Monitoring Network – Lima, Peru. Project leader for project to prepare specifications for a fourteen station ambient air quality monitoring network for the municipality of Lima, Peru. Network includes four complete gaseous pollutant, particulate, and meteorological parameter monitoring stations, as well as eight PM_{10} and TSP monitoring stations.

Evaluation of Proposed Ambient Air Quality Network Modernization Project – Venezuela. Analyzed a plan to modernize and expand the ambient air monitoring network in Venezuela. Project was performed for the U.S. Trade and Development Agency. Direct interaction with policy makers at the Ministerio del Ambiente y de los Recursos Naturales Renovables (MARNR) in Caracas was a major component of this project.

Evaluation of U.S.-Mexico Border Region Copper Smelter Compliance with Treaty Obligations – Mexico. Project manager and lead engineer to evaluate compliance of U.S. and Mexican border region copper smelters with the SO_2 monitoring, recordkeeping and reporting requirements in Annex IV [Copper Smelters] of the La Paz Environmental Treaty. Identified potential problems with current ambient and stack monitoring practices that could result in underestimating the impact of SO_2 emissions from some of these copper smelters. Identified additional source types, including hazardous waste incinerators and power plants, that should be considered for inclusion in the La Paz Treaty process.

Development of Air Emission Standards for Petroleum Refinery Equipment - Peru. Served as principal technical consultant to the Peruvian Ministry of Energy in Mines (MEM) for the development of air emission standards for Peruvian petroleum refineries. The sources included in the scope of this project included: 1) SO_2 and NO_x refinery heaters and boilers, 2) desulfurization of crude oil, particulate and SO_2 controls for fluid catalytic cracking units (FCCU), 3) VOC and CO emissions from flares, 4) vapor recovery systems for marine unloading, truck loading, and crude oil/refined products storage tanks, and 5) VOC emissions from process fugitive sources such as pressure relief valves, pumps, compressors and flanges. Proposed emission limits were developed for new and existing refineries based on a thorough evaluation of the available air emission control technologies for the affected refinery sources. Leading vendors of refinery control technology, such as John Zink and Exxon Research, provided estimates of retrofit costs for the largest Peruvian refinery, La Pampilla, located in Lima. Meetings were held in Lima with refinery operators and MEM staff to discuss the proposed

emission limits and incorporate mutually agreed upon revisions to the proposed limits for existing Peruvian refineries.

Development of Air Emission Limits for ICE Cogeneration Plant - Panamá. Lead engineer assisting U.S. cogeneration plant developer to permit an ICE cogeneration plant at a hotel/casino complex in Panama. Recommended the use of modified draft World Bank NO_x and PM limits for ICE power plants. The modification consisted of adding a thermal efficiency factor adjustment to the draft World Bank NO_x and PM limits. These proposed ICE emission limits are currently being reviewed by Panamanian environmental authorities.

Mercury Emissions Inventory for Stationary Sources in Northern Mexico. Project manager and lead engineer to estimate mercury emissions from stationary sources in Northern Mexico. Major potential sources of mercury emissions include solid- and liquid-fueled power plants, cement kilns co-firing hazardous waste, and non-ferrous metal smelters. Emission estimates were provided for approximately eighty of these sources located in Northern Mexico. Coordinated efforts of two Mexican subcontractors, located in Mexico City and Hermosillo, to obtain process throughput data for each source included in the inventory.

Translation of U.S. EPA Scrap Tire Combustion Emissions Estimation Document – Mexico. Evaluated the Translated a U.S. EPA scrap tire combustion emissions estimation document from English to Spanish for use by Latin American environmental professionals.

Environmental Audit of Aluminum Production Facilities – Venezuela. Evaluated the capabilities of existing air, wastewater and solid/hazardous waste control systems used by the aluminum industry in eastern Venezuela. This industry will be privatized in the near future. Estimated the cost to bring these control systems into compliance with air, wastewater and solid/hazardous waste standards recently promulgated in Venezuela. Also served as technical translator for team of U.S. environmental engineers involved in the due diligence assessment.

Assessment of Environmental Improvement Projects – Chile and Peru. Evaluated potential air, water, soil remediation and waste recycling projects in Lima, Peru and Santiago, Chile for feasibility study funding by the U.S. Trade and Development Agency. Project required onsite interaction with in-country decisionmakers (in Spanish). Projects recommended for feasibility study funding included: 1) an air quality technical support project for the Santiago, Chile region, and 2) soil remediation/metals recovery projects at two copper mine/smelter sites in Peru.

Air Pollution Control Training Course – Mexico. Conducted two-day Spanish language air quality training course for environmental managers of assembly plants in Mexicali, Mexico. Spanish-language course manual prepared by Powers Engineering. Practical laboratory included training in use of combustion gas analyzer, flame ionization detector (FID), photoionization detector (PID), and occupational sampling.

Stationary Source Emissions Inventory – Mexico. Developed a comprehensive air emissions inventory for stationary sources in Nogales, Sonora. This project requires frequent interaction with Mexican state and federal environmental authorities. The principal Powers Engineering subcontractor on this project is a Mexican firm located in Hermosillo, Sonora.

VOC Measurement Program – Mexico. Performed a comprehensive volatile organic compound (VOC) measurements program at a health products fabrication plant in Mexicali, Mexico. An FID and PID were used to quantify VOCs from five processes at the facility. Occupational exposures were also measured. Worker exposure levels were above allowable levels at several points in the main assembly area.

Renewable Energy Resource Assessment Proposal – Panama. Translated and managed winning bid to evaluate wind energy potential in Panama. Direct interaction with the director of development at the national utility monopoly (IRHE) was a key component of this project.

Comprehensive Air Emissions Testing at Assembly Plant – Mexico. Project manager and field supervisor of emissions testing for particulates, NO_x, SO_2 and CO at turbocharger/air cooler assembly plant in Mexicali, Mexico. Source specific emission rates were developed for each point source at the facility during the test program. Translated test report into Spanish for review by the Mexican federal environmental agency (SEMARNAP).

Air Pollution Control Equipment Retrofit Evaluation – Mexico. Project manager and lead engineer for comprehensive evaluation of air pollution control equipment and industrial ventilation systems in use at assembly plant consisting of four major facilities. Equipment evaluated included fabric filters controlling blast booth emissions, electrostatic precipitator controlling welding fumes, and industrial ventilation systems controlling welding fumes, chemical cleaning tank emissions, and hot combustion gas emissions. Recommendations included modifications to fabric filter cleaning cycle, preventative maintenance program for the electrostatic precipitator, and redesign of the industrial ventilation system exhaust hoods to improve capture efficiency.

Comprehensive Air Emissions Testing at Assembly Plant – Mexico. Project manager and field supervisor of emissions testing for particulates, NO_x, SO_2 and CO at automotive components assembly plant in Acuña, Mexico. Source-specific emission rates were developed for each point source at the facility during the test program. Translated test report into Spanish.

Fluent in Spanish. Studied at the Universidad de Michoacán in Morelia, Mexico; 1993, and at the Colegio de España in Salamanca, Spain, 1987-88. Have lectured (in Spanish) on air monitoring and control equipment at the Instituto Tecnológico de Tijuana. Maintain contact with Comisión Federal de Electricidad engineers responsible for operation of wind and geothermal power plants in México, and am comfortable operating in the Mexican business environment.

TITLE V PERMIT APPLICATION/MONITORING PLAN EXPERIENCE

Title V Permit Application – San Diego County Industrial Facility. Project engineer tasked with preparing streamlined Title V operating permit for U.S. Navy facilities in San Diego. Principal emission units included chrome plating, lead furnaces, IC engines, solvent usage, aerospace coating and marine coating operations. For each device category in use at the facility, federal MACT requirements were integrated with District requirements in user friendly tables that summarized permit conditions and compliance status.

Title V Permit Application Device Templates - Oil and Gas Production Industry. Project manager and lead engineer to prepare Title V permit application "templates" for the Western States Petroleum Association (WSPA). The template approach was chosen by WSPA to minimize the administrative burden associated with listing permit conditions for a large number of similar devices located at the same oil and gas production facility. Templates are being developed for device types common to oil and gas production operations. Device types include: boilers, steam generators, process heaters, gas turbines, IC engines, fixed-roof storage tanks, fugitive components, flares, and cooling towers. These templates will serve as the core of Title V permit applications prepared for oil and gas production operations in California.

Title V Permit Application - Aluminum Rolling Mill. Project manager and lead engineer for Title V permit application prepared for largest aluminum rolling mill in the western U.S. Responsible for the overall direction of the permit application project, development of a monitoring plan for significant emission units, and development of a hazardous air pollutant (HAP) emissions inventory. The project involved extensive onsite data gathering, frequent interaction with the plant's technical and operating staff, and coordination with legal counsel and subcontractors. The permit application was completed on time and in budget.

Title V Model Permit - Oil and Gas Production Industry. Project manager and lead engineer for the comparative analysis of regional and federal requirements affecting oil and gas production industry sources located in the San Joaquin Valley. Sources included gas turbines, IC engines, steam generators, storage tanks, and process fugitives. From this analysis, a model applicable requirements table was developed for a sample device type (storage tanks) that covered the entire population of storage tanks operated by the industry. The U.S. EPA has tentatively approved this model permit approach, and work is ongoing to develop comprehensive applicable requirements tables for each major category of sources operated by the oil and gas industry in the San Joaquin Valley.

Title V Enhanced Monitoring Evaluation of Oil and Gas Production Sources. Lead engineer to identify differences in proposed EPA Title V enhanced monitoring protocols and the current monitoring requirements for oil and gas production sources in the San Joaquin Valley. The device types evaluated included: steam generators, stationary ICEs, gas turbines, fugitives, fixed roof storage tanks, and thermally enhanced oil recovery (TEOR) well vents. Principal areas of difference included: more stringent Title V O&M requirements for parameter monitors (such as temperature, fuel flow, and O_2), and more extensive Title V recordkeeping requirements.

OIL AND GAS PRODUCTION AIR ENGINEERING/TESTING EXPERIENCE

Air Toxics Testing of Oil and Gas Production Sources. Project manager and lead engineer for test plan/test program to determine VOC removal efficiency of packed tower scrubber controlling sulfur dioxide emissions from a crude oil-fired steam generator. Ratfisch 55 VOC analyzers were used to measure the packed tower scrubber VOC removal efficiency. Tedlar bag samples were collected simultaneously to correlate BTX removal efficiency to VOC removal efficiency. This test was one of hundreds of air toxics tests performed during this test program for oil and gas production facilities from 1990 to 1992. The majority of the volatile air toxics analyses were performed at in-house laboratory. Project staff developed thorough familiarity with the applications and limitations of GC/MS, GC/PID, GC/FID, GC/ECD and GC/FPD. Tedlar bags, canisters, sorbent tubes and impingers were used during sampling, along with isokinetic tests methods for multiple metals and PAHs.

Air Toxics Testing of Glycol Reboiler – Gas Processing Plant. Project manager for test program to determine emissions of BTXE from glycol reboiler vent at gas processing facility handling 12 MM/cfd of produced gas. Developed innovative test methods to accurately quantify BTXE emissions in reboiler vent gas.

Air Toxics Emissions Inventory Plan. Lead engineer for the development of generic air toxics emission estimating techniques (EETs) for oil and gas production equipment. This project was performed for the Western States Petroleum Association in response to the requirements of the California Air Toxics "Hot Spots" Act. EETs were developed for all point and fugitive oil and gas production sources of air toxics, and the specific air toxics associated with each source were identified. A pooled source emission test methodology was also developed to moderate the cost of source testing required by the Act.

Fugitive NMHC Emissions from TEOR Production Field. Project manager for the quantification of fugitive Nonmethane hydrocarbon (NMHC) emissions from a thermally enhanced oil recovery (TEOR) oil production field in Kern County, CA. This program included direct measurement of NMHC concentrations in storage tank vapor headspace and the modification of available NMHC emission factors for NMHC-emitting devices in TEOR produced gas service, such as wellheads, vapor trunklines, heat exchangers, and compressors. Modification of the existing NMHC emission factors was necessary due to the high concentration of CO_2 and water vapor in TEOR produced gases.

Fugitive Air Emissions Testing of Oil and Gas Production Fields. Project manager for test plan/test program to determine VOC and air toxics emissions from oil storage tanks, wastewater storage tanks and produced gas

lines. Test results were utilized to develop comprehensive air toxics emissions inventories for oil and gas production companies participating in the test program.

Oil and Gas Production Field – Air Emissions Inventory and Air Modeling. Project manager for oil and gas production field risk assessment. Project included review and revision of the existing air toxics emission inventory, air dispersion modeling, and calculation of the acute health risk, chronic non-carcinogenic risk and carcinogenic risk of facility operations. Results indicated that fugitive H_2S emissions from facility operations posed a potential health risk at the facility fenceline.

PETROLEUM REFINERY AIR ENGINEERING/TESTING EXPERIENCE

Criteria and Air Toxic Pollutant Emissions Inventory for Proposed Refinery Modifications. Project manager and technical lead for development of baseline and future refinery air emissions inventories for process modifications required to produce oxygenated gasoline and desulfurized diesel fuel at a California refinery. State of the art criteria and air toxic pollutant emissions inventories for refinery point, fugitive and mobile sources were developed. Point source emissions estimates were generated using onsite criteria pollutant test data, onsite air toxics test data, and the latest air toxics emission factors from the statewide refinery air toxics inventory database. The fugitive volatile organic compound (VOC) emissions inventories were developed using the refinery's most recent inspection and maintenance (I&M) monitoring program test data to develop site-specific component VOC emission rates. These VOC emission rates were combined with speciated air toxics test results for the principal refinery process streams to produce fugitive VOC air toxics emission rates. The environmental impact report (EIR) that utilized this emission inventory data was the first refinery "Clean Fuels" EIR approved in California.

Air Toxic Pollutant Emissions Inventory for Existing Refinery. Project manager and technical lead for air toxic pollutant emissions inventory at major California refinery. Emission factors were developed for refinery heaters, boilers, flares, sulfur recovery units, coker deheading, IC engines, storage tanks, process fugitives, and catalyst regeneration units. Onsite source test results were utilized to characterize emissions from refinery combustion devices. Where representative source test results were not available, AP-42 VOC emission factors were combined with available VOC air toxics speciation profiles to estimate VOC air toxic emission rates. A risk assessment based on this emissions inventory indicated a relatively low health risk associated with refinery operations. Benzene, 1,3-butadiene and PAHs were the principal health risk related pollutants emitted.

Air Toxics Testing of Refinery Combustion Sources. Project manager for comprehensive air toxics testing program at a major California refinery. Metals, Cr^{+6}, PAHs, H_2S and speciated VOC emissions were measured from refinery combustion sources. High temperature Cr^{+6} stack testing using the EPA Cr^{+6} test method was performed for the first time in California during this test program. Representatives from the California Air Resources Board source test team performed simultaneous testing using ARB Method 425 (Cr^{+6}) to compare the results of EPA and ARB Cr^{+6} test methodologies. The ARB approved the test results generated using the high temperature EPA Cr^{+6} test method.

Air Toxics Testing of Refinery Fugitive Sources. Project manager for test program to characterize air toxic fugitive VOC emissions from fifteen distinct process units at major California refinery. Gas, light liquid, and heavy liquid process streams were sampled. BTXE, 1,3-butadiene and propylene concentrations were quantified in gas samples, while BTXE, cresol and phenol concentrations were measured in liquid samples. Test results were combined with AP-42 fugitive VOC emission factors for valves, fittings, compressors, pumps and PRVs to calculate fugitive air toxics VOC emission rates.

AIR ENGINEERING/AIR TESTING PROJECT EXPERIENCE – GENERAL

Reverse Air Fabric Filter Retrofit Evaluation – Coal-Fired Boiler. Lead engineer for upgrade of reverse air fabric filters serving coal-fired industrial boilers. Fluorescent dye injected to pinpoint broken bags and damper leaks. Corrosion of pneumatic actuators serving reverse air valves and inadequate insulation identified as principal causes of degraded performance.

Pulse-Jet Fabric Filter Performance Evaluation – Gold Mine. Lead engineer on upgrade of pulse-jet fabric filter and associated exhaust ventilation system serving an ore-crushing facility at a gold mine. Fluorescent dye used to identify bag collar leaks, and modifications were made to pulse air cycle time and duration. This marginal source was in compliance at 20 percent of emission limit following completion of repair work.

Pulse-Jet Fabric Filter Retrofit - Gypsum Calciner. Lead engineer on upgrade of pulse-jet fabric filter controlling particulate emissions from a gypsum calciner. Recommendations included a modified bag clamping mechanism, modified hopper evacuation valve assembly, and changes to pulse air cycle time and pulse duration.

Wet Scrubber Retrofit – Plating Shop. Project engineer on retrofit evaluation of plating shop packed-bed wet scrubbers failing to meet performance guarantees during acceptance trials, due to excessive mist carryover. Recommendations included relocation of the mist eliminator (ME), substitution of the original chevron blade ME with a mesh pad ME, and use of higher density packing material to improve exhaust gas distribution. Wet scrubbers passed acceptance trials following completion of recommended modifications.

Electrostatic Precipitator (ESP) Retrofit Evaluation – MSW Boiler. Lead engineer for retrofit evaluation of single field ESP on a municipal solid waste (MSW) boiler. Recommendations included addition of automated power controller, inlet duct turning vanes, and improved collecting plate rapping system.

ESP Electric Coil Rapper Vibration Analysis Testing - Coal-Fired Boiler. Lead engineer for evaluation of ESP rapper effectiveness test program on three field ESP equipped with "magnetically induced gravity return" (MIGR) rappers. Accelerometers were placed in a grid pattern on ESP collecting plates to determine maximum instantaneous plate acceleration at a variety of rapper power setpoints. Testing showed that the rappers met performance specification requirements.

Aluminum Remelt Furnace Particulate Emissions Testing. Project manager and lead engineer for high temperature (1,600 °F) particulate sampling of a natural gas-fired remelt furnace at a major aluminum rolling mill. Objectives of test program were to: 1) determine if condensable particulate was present in stack gases, and 2) to validate the accuracy of the in-stack continuous opacity monitor (COM). Designed and constructed a customized high temperature (inconel) PM_{10}/Mtd 17 sampling assembly for test program. An onsite natural gas-fired boiler was also tested to provide comparative data for the condensable particulate portion of the test program. Test results showed that no significant levels of condensable particulate in the remelt furnace exhaust gas, and indicated that the remelt furnace and boiler had similar particulate emission rates. Test results also showed that the COM was accurate.

Aluminum Remelt Furnace CO and NO_x Testing. Project manager and lead engineer for continuous week-long testing of CO and NO_x emissions from aluminum remelt furnace. Objective of test program was to characterize CO and NO_x emissions from representative remelt furnace for use in the facility's criteria pollution emissions inventory. A TECO Model 48 CO analyzer and a TECO Model 10 NO_x analyzer were utilized during the test program to provide ± 1 ppm measurement accuracy, and all test data was recorded by an automated data acquisition system.

PUBLICATIONS

W.E. Powers, *"Peak and Annual Average Energy Efficiency Penalty of Optimized Air-Cooled Condenser on 515 MW Fossil Fuel-Fired Utility Boiler,"* presented at California Energy Commission/Electric Power Research Institute Advanced Cooling Technologies Symposium, Sacramento, California, June 2005.

W.E. Powers, R. Wydrum, P. Morris, *"Design and Performance of Optimized Air-Cooled Condenser at Crockett Cogeneration Plant,"* presented at EPA Symposium on Technologies for Protecting Aquatic Organisms from Cooling Water Intake Structures, Washington, DC, May 2003.

P. Pai, D. Niemi, W.E. Powers, "A North American Anthropogenic Inventory of Mercury Emissions," to be presented at Air & Waste Management Association Annual Conference in Salt Lake City, UT, June 2000.

P.J. Blau and W.E. Powers, "Control of Hazardous Air Emissions from Secondary Aluminum Casting Furnace Operations Through a Combination of: Upstream Pollution Prevention Measures, Process Modifications and End-of-Pipe Controls," presented at 1997 AWMA/EPA Emerging Solutions to VOC & Air Toxics Control Conference, San Diego, CA, February 1997.

W.E. Powers, et. al., "Hazardous Air Pollutant Emission Inventory for Stationary Sources in Nogales, Sonora, Mexico ," presented at 1995 AWMA/EPA Emissions Inventory Specialty Conference, RTP, NC, October 1995.

W.E. Powers, "Develop of a Parametric Emissions Monitoring System to Predict NO_x Emissions from Industrial Gas Turbines," presented at 1995 AWMA Golden West Chapter Air Pollution Control Specialty Conference, Ventura, California, March 1995.

W. E. Powers, et. al., "Retrofit Control Options for Particulate Emissions from Magnesium Sulfite Recovery Boilers," presented at 1992 TAPPI Envr. Conference, April 1992. Published in *TAPPI Journal*, July 1992.

S. S. Parmar, M. Short, W. E. Powers, "Determination of Total Gaseous Hydrocarbon Emissions from an Aluminum Rolling Mill Using Methods 25, 25A, and an Oxidation Technique," presented at U.S. EPA Measurement of Toxic and Related Air Pollutants Conference, May 1992.

N. Meeks, W. E. Powers, "Air Toxics Emissions from Gas-Fired Internal Combustion Engines," presented at AIChE Summer Meeting, August 1990.

W. E. Powers, "Air Pollution Control of Plating Shop Processes," presented at 7th AES/EPA Conference on Pollution Control in the Electroplating Industry, January 1986. Published in *Plating and Surface Finishing* magazine, July 1986.

H. M. Davenport, W. E. Powers, "Affect of Low Cost Modifications on the Performance of an Undersized Electrostatic Precipitator," presented at 79th Air Pollution Control Association Conference, June 1986.

AWARDS

Engineer of the Year, 1991 – ENSR Consulting and Engineering, Camarillo
Engineer of the Year, 1986 – Naval Energy and Environmental Support Activity, Port Hueneme
Productivity Excellence Award, 1985 – U. S. Department of Defense

PATENTS

Sedimentation Chamber for Sizing Acid Mist, Navy Case Number 70094

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Resume of Lynne Brown

Objective

Community Organizer helping community people to understand and recognize that Bayview Hunters Point has 412 toxics sites and one of the sites is the proposed site of the San Francisco Energy Reliability Project.

Work experience

- CARE.

Vice President
Address the environmental energy problems in Bayview Hunters Point
2003 -Present CAlifornians For Renewable Energy, Inc.

- Community First Coalition (CFC)

Vice-President
Address the environmental problems in Bayview Hunters Point

- US Navy

Restoration Advisory Board Community Co-Chair
US Navy Community Emergency Response
2002-2004 Hunters Point Shipyard San Francisco CA.

- Pacific Gas & Electricity

Community Emergency Response
2002 – 2003 P.G. & E San Francisco, CA.

- Chairperson for the Ballot Measure Proposition P.

Clean-up the Hunters Point Shipyard to residential standers
2002 S.F., CA. San Francisco, CA.

- Communities for a Better Environment (CBE)

Community Organizer in Bayview Hunters Point
1997-2003 Community for A Better Environment Oakland California

Education

- San Francisco City College

Major in English, Minor in Computers, I moved to
Bayview Hunters Point in 1996 and became an Environmentalist.

Awards received

Hunters Point Naval Shipyard Restoration Advisory Board
(Award of Appreciation) (2004) S.F., CA.
Bayview Hunters Point Community Unsung Hero Award
(2001) S.F., CA.

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(209) 835-7162

Educational Experience

1971-1975 Attended Cal State Hayward graduated with a degree in Business Administration with a Major in Accounting and minor in Economics

1982-1985 Attended Cal State Hayward Graduated with an MBA in Tax Law.

Experience

2000-2001 Advisory Board for the San Joaquin Valley Air Pollution Control District.

2001-2004 Regulatory Compliance Analysts for CAlifornians for Renewable Energy, Inc. (CARE) on the following Energy projects before the California Energy Commission (CEC):

Tracy Peaker Plant	01-AFC-16
East Altamont Energy Center	01-AFC-4
Tesla Power project	01-AFC-21
Consumes Power Plant	01-AFC-19
MID Ripon	03-SPPE-1
Delta Energy Center	98-AFC-3 Compliance Proceeding
Los Medanos Project	98-AFC-1Compliance Proceeding

Kenneth Shawn Smallwood
Curriculum Vitae

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Born May 3, 1963 in
Sacramento, California.
Married, father of two children.

Affiliations:

BioResources Consulting
Consulting in the Public Interest, www.cipi.com
Biological Sciences Department, California State University, Sacramento
Institute for Sustainable Development

Disciplines:

Wildlife, ecosystem and landscape ecology; conservation biology; sampling methods and systems analysis; agricultural ecology, animal damage management.

Education:

Ph.D. Ecology, University of California, Davis. September 1990.
M.S. Ecology, University of California, Davis. June 1987.
B.S. Anthropology, University of California, Davis. June 1985.
Corcoran High School, Corcoran, California. June 1981.

Experience:

- 141 professional publications, including:
  - 43 peer reviewed publications
  - 19 in non-peer reviewed professional outlets
  - 72 reports and declarations
  - 7 in mass media outlets
- 48 public presentations of research results at professional meetings
- 61 papers reviewed by me for professional publications
- 2 book reviews

Part-time Faculty, 1/98 to present, California State University, Sacramento. I teach Contemporary Environmental Issues, Natural Resources Conservation, Mammalogy, Behavioral Ecology, and Ornithology Lab.

Senior Ecologist, 1999 to present, BioResources Consulting. I plan research and monitoring projects, perform fieldwork, and analyze complex data related to avian fatalities at wind turbines and to avian electrocutions on electrical distribution poles across California.

Systems Ecologist, 7/96 to present, Consulting in the Public Interest. I am part of a multi-disciplinary consortium of scientists who facilitate large-scale, environmental planning projects and litigation. We provide risk assessments, assessments of management practices, and expert witness testimony.

Chairman, Conservation Affairs Committee, The Wildlife Society--Western Section, 1999-2001.

Systems Ecologist, 1/95 to present, Institute for Sustainable Development. I head ISD's program on integrated resources management. I develop indicators of ecological integrity for large areas, using remotely sensed data, local community involvement and GIS.

Associate, 1997-1998, Department of Agronomy and Range Science, University of California, Davis.

Editorial Board Member, Environmental Management, 10/99 to present.

Lead Scientist, 6/96 to 6/99, National Endangered Species Network. I headed NESN's efforts to inform academic scientists and environmental activists about emerging issues regarding the Endangered Species Act and other environmental laws pertaining to legally rare species. I also testified at public hearings on behalf of environmental groups and endangered species.

Ecologist, 1/97 to 6/98, Western Foundation of Vertebrate Zoology. I conducted field research to determine the impact of past mercury mining on the status of red-legged frogs in Santa Clara County, California.

Associate Editor, Biological Conservation, 9/94 to 9/95. Administered independent scientific reviews of submitted, professional papers in ecology and conservation biology, and made recommendations to the Editors.

Senior Systems Ecologist, 7/94 to 12/95, EIP Associates, Sacramento, California. Provided consulting services in environmental planning. I also developed a quantitative assessment of land units for their conservation and restoration opportunities, using the ecological resource requirements of 29 legally rare species. I mapped vegetation and land use, and derived new spatial data from a GIS overlay of these variables with soil types, flood zones, roads, and other spatially referenced data. Using these derived data, I developed a set of indicators for prioritizing areas within Yolo County that will receive mitigation funds for habitat easements and restoration.

Post-Graduate Researcher, 10/90 to 6/94, with Dr. Shu Geng, Department of Agronomy and Range Science, *U.C. Davis*. Studied landscape and management effects on temporal and spatial patterns of abundance among pocket gophers and species of Falconiformes and Carnivora in the Sacramento Valley. I also developed and analyzed a data base of energy use in California agriculture, and I assisted with a landscape (GIS) study of groundwater contamination across Tulare County, California.

Co-teacher, 1/91 to 6/91 and 1/93 to 6/93, Graduate Group in Ecology, U.C. Davis. Co-taught conservation biology with Dr. Christine Schonewald.

Reader, 3/90 to 6/90, Department of Psychology, U.C. Davis. Assisted students of Psychobiology (taught by Dr. Richard Coss) with research and writing term papers.

Research Assistant, 11/88 to 9/90, with Dr. Walter E. Howard, Department of Wildlife and Fisheries Biology, U.C. Davis. Tested durable baits for pocket gopher control in forest plantations, and developed gopher sampling methods.

Fulbright Research Fellow, Indonesia, 7/88 to 11/88. Tested use of new sampling methods for monitoring the number of Sumatran tigers and six other species of endemic felids, and evaluated methods used by other researchers.

Research Assistant, 7/87 to 6/88, with Dr. Terrell P. Salmon, Wildlife Extension, Department of Wildlife and Fisheries Biology, U.C. Davis. Developed empirical models of mammal and bird invasions in North America, and a rating system for priority research and control of exotic species based on economic, environmental, and human health hazards in California.

Student Assistant, 3/85 to 6/87, with Dr. E. Lee Fitzhugh, Wildlife Extension, Department of Wildlife and Fisheries Biology, U.C. Davis. Developed and implemented a statewide mountain lion track count for long-term monitoring of numbers and distribution. Also developed quantitative techniques to identify individual mountain lions by their tracks, and to differentiate mountain lion and dog tracks.

Projects

Expert Witness Testimony and Declarations. I have testified before the California Coastal Commission, California Energy Commission, County Boards of Supervisors, and City Councils, and I have participated with press conferences and have been deposed by attorneys. I prepared expert witness reports and court declarations, which are summarized under Reports (below).

Protocol-level endangered species searches and recovery efforts. I search for special-status species using Department of Fish and Game and US Fish and Wildlife Service protocols. I have searched for, or otherwise worked with, California red-legged frog, arroyo southwestern toad, California tiger salamander, blunt-nosed leopard lizard, western pond turtle, giant kangaroo rat, Fresno kangaroo rat, San Joaquin kit fox, Sumatran tiger, willow flycatcher, least Bell's vireo, western burrowing owl, Swainwon's hawk, Valley elderberry longhorn beetle and many other special-status species. I also help with recovery of the Fresno kangaroo rat at Lemoore Naval Air Station.

Workshops on HCPs. Assisted Dr. Michael Morrison with organizing and conducting a 2-day workshop on Habitat Conservation Plans, sponsored by Southern California Edison, and another 1-day workshop sponsored by PG&E. These Workshops were attended by academics, attorneys, and consultants with HCP experience. We guest-edited a Proceedings published in Environmental Management.

Mapping of wind turbines and biological resources at Altamont Pass. I am using GPS and GIS to map and study environmental impacts of 1,400 wind turbines. I am relating the number of raptor fatalities at wind turbines to the degree of aggregation of prey species around the turbines, as well as many other factors related to where the turbines are located, how they are designed and operated, and how raptors behave at Altamont Pass.

Mapping of biological resources along Highways 46 and 41. I am using GPS and GIS to delineate vegetation complexes and locations of special-status species along 26 miles of highway in San Luis Obispo County, and in a large area north of Fresno, including within reclaimed gravel mining pits.

GPS mapping and monitoring at restoration sites and at Caltrans mitigation sites. I am monitoring the success of elderberry shrubs at one location, the success of willows at another location, and the response of wildlife to the succession of vegetation at both these sits. I am also using GPS to monitor the response of fossorial animals to yellow star-thistle eradication and natural grassland restoration efforts at Bear Valley, Colusa County, and at the decommissioned Mather Air Force Base in Sacramento County.

Mercury effects on Red-legged Frog. I assisted Dr. Michael Morrison and US Fish and Wildlife Service in assessing the possible impacts of historical mercury mining on the federally listed California red-legged frog in Santa Clara County. I also measured habitat variables in numerous streams.

Opposition to proposed No Surprises rule. I wrote a white paper and summary letter explaining scientific grounds for opposing the incidental take permit (ITP) rules providing ITP applicants and holders with general assurances they will be free of compliance with the Endangered Species Act once they adhere to the terms of a "properly functioning HCP." I obtained 188 signatures of scientists and environmental professionals on the letter submitted to the US Fish and Wildlife Service and the National Marine Fisheries Service. The letter was also provided to all US Senators. It helped change the prevailing view of HCPs as beneficial to listed species.

Natomas Basin Habitat Conservation Plan alternative. I designed narrow channel marsh to increase the likelihood of survival and recovery in the wild of giant garter snake, Swainson's hawk and Valley Elderberry Longhorn Beetle. The design included replication and interspersion of treatments for experimental testing of critical habitat elements. I provided a report to Northern Territories, Inc.

Cook *et al.* v. Rockwell International *et al.*, No. 90-K-181 (D. Colorado). I am providing expert testimony on the role of burrowing animals in affecting the fate of buried and surface-deposited radioactive and hazardous chemical wastes at the Rocky Flats Plant, Colorado. I provided expert reports based on four site visits and the most extensive document review of burrowing animals ever conducted. I conducted transect surveys for evidence of burrowing animals and other wildlife on and around waste facilities. I also discovered substantial intrusion of waste structures by burrowing animals.

Hanford Nuclear Reservation Litigation. I am providing expert testimony on the role of burrowing animals in affecting the fate of buried radioactive wastes at the Hanford Nuclear Reservation, Washington. I provided three expert reports based on three site visits and extensive document review. I predicted and verified a certain population density of pocket gophers on buried waste structures, as well as incidence of radionuclide contamination in body tissue. I conducted transect surveys for evidence of burrowing animals and other wildlife on and around waste facilities. I also discovered substantial intrusion of waste structures by burrowing animals.

Assessment of Environmental Technology Transfer to China, and Assessment of Agricultural Production System. I twice traveled to China and interviewed scientists, industrialists, agriculturalists, and the Directors of the Chinese Environmental Protection Agency and the Department of Agriculture to assess the need and possible pathways for environmental clean-up technologies and trade opportunities between the US and China. I spent a total of five weeks in China, including in Shandong and Linxion Provinces and in Beijing.

Yolo County Habitat Conservation Plan. I conducted the landscape ecology study of Yolo County to identify the priority land units to receive mitigation so as to most improve the ecosystem functionality within the County from the perspective of 29 special-status species of wildlife and plants. I used a hierarchically structured indicators approach to apply principles of landscape and ecosystem ecology, conservation biology, and local values in rating land units. I derived GIS maps to help guide the conservation area design, and then I developed implementation strategies.

Mountain Lion Track Count. I developed and conducted the carnivore monitoring program throughout California since 1985. Species counted include mountain lion, bobcat, black bear, coyote, red and gray fox, raccoon, striped skunk, badger, and black-tailed deer. Vegetation and land use are also monitored. The transect was established on dusty, dirt roads within randomly selected quadrats. These roads are searched for tracks of the carnivores, which routinely use the roads for travel paths.

Sumatran Tiger and other Felids. I designed and conducted track counts for seven species of wild cats in Sumatra, including the Sumatran tiger, fishing cat, and golden cat. I spent four months on Sumatra and Java, and learned Bahasa Indonesia (the official Indonesian language). I was awarded a Fulbright Research Fellowship to complete the project.

Wildlife in Agriculture. Beginning as my post-graduate research, I have studied pocket gophers and other wildlife in 40 alfalfa fields throughout the Sacramento Valley, and I surveyed for wildlife along a 200 mile road transect for six years. The data were analyzed using GIS and methods from landscape ecology, and the results were published and presented orally to farming groups in California and elsewhere. I also conducted the first study of wildlife in cover crops used on vineyards and orchards.

Agricultural Energy Use and Tulare County Groundwater Study. I developed and analyzed a data base of energy use in California agriculture, and collaborated on a landscape (GIS) study of groundwater contamination across Tulare County, California.

Pocket Gopher Damage in Forest Clearcuts. I tested various poison baits and baiting regimes for pocket gopher control in forest plantations, and I developed gopher sampling methods. I conducted the most extensive field study of pocket gophers ever, involving thousands of gophers in 68 research plots on 55 clearcuts among 6 National Forests in northern California.

Risk Assessment of Exotic Species in North America. I developed empirical models of mammal and bird species invasions in North America, as well as a rating system for assigning priority research and control to exotic species in California, based on economic, environmental, and human health hazards.

Representative Clients

Law offices and environmental groups	Government agencies	Businesses and others
Law Offices of Berger & Montague	US Department of Agriculture	Pacific Gas & Electric Co.
Law Offices of Roy Haber	US Forest Service	Southern California Edison Co.
Law Offices of Edward MacDonald	US Fish & Wildlife Service	Georgia-Pacific Timber Co.
Law Office of John Gabrielli	US Navy	Northern Territories Inc.
Law Office of Bill Kopper	California Energy Commission	National Renewable Energy Lab
California Wildlife Federation	California Dept of Fish & Game	David Magney Environmental Consulting
Defenders of Wildlife	California Dept. of Transportation	Don & LaNelle Silverstien
Sierra Club	California Dept. of Forestry	Wildlife History Foundation
National Endangered Species Network	California Dept. of Food & Agriculture	Seventh Day Adventist Church
Spirit of the Sage Council	Ventura County Counsel	Escuela de la Raza Unida
The Humane Society	County of Yolo	Susan Pelican and Howard Beeman
Hagens Berman LLP	Tahoe Regional Planning Agency	Emerald Farms
Environmental Protection Information Center (EPIC)	Sustainable Agriculture Research & Education Program	Residents Against Inconsistent Development, Inc.
Goldberg, Kamin & Garvin, Attorneys at Law		Bob Sarvey
Californians for Renewable Energy (CaRE)		
Seatuck Environmental Association		

Representative special-status species experience

Common name	Species name	Status[1]	Description
Field experience			
California red-legged frog	*Rana aurora draytonii*	FT, CSC	Protocol searches & discovery at multiple sites
Foothill yellow-legged frog	*Rana boylii*	FSC, CSC	Research and discoveries
Western spadefoot	*Spea hammondii*	FSC, CSC	Searches and discovery
California tiger salamander	*Ambystoma californiense*	FC, CSC	Protocol searches & discovery in Monterey Co.
Coast range newt	*Taricha torosa torosa*	CSC	Searches and multiple discoveries
Blunt-nosed leopard lizard	*Gambelia sila*	FE, CE	Discovery in San Luis Obispo County
California Horned Lizard	*Phrynosoma coronatum frontale*	FSC, CSC	Search and discovery in San Luis Obispo Co.
Western pond turtle	*Clemmys marmorata*	FSC, CSC	Searches and discoveries at multiple sites
San Joaquin kit fox	*Vulpes macrotis mutica*	FE, CT	Protocol searches and discovery
Sumatran tiger	*Panthera tigris*		Research in Sumatra
Mountain lion	*Puma concolor californicus*	CFP	Research and publications
Point Arena mountain beaver	*Aplodontia rufa nigra*	FE, CSC	Remote camera operation
Giant kangaroo rat	*Dipodomys ingens*	FE, CE	Discovery in Cholame Valley
Fresno kangaroo rat	*Dipodomys nitratoides*	FE, CE	Research and conservation at Lemoore Naval Air Station
Monterey dusky-footed woodrat	*Neotoma fuscipes luciana*	FSC, CSC	Captures and mapping of dens
Salinas harvest mouse	*Reithrodontomys megalotus distichlus*	G5T1S1	Captures in the Salinas area
Golden eagle	*Aquila chrysaetos*	CSC	Research in Sacramento Valley
Swainson's hawk	*Buteo swainsoni*	CT	Research in Sacramento Valley
Northern harrier	*Circus cyaeneus*	CSC	Research and publication
White-tailed kite	*Elanus leucurus*	CFP	Research and publication
Loggerhead shrike	*Lanius ludovicianus*	FSC, CSC	Research in Sacramento Valley
Least Bell's vireo	*Vireo bellii pusillus*	FE, CE	Discovery in Monterey County
Willow flycatcher	*Empidonax traillii extimus*	FE, CE	Research at breeding sites in high Sierra Nevada
Burrowing owl	*Athene cunicularia hypugia*	FSC, CSC	Research at multiple locations
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT	Research on mitigation site in Central Valley
Analytical			
Arroyo southwestern toad	*Bufo microscaphus californicus*	FE, CSC	Research and report.
Giant garter snake	*Thamnophis gigas*	FT, CE	Research and publication.
Northern goshawk	*Accipiter gentilis*	FSC, CSC	Research and publication.
Northern spotted owl	*Strix occidentalis*	FT	Research and reports. Publication in progress.

[1] FE = Federal Endangered, FT = Federal threatened, FC = Federal candidate for listing, FSC = Federal species of concern, CE = California Endangered, CT = California threatened, CFP = California Fully Protected, CSC = California Species of Concern, G5T1S1 = CNDDB rating of emperiled throughout California range.

Peer Reviewed Publications:

Zhang, M., K. S. Smallwood, and E. Anderson. 2002. Relating indicators of ecological health and integrity to assess risks to sustainable agriculture and native biota. In: Rapport, D. J., W. L. Lasley, D. E Rolston, N. O. Nielsen, C. O. Qualset, and A. B. Damania, Editors, Managing for Healthy Ecosystems. CRC/Lewis Press: In press.

Wilcox, B.A., K.S. Smallwood, and J.R. Kahn. 2002. Toward a forest capital index. In: Rapport, D. J., W. L. Lasley, D. E Rolston, N. O. Nielsen, C. O. Qualset, and A. B. Damania, Editors, Managing for Healthy Ecosystems. CRC/Lewis Press: In press.

Smallwood, K.S. 2002. Habitat models based on numerical comparisons. In Predicting species occurrences: Issues of scale and accuracy, J. M. Scott, P. J. Heglund, M. Morrison, M. Raphael, J. Haufler, and B. Wall, editors. Island Press, Covello, California. In press.

Smallwood, K.S. 2001. The allometry of density within the space used by populations of Mammalian Carnivores. Canadian Journal of Zoology 79:1634-1640.

Smallwood, K.S., and T.R. Smith. 2001. Study design and interpretation of Sorex density estimates. Annales Zoologi Fennici 38:141-161.

Smallwood, K.S., A. Gonzales, T. Smith, E. West, C. Hawkins, E. Stitt, C. Keckler, C. Bailey, and K. Brown. 2001. Suggested standards for science applied to conservation issues. Transactions of the Western Section of the Wildlife Society 36:40-49.

Geng, S., Yixing Zhou, Minghua Zhang, and K. Shawn Smallwood. 2001. A Sustainable Agro-ecological Solution to Water Shortage in North China Plain (Huabei Plain). Environmental Planning and Management 44:345-355.

Smallwood, K. Shawn, Lourdes Rugge, Stacia Hoover, Michael L. Morrison, Carl Thelander. 2001. Intra- and inter-turbine string comparison of fatalities to animal burrow densities at Altamont Pass. Pages 23-37 in S. S. Schwartz, ed., Proceedings of the National Avian-Wind Power Planning Meeting IV. RESOLVE, Inc., Washington, D.C.

Smallwood, K.S., S. Geng, and M. Zhang. 2001. Comparing pocket gopher (Thomomys bottae) density in alfalfa stands to assess management and conservation goals in northern California. Agriculture, Ecosystems & Environment 87: 93-109.

Smallwood, K. S. 2001. Linking habitat restoration to meaningful units of animal demography. Restoration Ecology 9:253-261.

Smallwood, K.S. 2000. A crosswalk from the Endangered Species Act to the HCP Handbook and real HCPs. Environmental Management 26, Supplement 1:23-35.

Smallwood, K.S., J. Beyea and M. Morrison. 1999. Using the best scientific data for endangered species conservation. Environmental Management 24:421-435.

Smallwood, K.S. 1999. Scale domains of abundance among species of Mammalian Carnivora. Environmental Conservation 26:102-111.

Smallwood, K.S. 1999. Suggested study attributes for making useful population density estimates. Transactions of the Western Section of the Wildlife Society 35: 76-82.

Smallwood, K.S. and M.L. Morrison. 1999. Estimating burrow volume and excavation rate of pocket gophers (Geomyidae). Southwestern Naturalist 44:173-183.

Smallwood, K.S. and M.L. Morrison. 1999. Spatial scaling of pocket gopher (*Geomyidae*) density. Southwestern Naturalist 44:73-82.

Smallwood, K.S. 1999. Abating pocket gophers (*Thomomys* spp.) to regenerate forests in clearcuts. Environmental Conservation 26:59-65.

Smallwood, K.S. 1998. Patterns of black bear abundance. Transactions of the Western Section of the Wildlife Society 34:32-38.

Smallwood, K.S. 1998. On the evidence needed for listing northern goshawks (*Accipter gentilis*) under the Endangered Species Act: a reply to Kennedy. J. Raptor Research 32:323-329.

Smallwood, K.S., B. Wilcox, R. Leidy, and K. Yarris. 1998. Indicators assessment for Habitat Conservation Plan of Yolo County, California, USA. Environmental Management 22: 947-958.

Smallwood, K.S., M.L. Morrison, and J. Beyea. 1998. Animal burrowing attributes affecting hazardous waste management. Environmental Management 22: 831-847.

Smallwood, K.S, and C.M. Schonewald. 1998. Study design and interpretation for mammalian carnivore density estimates. Oecologia 113:474-491.

Zhang, M., S. Geng, and K.S. Smallwood. 1998. Nitrate contamination in groundwater of Tulare County, California. Ambio 27(3):170-174.

Smallwood, K.S. and M.L. Morrison. 1997. Animal burrowing in the waste management zone of Hanford Nuclear Reservation. Proceedings of the Western Section of the Wildlife Society Meeting 33:88-97.

Morrison, M.L., K.S. Smallwood, and J. Beyea. 1997. Monitoring the dispersal of contaminants by wildlife at nuclear weapons production and waste storage facilities. The Environmentalist 17:289-295.

Smallwood, K.S. 1997. Interpreting puma (*Puma concolor*) density estimates for theory and management. Environmental Conservation 24(3):283-289.

Smallwood, K.S. 1997. Managing vertebrates in cover crops: a first study. American Journal of Alternative Agriculture 11:155-160.

Smallwood, K.S. and S. Geng. 1997. Multi-scale influences of gophers on alfalfa yield and quality. Field Crops Research 49:159-168.

Smallwood, K.S. and C. Schonewald. 1996. Scaling population density and spatial pattern for terrestrial, mammalian carnivores. Oecologia 105:329-335.

Smallwood, K.S., G. Jones, and C. Schonewald. 1996. Spatial scaling of allometry for terrestrial, mammalian carnivores. Oecologia 107:588-594.

Van Vuren, D. and K.S. Smallwood. 1996. Ecological management of vertebrate pests in agricultural systems. Biological Agriculture and Horticulture 13:41-64.

Smallwood, K.S., B.J. Nakamoto, and S. Geng. 1996. Association analysis of raptors on an agricultural landscape. Pages 177-190 in D.M. Bird, D.E. Varland, and J.J. Negro, eds., Raptors in human landscapes. Academic Press, London.

Erichsen, A.L., K.S. Smallwood, A.M. Commandatore, D.M. Fry, and B. Wilson. 1996. White-tailed Kite movement and nesting patterns in an agricultural landscape. Pages 166-176 in D.M. Bird, D.E. Varland, and J.J. Negro, eds., Raptors in human landscapes. Academic Press, London.

Smallwood, K.S. 1995. Scaling Swainson's hawk population density for assessing habitat-use across an agricultural landscape. J. Raptor Research 29:172-178.

Smallwood, K.S. and W.A. Erickson. 1995. Estimating gopher populations and their abatement in forest plantations. Forest Science 41:284-296.

Smallwood, K.S. and E.L. Fitzhugh. 1995. A track count for estimating mountain lion *Felis concolor californica* population trend. Biological Conservation 71:251-259

Smallwood, K.S. 1994. Site invasibility by exotic birds and mammals. Biological Conservation 69:251-259.

Smallwood, K.S. 1994. Trends in California mountain lion populations. Southwestern Naturalist 39:67-72.

Smallwood, K.S. 1993. Understanding ecological pattern and process by association and order. Acta Oecologica 14(3):443-462.

Smallwood, K.S. and E.L. Fitzhugh. 1993. A rigorous technique for identifying individual mountain lions *Felis concolor* by their tracks. Biological Conservation 65:51-59.

Smallwood, K.S. 1993. Mountain lion vocalizations and hunting behavior. The Southwestern Naturalist 38:65-67.

Smallwood, K.S. and T.P. Salmon. 1992. A rating system for potential exotic vertebrate pests. Biological Conservation 62:149-159.

Smallwood, K.S. 1990. Turbulence and the ecology of invading species. Ph.D. Thesis, University of California, Davis.

Non-Peer Reviewed Publications

Thelander, C.G. and S. Smallwood. 2002. The Altamont Pass Wind Resource Area's Effects on Birds: A Case History. Manuela de Lucas, Guyonne Janss, and Miguel Ferrer, eds. Birds and wind power. In press.

Smallwood, K.S. 2001. Review of "The Endangered Species Act. History, Conservation, and Public Policy." By Brian Czech And Paul B. Krausman. Environmental Conservation : In press.

Thelander, C.G. S. Smallwood, and L. Rugge. 2001. Bird risk behaviors and fatalities at the Altamont Wind Resource Area – a progress report. Proceedings of the American Wind Energy Association, Washington D.C. 16pp.

Smallwood, K.S. 1997. Spatial scaling of pocket gopher (Geomyidae) burrow volume. Abstract in Proceedings of 44th Annual Meeting, Southwestern Association of Naturalists. Department of Biological Sciences, University of Arkansas, Fayetteville.

Smallwood, K.S. 1997. Estimating prairie dog and pocket gopher burrow volume. Abstract in Proceedings of 44th Annual Meeting, Southwestern Association of Naturalists. Department of Biological Sciences, University of Arkansas, Fayetteville.

Smallwood, K.S. 1997. Animal burrowing parameters influencing toxic waste management. Abstract in Proceedings of Meeting, Western Section of the Wildlife Society.

Smallwood, K.S, and Bruce Wilcox. 1996. Study and interpretive design effects on mountain lion density estimates. Abstract, page 93 in D.W. Padley, ed., *Proceedings 5th Mountain Lion Workshop*, Southern California Chapter, The Wildlife Society. 135 pp.

Smallwood, K.S, and Bruce Wilcox. 1996. Ten years of mountain lion track survey. Page 94 in D.W. Padley, ed. Abstract, page 94 in D.W. Padley, ed., *Proceedings 5th Mountain Lion Workshop*, Southern California Chapter, The Wildlife Society. 135 pp.

Smallwood, K.S, and M. Grigione. 1997. Photographic recording of mountain lion tracks. Pages 75-75 in D.W. Padley, ed., *Proceedings 5th Mountain Lion Workshop*, Southern California Chapter, The Wildlife Society. 135 pp.

Smallwood, K.S., B. Wilcox, and J. Karr. 1995. An approach to scaling fragmentation effects. Brief 8, Ecosystem Indicators Working Group, 17 March, 1995. Institute for Sustainable Development, Thoreau Center for Sustainability – The Presidio, PO Box 29075, San Francisco, CA 94129-0075.

Wilcox, B., and K.S. Smallwood. 1995. Ecosystem indicators model overview. Brief 2, Ecosystem Indicators Working Group, 17 March, 1995. Institute for Sustainable Development, Thoreau Center for Sustainability – The Presidio, PO Box 29075, San Francisco, CA 94129-0075.

EIP Associates. 1996. Yolo County Habitat Conservation Plan. Yolo County Planning and Development Department, Woodland, California.

Geng, S., K.S. Smallwood, and M. Zhang. 1995. Sustainable agriculture and agricultural sustainability. Proc. 7th International Congress SABRAO, 2nd Industrial Symp. WSAA. Taipei, Taiwan.

Smallwood, K.S. and S. Geng. 1994. Landscape strategies for biological control and IPM. Pages 454-464 in W. Dehai, ed., Proc. International Conference on Integrated Resource Management for Sustainable Agriculture. Beijing Agricultural University, Beijing, China.

Smallwood, K.S. and S. Geng. 1993. Alfalfa as wildlife habitat. California Alfalfa Symposium 23:105-8.

Smallwood, K.S. and S. Geng. 1993. Management of pocket gophers in Sacramento Valley alfalfa. California Alfalfa Symposium 23:86-89.

Smallwood, K.S. and E.L. Fitzhugh. 1992. The use of track counts for mountain lion population census. Pages 59-67 in C. Braun, ed. Mountain lion-Human Interaction Symposium and Workshop. Colorado Division of Wildlife, Fort Collins.

Smallwood, K.S. and E.L. Fitzhugh. 1989. Differentiating mountain lion and dog tracks. Pages 58-63 in Smith, R.H., ed. Proc. Third Mountain Lion Workshop. Arizona Game and Fish Department, Pheonix.

Fitzhugh, E.L. and K.S. Smallwood. 1989. Techniques for monitoring mountain lion population levels. Pages 69-71 in Smith, R.H., ed. Proc. Third Mountain Lion Workshop. Arizona Game and Fish Department, Pheonix.

Reports

Smallwood, K. S., M. Robison, and C. Thelander. 2002. Draft Natural Environment Study, Prunedale Highway 101 Project. California Department of Transportation, San Luis Obispo, California. 120 pp.

Smallwood, K.S. 2001. Assessment of ecological integrity and restoration potential of Beeman/Pelican Farm. Draft Report to Howard Beeman, Woodland, California. 14 pp.

Smallwood, K. S., and M. L. Morrison. 2002. Fresno kangaroo rat (*Dipodomys nitratoides*) Conservation Research at Resources Management Area 5, Lemoore Naval Air Station. Progress report to U.S. Department of the Navy, Lemoore, California. 29 pp. + 19 figures.

Smallwood, K.S. 2001. Rocky Flats visit, April 4th through 6th, 2001. Report to Berger & Montaque, P.C. 16 pp. with 61 color plates.

Thelander, C.G., K.S. Smallwood, and L. Rugge. 2001. Bird risk behaviors and fatalities at the Altamont Wind Resource Area. Submitted to National Renewable Energy Laboratory, July 20.

Smallwood, K.S. 2001. Affidavit of K. Shawn Smallwood, Ph.D. in the matter of the U.S. Fish and Wildlife Service's rejection of Seatuck Environmental Association's proposal to operate an education center on Seatuck National Wildlife Refuge. Submitted to Seatuck Environmental Association in two parts, totaling 7 pp.

Magney, D., and K.S. Smallwood. 2001. Maranatha High School CEQA critique. Comment letter submitted to Tamara & Efren Compeán, 16 pp.

Smallwood, K.S. 2001. Preliminary Comments on the Proposed Blythe Energy Project. Submitted to California Energy Commission on March 15 on behalf of Californians for Renewable Energy (CaRE). 14 pp.

Smallwood, K. S. and D. Mangey. 2001. Comments on the Newhall Ranch November 2000 Administrative Draft EIR. Prepared for Ventura County Counsel regarding the Newhall Ranch Specific Plan EIR. 68 pp.

Magney, D. and K. S. Smallwood. 2000. Newhall Ranch Notice of Preparation Submittal. Prepared for Ventura County Counsel regarding our recommended scope of work for the Newhall Ranch Specific Plan EIR. 17 pp.

Smallwood, K. S. 2000. Comments on the Preliminary Staff Assessment of the Contra Costa Power Plant Unit 8 Project. Submitted to California Energy Commission on November 30 on behalf of Californians for Renewable Energy (CaRE). 4 pp.

Smallwood, K. S. 2000. Comments on the California Energy Commission's Final Staff Assessment of the MEC. Submitted to California Energy Commission on October 29 on behalf of Californians for Renewable Energy (CaRE). 8 pp.

Smallwood, K. S. 2000. Comments on the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP). Submitted to California Energy Commission on October 29 on behalf of Californians for Renewable Energy (CaRE). 9 pp.

Smallwood, K. S. 2000. Comments on the Preliminary Staff Assessment of the Metcalf Energy Center. Submitted to California Energy Commission on behalf of Californians for Renewable Energy (CaRE). 11 pp.

Smallwood, K. S. 2000. Preliminary report of reconnaissance surveys near the TRW plant south of Phoenix, Arizona, March 27-29. Report prepared for Hagens, Berman & Mitchell, Attorneys at Law, Phoenix, AZ. 6 pp.

Morrison, M.L., K.S. .Smallwood, and M. Robison. 2001. Draft Natural Environment Study for Highway 46 compliance with CEQA/NEPA. Report to the California Department of Transportation. 75 pp.

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Smallwood, K. S. 1999. Estimation of impacts due to dredging of a shipping channel through Humboldt Bay, California. Court Declaration prepared on behalf of EPIC.

Smallwood, K. S. 1998. 1998 California Mountain Lion Track Count. Report to the Defenders of Wildlife, Washington, D.C. 5 pages.

Smallwood, K.S. 1998. Draft report of a visit to a paint sludge dump site near Ridgewood, New Jersey, February 26th, 1998. Unpublished report to Consulting in the Public Interest.

Smallwood, K.S. 1997. Science missing in the "no surprises" policy. Commissioned by National Endangered Species Network and Spirit of the Sage Council, Pasadena, California.

Smallwood, K.S. and M.L. Morrison. 1997. Alternate mitigation strategy for incidental take of giant garter snake and Swainson's hawk as part of the Natomas Basin Habitat Conservation Plan. Pages 6-9 and *iii* illustrations in W.D. Carrier, K.S. Smallwood and M.L. Morrison, Natomas Basin Habitat Conservation Plan: Narrow channel marsh alternative wetland mitigation. Northern Territories, Inc., Sacramento.

Smallwood, K.S. 1996. Assessment of the BIOPORT model's parameter values for pocket gopher burrowing characteristics. Report to Berger & Montague, P.C. and Roy S. Haber, P.C., Philadelphia. (peer reviewed).

Smallwood, K.S. 1997. Assessment of plutonium releases from Hanford buried waste sites. Report Number 9, Consulting in the Public Interest, 53 Clinton Street, Lambertville, New Jersey, 08530.

Smallwood, K.S. 1996. Soil Bioturbation and Wind Affect Fate of Hazardous Materials that were Released at the Rocky Flats Plant, Colorado. Report to Berger & Montague, P.C., Philadelphia.

Smallwood, K.S. 1996. Second assessment of the BIOPORT model's parameter values for pocket gopher burrowing characteristics and other relevant wildlife observations. Report to Berger & Montague, P.C. and Roy S. Haber, P.C., Philadelphia.

Smallwood, K.S., and R. Leidy. 1996. Wildlife and Their Management Under the Martell SYP. Report to Georgia Pacific, Corporation, Martel, CA. 30 pp.

EIP Associates. 1995. Yolo County Habitat Conservation Plan Biological Resources Report. Yolo County Planning and Development Department, Woodland, California.

Smallwood, K.S. and S. Geng. 1995. Analysis of the 1987 California Farm Cost Survey and recommendations for future survey. Program on Workable Energy Regulation, University-wide Energy Research Group, University of California.

Fitzhugh, E.L. and K.S. Smallwood. 1987. Methods Manual – A statewide mountain lion population index technique. California Department of Fish and Game, Sacramento.

Salmon, T.P. and K.S. Smallwood. 1989. Final Report – Evaluating exotic vertebrates as pests to California agriculture. California Department of Food and Agriculture, Sacramento.

Smallwood, K.S. and W. A. Erickson (written under supervision of W.E. Howard, R.E. Marsh, and R.J. Laacke). 1990. Environmental exposure and fate of multi-kill strychnine gopher baits. Final Report to USDA Forest Service –NAPIAP, Cooperative Agreement PSW-89-0010CA.

Fitzhugh, E.L., K.S. Smallwood, and R. Gross. 1985. Mountain lion track count, Marin County, 1985. Unpublished report on file at Wildlife Extension, University of California, Davis.

Comments on Environmental Documents

I have been retained or commissioned to comment on various environmental documents, including:

- Recirculated Initial Study for Calpine's proposed Pajaro Valley Energy Center (2002: 3 pp)
- UC Merced -- Declaration of Dr. Shawn Smallwood in support of petitioner's application for temporary restraining order and preliminary injunction (2002: 5 pp)
- California Energy Commission Staff Report on GWF Tracy Peaker Project (2002: 17 pp + 3 photos; follow-up report of 3 pp)
- Initial Study and Negative Declaration, Silver Bend Apartments, Placer County (2002: 13 pp);
- UC Merced Long-range Development Plan DEIR and UC Merced Community Plan DEIR (2001: 26 pp);
- Initial Study, Colusa County Power Plant (2001: 6 pp);
- Comments on Proposed Dog Park at Catlin Park, Folsom, California (2001: 5 pp + 4 photos);
- Pacific Lumber Co. (Headwaters) Habitat Conservation Plan and Environmental Impact Report (1998: 28 pp);
- Final Environmental Impact Report/Statement for Issuance of Take authorization for listed species within the MSCP planning area in San Diego County, California (Fed. Reg. 62 (60): 14938, San Diego Multi-Species Conservation Program) (1997: 10 pp);
- Permit (PRT-823773) Amendment for the Natomas Basin Habitat Conservation Plan, Sacramento, CA (Fed. Reg. 63 (101): 29020-29021) (1998);
- Draft Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*). (Fed. Reg. 64(176): 49497-49498) (1999: 8 pp);
- Review of the Draft Recovery Plan for the Arroyo Southwestern Toad (*Bufo microscaphus californicus*) (1998);
- Ballona West Bluffs Project Environmental Impact Report (1999: oral presentation);
- California Board of Forestry's proposed amended Forest Practices Rules (1999);
- Negative Declaration for the Sunset Skyranch Airport Use Permit (1999);
- Calpine and Bechtel Corporations' Biological Resources Implementation and Monitoring Program (BRMIMP) for the Metcalf Energy Center (2000: 10 pp);
- California Energy Commission's Final Staff Assessment of the proposed Metcalf Energy Center (2000);
- US Fish and Wildlife Service Section 7 consultation with the California Energy Commission regarding Calpine and Bechtel Corporations' Metcalf Energy Center (2000: 4 pp);
- California Energy Commission's Preliminary Staff Assessment of the proposed Metcalf Energy Center (2000: 11 pp);

- Site-specific management plans for the Natomas Basin Conservancy's mitigation lands, prepared by Wildlands, Inc. (2000: 7 pp);
- Affidavit of K. Shawn Smallwood in Spirit of the Sage Council, et al. (Plaintiffs) vs. Bruce Babbitt, Secretary, U.S. Department of the Interior, et al. (Defendants), Injuries caused by the No Surprises policy and final rule which codifies that policy (1999: 9 pp).

I also issued formal comments on the following documents:

- Notice of Preparation of UC Merced Community and Area Plan EIR, on behalf of The Wildlife Society—Western Section (2001: 8 pp.);
- Preliminary Draft Yolo County Habitat Conservation Plan (2001; 2 letters totaling 35 pp.);
- Merced County General Plan Revision, notice of Negative Declaration (2001: 2 pp.);
- Notice of Preparation of Campus Parkway EIR/EIS (2001: 7 pp.);
- Draft Recovery Plan for the bighorn sheep in the Peninsular Range (*Ovis candensis*) (2000);
- Draft Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*), on behalf of The Wildlife Society—Western Section (2000: 10 pp.);
- Sierra Nevada Forest Plan Amendment Draft Environmental Impact Statement, on behalf of The Wildlife Society—Western Section (2000: 7 pp.);
- State Water Project Supplemental Water Purchase Program, Draft Program EIR (1997);
- Davis General Plan Update EIR (2000);
- Covell Center Project EIR and EIR Supplement (1997);
- Turn of the Century EIR (1999: 10 pp);
- Proposed termination of Critical Habitat Designation under the Endangered Species Act (Fed. Reg. 64(113): 31871-31874) (1999);
- NOA Draft Addendum to the Final Handbook for Habitat Conservation Planning and Incidental Take Permitting Process, termed the HCP 5-Point Policy Plan (Fed. Reg. 64(45): 11485 - 11490) (1999).

Position Statements I prepared the following position statements:

- Recommended that the California Department of Fish and Game prioritize the extermination of the introduced southern water snake in northern California. The Wildlife Society--Western Section (2001);
- Recommended that The Wildlife Society—Western Section appoint or recommend members of the independent scientific review panel for the UC Merced environmental review process (2001);
- Opposed the siting of the University of California's 10th campus on a sensitive vernal pool/grassland complex east of Merced. The Wildlife Society--Western Section (2000);
- Opposed the legalization of ferret ownership in California. The Wildlife Society--Western Section (2000);
- Opposed the Proposed "No Surprises," "Safe Harbor," and "Candidate Conservation Agreement" rules, including permit-shield protection provisions (Fed. Reg. Vol. 62, No. 103, pp. 29091-29098 and No. 113, pp. 32189-32194). This statement was signed by 188 scientists and went to the responsible federal agencies, as well as to the U.S. Senate and House of Representatives.

Printed Mass Media

Smallwood, K.S. 2002. Spring Lake threatens Davis. Op-Ed to the Davis Enterprise.

Smallwood, K.S. Summer, 2001. Mitigation of habitation. The Flatlander, Davis, California.

Entrikan, R.K. and K.S. Smallwood. 2000. Measure O: Flawed law would lock in new taxes. Op-Ed to the Davis Enterprise.

Smallwood, K.S. 2000. Davis delegation lobbies Congress for Wildlife conservation. Op-Ed to the Davis Enterprise.

Smallwood, K.S. 1998. Davis Visions. The Flatlander, Davis, California.

Smallwood, K.S. 1997. Last grab for Yolo's land and water. The Flatlander, Davis, California.

Smallwood, K.S. 1997. The Yolo County HCP. Op-Ed to the Davis Enterprise.

Radio/Television

KDVS Speaking in Tongues (host Ron Glick), Yolo County HCP: 1 hour. December 27, 2001;

KDVS Speaking in Tongues (host Ron Glick), Yolo County HCP: 1 hour. May 3, 2001;

KDVS Speaking in Tongues (host Ron Glick), Yolo County HCP: 1 hour. February 8, 2001;

KDVS Speaking in Tongues (host Ron Glick & Shawn Smallwood), California Energy Crisis: 1 hour. Jan. 25, 2001;

KDVS Speaking in Tongues (host Ron Glick), Headwaters Forest HCP: 1 hour. 1998;

Davis Cable Channel (host Gerald Heffernon), Burrowing owls in Davis: half hour. June, 2000;

Davis Cable Channel (hosted by Davis League of Women Voters), Measure O debate: 1 hour. October, 2000;

KXTV 10, In Your Interest, The Endangered Species Act: half hour. 1997.

Posters at Professional Meetings

Smallwood, K.S. and Eva Butler. 2002. Pocket Gopher Response to Yellow Star-thistle Eradication as part of Grassland Restoration at Decommissioned Mather Air Force Base, Sacramento County, California. White Mountain Research Station Open House, Barcroft Station.

Smallwood, K.S. and Michael L. Morrison. 2002. Fresno kangaroo rat (*Dipodomys nitratoides*) Conservation Research at Resources Management Area 5, Lemoore Naval Air Station. White Mountain Research Station Open House, Barcroft Station.

Smallwood, K.S. and E.L. Fitzhugh. 1989. Differentiating mountain lion and dog tracks. Third Mountain Lion Workshop, Prescott, AZ.

Smith, T. R. and K. S. Smallwood. 2000. Effects of study area size, location, season, and allometry on reported *Sorex* shrew densities. Annual Meeting of the Western Section of The Wildlife Society.

Papers In Review

Smallwood, K.S. and J. Gabrielli. A biologist's view of CEQA. Environmental Management.

Carl G. Thelander and K. Shawn Smallwood. The Altamont Pass Wind Resource Area's Effects on Birds: A Case History. Edited volume published out of Spain.

Papers in Preparation (Soon to be Submitted)

Smallwood, K.S., and S. Anderson. Using a Geographic Positioning System (GPS) to map wildlife and habitat.
Smallwood, K.S. EIR and EIS responses to comments reveal outcomes in search of a process.
Smallwood, K.S., D. Magney, and J. Gabrielli. Litigable issues under CEQA.
Smallwood, K.S., and others. Offsetting mitigation of environmental impacts.
Smallwood, K.S. Mountain lions in Utopia. Book.
Smallwood, K.S. Estimating prairie dog impacts on the environment.
Stitt, E. and K. S. Smallwood. Study design and interpretation of Natricine snake density estimates.
Smallwood, K. S. Study design and interpretation of northern spotted owl density estimates.

Presentations at Professional Meetings and Seminars:

California mountain lions. Ecological & Environmental Issues Seminar, Department of Biology, California State University, Sacramento, November, 2000.

Using a Geographic Positioning System (GPS) to map wildlife and habitat. Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

Suggested standards for science applied to conservation issues. Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

The indicators framework applied to ecological restoration in Yolo County, California. Society for Ecological Restoration, September 25, 1999.

Ecological restoration in the context of animal social units and their habitat areas. Society for Ecological Restoration, September 24, 1999.

Relating Indicators of Ecological Health and Integrity to Assess Risks to Sustainable Agriculture and Native Biota. International Conference on Ecosystem Health, August 16, 1999.

A crosswalk from the Endangered Species Act to the HCP Handbook and real HCPs. Southern California Edison, Co. and California Energy Commission, March 4-5, 1999.

Mountain lion track counts in California: Implications for Management. Ecological & Environmental Issues Seminar, Department of Biological Sciences, California State University, Sacramento, November 4, 1998.

"No Surprises" -- Lack of science in the HCP process. California Native Plant Society Annual Conservation Conference, The Presidio, San Francisco, September 7, 1997.

In Your Interest. A half hour weekly show aired on Channel 10 Television, Sacramento. In this episode, I served on a panel of experts discussing problems with the implementation of the Endangered Species Act. Aired August 31, 1997.

Spatial scaling of pocket gopher (*Geomyidae*) density. Southwestern Association of Naturalists 44th Meeting, Fayetteville, Arkansas, April 10, 1997.

Estimating prairie dog and pocket gopher burrow volume. Southwestern Association of Naturalists 44th Meeting, Fayetteville, Arkansas, April 10, 1997.

Ten years of mountain lion track survey. Fifth Mountain Lion Workshop, San Diego, February 27, 1996.

Study and interpretive design effects on mountain lion density estimates. Fifth Mountain Lion Workshop, San Diego, February 27, 1996.

Small animal control. Session moderator and speaker at the California Farm Conference, Sacramento, California, Feb. 28, 1995.

Small animal control. Ecological Farming Conference, Asylomar, California, Jan. 28, 1995.

Habitat associations of the Swainson's Hawk in the Sacramento Valley's agricultural landscape. 1994 Raptor Research Foundation Meeting, Flagstaff, Arizona.

Alfalfa as wildlife habitat. Seed Industry Conference, Woodland, California, May 4, 1994.

Habitats and vertebrate pests: impacts and management. Managing Farmland to Bring Back Game Birds and Wildlife to the Central Valley. Yolo County Resource Conservation District, U.C. Davis, February 19, 1994.

Management of gophers and alfalfa as wildlife habitat. Orland Alfalfa Production Meeting and Sacramento Valley Alfalfa Production Meeting, February 1 and 2, 1994.

Patterns of wildlife movement in a farming landscape. Wildlife and Fisheries Biology Seminar Series: Recent Advances in Wildlife, Fish, and Conservation Biology, U.C. Davis, Dec. 6, 1993.

Alfalfa as wildlife habitat. California Alfalfa Symposium, Fresno, California, Dec. 9, 1993.

Management of pocket gophers in Sacramento Valley alfalfa. California Alfalfa Symposium, Fresno, California, Dec. 8, 1993.

Association analysis of raptors in a farming landscape. Plenary speaker at Raptor Research Foundation Meeting, Charlotte, North Carolina, Nov. 6, 1993.

Landscape strategies for biological control and IPM. Plenary speaker, International Conference on Integrated Resource Management and Sustainable Agriculture, Beijing, China, Sept. 11, 1993.

Landscape Ecology Study of Pocket Gophers in Alfalfa. Alfalfa Field Day, U.C. Davis, July 1993.

Patterns of wildlife movement in a farming landscape. Spatial Data Analysis Colloquium, U.C. Davis, August 6, 1993.

Sound stewardship of wildlife. Veterinary Medicine Seminar: Ethics of Animal Use, U.C. Davis. May 1993.

Landscape ecology study of pocket gophers in alfalfa. Five County Grower's Meeting, Tracy, California. February 1993.

Turbulence and the community organizers: The role of invading species in ordering a turbulent system, and the factors for invasion success. Ecology Graduate Student Association Colloquium, U.C. Davis. May 1990.

Evaluation of exotic vertebrate pests. Fourteenth Vertebrate Pest Conference, Sacramento, California. March 1990.

Analytical methods for predicting success of mammal introductions to North America. The Western Section of the Wildlife Society, Hilo, Hawaii. February 1988.

A state-wide mountain lion track survey. Sacramento County Dept Parks and Recreation. April 1986.

The mountain lion in California. Davis Chapter of the Audubon Society. October 1985.

Ecology Graduate Student Seminars, U.C. Davis, 1985-1990: Social behavior of the mountain lion; Mountain lion control; Political status of the mountain lion in California.

Other forms of Participation at Professional Meetings

- Chair of Animal Damage Management Session, The Wildlife Society, Annual Meeting, Reno, Nevada, September 26, 2001.
- Chair of Technical Session: Human communities and ecosystem health: Comparing perspectives and making connection. Managing for Ecosystem Health, International Congress on Ecosystem Health, Sacramento, CA August 15-20, 1999.
- Student Awards Committee, Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.
- Student Mentor, Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

Reviews of Journal Papers (Number of papers I reviewed for each journal)

American Naturalist	1
Auk	1
Biological Conservation	>31
Canadian Journal of Zoology	1
Environmental Conservation	3
Environmental Management	15
Journal of Applied Ecology	1
Journal of Raptor Research	1
National Renewable Energy Lab reports	2
Oikos	1
Restoration Ecology	1
Southwestern Naturalist	1
The Wildlife Society--Western Section Trans.	3
Proc. Int. Congress on Managing for Ecosystem Health	1
Transactions in GIS	1
Total in my records maintained since 1997	61

Committees

Ph.D. Thesis Committee, Steve Anderson, University of California, Davis.
Board Member, Iron Mountain Conservancy

Memberships in Professional Societies:

The Wildlife Society
Western Section of the Wildlife Society
Society for Ecological Restoration
Association of Southwest Naturalists
Raptor Research Foundation
American Museum of Natural History

Honors and Awards:

Certificate of Appreciation, The Wildlife Society—Western Section, 2000, 2001
Fulbright Research Fellowship to Indonesia, 1987.
Northern California Athletic Association Most Valuable Cross Country Runner, 1984.
J.G. Boswell Full Academic Scholarship, 1981 (Paid expenses for undergraduate education).
American Legion Award, Corcoran High School, 1981, and John Muir Junior High, 1977.
CIF Section Champion, Cross Country in 1978 and Track & Field 2 mile run in 1981.
National Junior Record, 20 kilometer run, 1982.
National Age Group Record, 1500 meter run, 1978

Data Results

Comments: Elevated levels of contaminants seem to be migrating towards the Bay require a risk analysis to determine their impact on the Bay.

Chromium was analyzed as total chromium. Additional analysis must be performed to determine the concentrations of both Cr^{+3} and Cr^{+6}.

DTSC and OEHHA direct that 5% of the chromium be treated as Cr^{+6} . Sampling should be conducted to determine the amount of Cr^{+6} rather than estimating it so that a thorough risk analysis is performed.

Soil air dispersion modeling should be conducted after speciation of chromium has been determined, again to conduct a thorough assessment.

Draft Field Investigation Summary Report SFERP Site

The sampling plan should have been made more comprehensive by laying out the property in a grid and sampling along the grid to provide a more thorough characterization of the site. Instead sampling appears more random leaving many un-sampled areas on the site. The methods are acceptable but sampling is not comprehensive enough.

Sec. 4.0 Field Activities

Comments: Three soil gas samples were not collected because of wet conditions. These samples should be collected and analyzed to provide a better understanding of the extent of contamination.

Sec. 5.0

Data generated from preliminary assessment shows extensive contamination in some areas of the site. Since a more thorough characterization has not been conducted, the possibility for more extensive contamination exists.

Sec. 5.1.9 pH

pH in soil reported from all samples collected across the site ranged in value from 7 to 12.6. The highest value, 12.6, was reported from SB-25, 5 feet bgs. This means the presence of a very strongly alkaline substance 5 feet below the ground surface probably the result of a significant spill of a hazardous material.

Clifton J. Smith, REA
Environmental Consultant

Summary of Qualifications

Clifton J. Smith is a seasoned professional that specializes in environmental program management and development, wastewater treatment systems design and implementation including waste minimization, source reduction and recycling. Mr. Smith has contributed to the growth development of compliance programs for several major manufacturing organizations including diesel engine manufacturing, agricultural chemical, and nickel cadmium and lithium batteries for over 26 years. Mr. Smith has successfully acquired Title V and storm water discharge permits and implemented environmental and occupational safety compliance and training programs, overseeing hazardous waste handling operations, facilities maintenance, budgeting and project management. He developed his foundation skills in analytical work environments, primarily chemical and process engineering.

Currently, Mr. Smith devotes his talent to Phase I & II Environmental Site Assessments, Toxic Mold Assessments, groundwater and wastewater treatment, and air purification systems. He has significant insight and interpretation skills, with respect to environmental laws and regulations as relates to his clients' needs and the environmental safety of others.

Mr. Smith has an accomplished track record of utilizing innovative techniques coupled with sound engineering practices, that successfully solve environmental problems. He has designed effective wastewater treatment systems that removed over ninety nine percent of target pollutants from wastewater discharge, using pH adjustment, ion exchange and pressure filtration for the battery industry. He has also modified heavy metals wastewater treatment systems to meet permit requirements, managed projects to install an extended aeration wastewater treatment system resulting in reduced biochemical oxygen demand, nitrogen compounds and suspended solids in effluent. He has also initiated recycling programs to recover and reuse nickel and cadmium from waste treatment sludge.

As previously mentioned, Clifton chooses to devote his talents to Toxic Mold Assessments and Phase I Environmental Site Assessments, including completed projects that identified toxic mold for McClellan Air Force Base in Sacramento California, and the City of Tempe, Arizona. He has prepared himself by completing coursework in biological science and has twelve years of experience in industrial hygiene. Clifton has skillfully identified surface soil contamination during a Phase I Environmental Site Assessment which resulted in the excavation of the containmated soil and the installation of a concrete spill containment basin for bulk chemical storage. This required his design, implementation and management of a bioremediation project for the contaminated soil.

Throughout, Clifton has maintained a strong commitment toward quality, efficiency and congeniality. He is able to assess environmental issues and apply practical solutions and training programs designed to achieve regulatory compliance. Clifton prefers participatory learning techniques and encourages team building and positive social interaction amongst team members, technicans and management personnel.

Mr. Smith achieved his personal education and training by completing numerous environmental seminars and workshops throughout the United States. His certifications include but are not limited to Toxic Mold Inspection; Water, Wastewater and Hazardous Waste Treatment; Wastewater Resources; Environmental Site Assessment for Commercial Real Estate; Environmental Health and Safety Law and ISO 14000 for Managers. Mr. Smith holds a Bachelor's Degree in Biology from North Carolina Central University in Durham, North Carolina. He is a member of the National Registry of Environmental Professionals and is a Registered Environmental Assessor (REA) with the California Environmental Protection Agency.

This valuable combination of professional training and extensive work experience, qualifys him to offer exceptional and viable environmental solutions to most industries and governmental agencies.